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Participatory trouble: Towards an understanding of algorithmic structures on Facebook

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Abstract

Several studies have engaged in understanding how the internet and online platforms increase political engagement through various forms of online participation and leverage social collective action. This article advances this line of research by exploring how social network sites in general and Facebook in particular are fuelled by algorithms that affect and become entangled with social practices on these sites. The article is empirically grounded in an analysis of 66 self-reflexive diaries on Facebook use and studies algorithmic structures on Facebook by exploring how personalized social feeds affect the experienced relationship between self and others as well as the readiness to share information to a network of peers. In contrast to studies that position online platforms as strengthening participatory political action, this article argues that it is necessary to take into account how algorithmic structures affect interpersonal relationships and the experienced ability to engage in participatory practices.

Keywords: Facebook; social network sites; algorithms; participatory practices

Introduction

Ever since the early days of the internet, online platforms have been associated with vast increases in social and political participatory practices due to their assumed capacity to make people connect and allow for information to be distributed and shared without significant effort. At the dawn of internet research, it was often assumed that online platforms allowed for a new kind of community to emerge through which the material and political conditions of everyday life could be transcended (Baym, 1998; Rheingold, 1995; Turkle, 1995). Whereas early theorists of cyberspace leaned towards understanding the internet as providing a distinct social space where social dynamics and conditions for social interaction were fundamentally altered, recent accounts of online platforms rarely ascribe spatial qualities to online platforms, nor assume a particularly sharp dividing line between the online and offline parts of the social realm.

Contemporary internet research most often regards online platforms as fundamentally embedded in and intertwined with everyday life social practices (Berg, 2011; boyd, 2012). Largely, this is due to the advent of Web 2.0 that allowed the general population to produce, share, distribute and consume information without any particular technological skills (O'Reilly, 2007). In place of static content and one-way directed publishing systems, Web 2.0 provided a technological architecture that allowed for new forms of participation and collaboration. The most notable outcome of this groundbreaking shift is the proliferation of social network sites. The emergence of these distinct online platforms implied a move away from thematically organized online communities to "egocentric" networks revolving around individuals and their personal activities, preferences and so forth (boyd & Ellison, 2007). These changes have spurred a growing interest in understanding the political dimensions of social network sites. Several studies have engaged in understanding how online platforms potentially strengthen democratic processes, increase political engagement through various forms of online participation and leverage collective social action at different societal levels (Davis, 2010; Gil De Zuniga, Puig, & Rojas, 2009). At the same time, a number of studies have highlighted the necessity of taking a critical stance on the assumed democratic promises of the internet and users' alleged increased interactivity (Gustafsson, 2013; Larsson, 2013). Despite the critical voices that have been raised as a reaction to the assumed democratic promises of social network sites, there is a tendency to emphasize their instrumental characteristics in favour of the mechanisms that codify, constrain and regulate social interaction on these platforms (Berg, 2012). Although there is a vast amount of research that takes the properties and effects of the internet architecture seriously, it is not until recently that the interrelationship between participatory practices and the algorithms that fuel social network sites has become an object of critical inquiry, most notably within the field of software studies (Feenberg, 1999; Fuller, 2003; Galloway, 2004; Mackenzie, 2006; Manovich, 2001, 2013).

With its particular focus on Facebook, this article builds on the growing body of software studies research and aims at advancing ongoing discussions about the social effects of algorithms on social network sites. Currently, Facebook is the most well-known example of a social network site and it allows more than one billion users to connect on a

platform whose architecture dynamically reshapes the conditions for social interaction by means of complex algorithmic calculations. Aiming to establish an understanding of the effects of algorithmic structures on Facebook, this article specifically explores how personalized social feeds affect the experienced relationship between self and others as well as the readiness to share information with a network of peers. These matters are of crucial importance for understanding how the architecture of online platforms becomes entangled with the social dynamics of political practices online.

The remainder of the article is organized as follows: The introduction is followed by a section that establishes an understanding of how the user interface and algorithmic processing of personal and interactional data on Facebook lead to the emergence of algorithmic structures. The third section features methodological remarks on the empirical study of approximately 470 self-reflexive diary entries about Facebook use that forms the basis for this article. The fourth section presents an overview of the empirical findings focusing mainly on the interrelationship between self, others and practices of sharing on this social network site. Finally, the fifth and concluding section considers the empirical findings in light of the literature review. It is argued that the effects of algorithms combined with the social archive of Facebook friends tend to provoke a certain feeling of insecurity among users. Users find it difficult to relate to such a broad collection of people from highly diverse contexts and periods of life and consequently they develop actions that help them cope with the experienced insecurity. In contrast to studies that position online platforms as strengthening participatory action online, this article argues that the technological characteristics of Facebook provoke certain ways of acting and being online which are characterized by the sharing of information that is perceived as socially safe.

Facebook and Algorithmic Structure

It is often claimed that Facebook helps users connect and thus facilitate the formation and maintenance of social relationships throughout the course of life. This is achieved by means of complex algorithmic calculations through which the exponential growth of users' personal networks is supported. Facebook's database architecture makes it possible to capture arbitrary actions and relationships between users and objects thus laying the foundation for a highly complex informational infrastructure that fuels the Facebook experience for users and their friends. The personal and interactional data that is generated through Facebook user activity becomes part of the social graph (a term commonly used by Facebook to describe the system's architecture) and is visualized through the Timeline and automatically distributed to other users through the News Feed (and its real-time sibling Ticker). The News Feed presents users with a snapshot of the social graph and allows instant interaction with various objects (which can thus provoke a viral spread, not least because the information was highlighted in other users' Ticker). Facebook is thus not simply mapping relationships to certain objects, but rather establishes an understanding of rich connections between a larger number of actions and objects and that in turn determines how information is shown to users.

Initially, the News Feed presented users with such a large amount of information making it hard to react which was problematic in terms of Facebook's aim to encourage users to interact with content (and thereby provide useful data about themselves). The challenge for Facebook was to filter the signal from the noise, and that by presenting users with interesting content from significant others in a timely and relevant manner. In a breakout session entitled Focus on Feed at Facebook's 2010 F8 developer conference, engineer Ruchi Sanghvi (2010) explained these challenges further: "How do we use the features of a story, like the author who has published it, the strength of the connection between author and viewer, the time it was published at, to make sure the user actually finds the story interesting?" In the same session, engineer Ari Steinberg revealed that there is a "fancy little formula" termed EdgeRank. This core algorithm performs a number of calculations on the personal and interactional data which makes News Feed display only the updates that are assumed to be most important, "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" (Bucher, 2013, p. 484). The EdgeRank algorithm considers items (such as status updates, pictures and videos) in the News Feed as objects and whenever users interact (by tagging, commenting, liking and so forth) with an object an Edge is created. These Edges have three factors that, taken together, determine the rank of a certain object and thus the relative possibility for the object to appear in a particular user's News Feed. First, an affinity score is calculated by measuring the patterns of social interaction between two users; the more intense contact (through frequent chatting, and profile views, for instance), the higher the affinity score. Second, each Edge is weighted in order to make a difference between different kinds of interaction (a comment is clearly more important than a like). Third, the recency of each Edge is measured and a new Edge is considered more important than an old one. As Bucher argues, "[t]he 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" (Bucher, 2013, p. 485).

The complex architecture of Facebook illustrates that this online platform cannot simply be approached from a purely instrumental perspective. Rather, it needs to be acknowledged that we are dealing with a certain kind of microcosm in which social interactions are structured in various ways. In this article, the term algorithmic structure is used to describe how the processing of personal and interactional data affects the experienced relationship between self and others on Facebook. Drawing on the work of Mead (1934), these structures can be understood as regulating how the generalized other can be imagined and thus affecting the ways in which individuals are able to engage in social action. According to Mead, "[t]he individual enters as such into his own experience only as an object, not as a subject; and he can enter as an object only on the basis of social relations and interactions, only by means of his experiential transactions with other individuals in an organized social environment" (1934, p. 225). Following this understanding of the relationship between self and others, it becomes clear that the ability to act in one way or another depends on the social environment in which such an action can possibly take place. On Facebook the News Feed forms a rather distinct generalized other – a result of the calculations performed on the personal and interactional data provided by user activity. This implies that we are dealing with a particular form of structures that

are partly formed by user activity and partly by intangible algorithmic calculations.

Taking into account Facebook's characteristic features, it becomes clear that we are dealing with an online platform that does more than simply allow the production and consumption of user-generated content. However, social network sites are often interpreted through a rhetorical prism that positions users as vastly more involved in content creation than was the case in earlier forms of online communities (Beer, 2009; Beer & Burrows, 2007). Online platforms are thus often expected to support the human good by allowing for an increased level of social as well as political participation. Due to the advanced algorithmic calculations that form the basis of the Facebook experience, it must be acknowledged that users are more or less encouraged to use this site as a means of self-expression, connection making, information sharing and social organisation (Gehl, 2011; Zimmer, 2008). Social network sites are thus liberating in the sense that they allow users to make their voices heard but equally importantly the extensive dissemination of personal voices is affected by algorithmic structures and the new forms of power that they give rise to. Hence, software is not simply guided by users' desires but rather, as Beer points out, "acts in often unseen and concealed ways to structure and sort people, places and things" (2009, p. 988). There is thus a pressing need to investigate the consequences of our everyday lives becoming intertwined with and seriously affected by different kinds of software (see also Burrows, 2009; Dodge & Kitchin, 2009; Manovich, 2013).

The interrelationship between technological architectures, databases and algorithms has been extensively explored by a number of researchers within the field of software studies. These studies are of pivotal importance for understanding how software assumes an agency and to various extents becomes entangled with the social practices of everyday life. Although these studies provide advanced knowledge about the social and cultural effects of software, it has not yet been fully explored how these matters affect social interaction in the wider context of social network sites and become part of the technological unconscious (Beer, 2009; Thrift, 2005). Recently, however, a number of papers have been published that express an interest in the effects of embedded algorithms and their potential capacity to structure social interaction. Although researchers such as Beer (2009), Bucher (2012a, 2012b, 2013) and Gehl (2011) provide excellent accounts of how software and algorithms sink into the background of people's everyday life and affect the social dynamics through subtle structuring processes, it remains unclear to what extent the relationship between self and others and the experienced ability to engage in social action are affected. It has, for instance, been demonstrated that the harvesting of personal and interactional data on Facebook forms the basis of a virtual data-double in which the self is "broken up into a series of data flows" based on traces and signifiers (McStay, 2011, p. 311). Such a perspective assumes that Facebook can establish an understanding of users without taking into account the particular social dynamics taking place within the social realm on this online platform. It is clear that all patterns of interactions, status updates, clicks and uses of the like-button "become data points in algorithms for sorting, predicting, and managing our behaviour" (Andrejevic, 2011, p. 287). It must be acknowledged, however, that these processes enter the interrelationship between self and others through alterations in the visibility of others on Facebook.

On Facebook, harvested personal and interactional data is thus subject to multiple algorithmic operations through which information is produced that exceeds the knowledge of the individual user. This information, in turn, is used as a means of constructing an interactional environment that acts upon the individual. This implies that algorithms and the technological architecture of this site do not only operate in the social field but rather coincide with that very field or at least interfere with the cognitive horizon of users through an "automatic production of space" (Thrift, 2005, p. 153). The aim of these operations is to multiply users' practices of sharing information with others and at the same

time increase the amount of information that reaches them and that they find important. As the empirical study suggests, the personalization of social feeds creates a particular relationship between self and others while seriously affecting the readiness to share information with others.

Methodological Remarks

Studying everyday routinized phenomena such as Facebook use is a venture that demands methods allowing us to go beyond the ordinary and what is taken for granted. In several ways Facebook use is deeply embedded in and often even intertwined with everyday life practices and processes and thus not easily studied. Facebook is a social network site with advanced privacy settings that make qualitative and/or ethnographic inquiry outside of one's own personal network nearly impossible. These matters are rendered even more problematic when studying Facebook use and the effects of algorithms and its technological architecture in general. In order to establish an understanding of how users perceive Facebook use and to explore the effects of algorithms I chose to use self-reflexive diaries through which users could reflect upon their use in spaces and times they found comfortable (see, for instance, Horvath, Beadnell, & Bowen, 2013). In late 2011, an invitation to participate in this study was posted on my personal blog and later on, this post was shared through Twitter and Facebook with a reach far beyond what could be imagined (during the first week more than 1,600 persons visited the blog post and spent approximately 3.5 minutes on the page). In total, 470 diary entries written by 66 people (of which two were befriended by the author) in one week were analysed. Participants were aged between 22 and 68 years, self-selected and interestingly, approximately 75% of the participants were female but no gender-specific differences can be noted in the style or content of the diaries. Given that Facebook is a network site with a user database consisting of more than a billion users, it is nearly impossible to find a specific user group that could serve as a basis for an empirical study of the general uses of this site. Due to this, self-selection was deemed an appropriate criterion for participation. Each participant was encouraged to end their period of diary writing by reflecting on the process. Through these notes (some of them short, others quite lengthy) it became clear that writing diaries involved a learning process through which the participants became aware of their own habitual use of Facebook and in that sense managed to temporarily sidestep their everyday immersion in this social network site. The diaries were analysed in two steps. First, general coding was performed and

consequently it became clear that the relationship to Facebook as a technology was often not reflected and also that participants often avoided sharing personal information. Due to the fact that Facebook openly admits that complex algorithmic operations are used as a means of facilitating communication and social interaction, a second thematic coding was performed that focused on these matters, particularly on practices of sharing and social interaction and the relationship with Facebook friends. The analysis of the diaries was guided by the overall research question of how the assemblage of friends and personalized social feeds on Facebook affects the readiness to share information with a network of peers. The analysis of the diaries was conducted along with the literature review and the most illuminating excerpts were chosen to illustrate the theoretical arguments that are put forward in this article. This is the most feasible way to study the social effects of algorithms whose actual composition remains concealed to both users and researchers but it must be noted that no claims on generalizability are made in this empirical study.

Empirical Findings

Sharing with Unclear Others

In the diaries that form the empirical basis for this article, a vast array of themes emerged around how Facebook is used and perceived. On several occasions the diary authors discussed and reflected upon the interrelationship between practices of sharing and social interaction, the assemblage of Facebook friends and the personalized social feeds on Facebook. Adrienne¹, for instance, explicitly states that she avoids posting updates in which she complains about everyday life unless it is possible to do so with a certain twist. The idea that status updates must somehow be slightly amusing is a recurrent theme in the diaries and Adrienne along with others explains that this is due to the fact that the audience is most often quite fragmented. Adding a humorous twist to an everyday observation or a note that could be seen as cranky or less positive than usual seems to disarm the actual meaning and can potentially jeopardize social interaction that was expected to be smooth. Adrienne explains that the expected humorous dimension in her posts sometimes makes her refrain from posting any information at all in order to avoid any misunderstandings. In a similar vein, Taylor explains that she is somewhat secretive when it comes to sharing on Facebook since her group of friends is of a very fragmented kind. "Sometimes I wonder why I'm even friends with some of them", she writes and explains that she has befriended people who were very important in her past but today she cannot see that they "have anything in common".

The broad collection of friends on Facebook seems to provoke a sense of strangeness in Taylor and sometimes, she writes, she feels that she should not have access to her friends' personal lives and this applies vice versa. Reflecting on her friends, Taylor explains that they are added without any serious reflection. There are various ways in which

this theme emerges in the diaries but often it involves how and why one should relate to their friends as an audience as it is not always only one's own actions that are involved but also – potentially – those of others. Kendall, for instance, explains that she was once tagged in a photo that depicted her in a way that was not appropriate for all her friends to see. In this case, her friends could see that Kendall drank alcohol at a party to which several of her friends were not invited. She comments on this photo and writes that Facebook allows for photos to be visible to friends of friends which could possibly imply that a photo like this becomes spread beyond her control. The fear that shared information can travel beyond her control and the fact that the audience is fragmented, makes Kendall cautious when sharing information. When it comes to photos, she explains, she only posts those that are purposely taken for sharing. Furthermore, she writes, "I always consider carefully before posting anything at all to Facebook. I guess that is why I feel safe". These matters are further discussed by Lynn who poses the more philosophical question of what her Facebook friends are. She knows how many they are and she can indeed flicker through the friends list but points out the fundamental difficulty in understanding them as a whole. They all come from different periods in her life and can be related to particular moments, meetings and happenings during the life course. It is perhaps not at all strange that the interaction with such a fragmented group of faces from different times and places is hard to accomplish when there is an underlying insecurity about whom one's actions would be directed at. Similarly, Elliott comments on the same matters saying that status updates on Facebook are not directed towards "anyone in particular and thus will not receive a reply from anyone in particular".

From the above presented accounts of Facebook use, it becomes clear that the relationship between friends and practices of sharing information is of a certain kind. Overall, the diary authors relate to their friends as a generalized other when sharing information, writing a status update and so forth. Sharing information or otherwise commenting on others' posts and status updates involve imagining possible consequences – and importantly for our argument here – assuming the perspective of a generalized other. In contrast to everyday offline life, the friends list on Facebook and the very architecture of this social network site enables an understanding of the generalized other as knowable yet extremely hard to grasp as a unity. The Facebook friend list is an archive in which past, present and perhaps even future interpersonal relationships are stored, managed and transformed into an online generalized other that cuts across both spatial and temporal boundaries. Importantly, it needs to be added that these friends are related to certain social demands. Robin, for instance, stresses that sometimes one simply has to become friends with certain people although one does not even like them as friends. Not befriending such individuals on Facebook would, as she puts it in her diary, be "totally socially unacceptable". This notion of compulsory befriending on Facebook highlights an interesting aspect of Facebook as a playground for social interaction. With such a highly diverse group of peers, insecurity arises around what brings all these people together.

Bored in an Ordinary Space

Facebook clearly aims to connecting people but it seems that the very connection to other people is a rather vague

ground for common action. Rather than bringing people together and to let users act in concert, Facebook turns into a social space that is marked by, as Cody suggests in her diary, just being "ordinary". The diaries often suggest that respondents desire to use Facebook but it is not clear in what ways they should share information or act in relation to their peers. In general, it seems to be the case that different personal spheres collide on Facebook with different and often contradictory expectations of how to act and interact coinciding. Users are often aware of the highly diverse nature of their friends and point out the difficulty in relating to all of them at once when sharing information. As a consequence, diary authors tend to either avoid posting social updates or strive to share information that is deemed socially safe or to some extent amusing. This clearly suggests that Facebook's ambition to provide users with a personalized experience of the social feed has unforeseen consequences. Instead of providing an environment in which strong ties can be maintained and interpersonal relationships marked by trust can be upheld, we are dealing with a social space characterized by underlying doubt.

These unforeseen consequences are further problematized when participants discuss how Facebook as a technology connects people from within their personal social spheres while at the same time making information from certain persons (in)visible. Alex comments on these matters and she is surprised by how Facebook can connect people and social groups. "It is strange how different groups of friends can melt together", she writes and points at the strange feeling of being able to partake in discussions among people who were once part of her personal life. In the diaries, reflections of this kind were quite rare and it was more common to point towards an experience of the social feed as being slightly too ordinary and predictable. Lee explains that this makes her consume information on Facebook without any particular commitment. It seems to be the case, she writes, that people say the same thing everyday and share the same kind of information. This makes her "scroll through" the feed but, she notes, "without feeling anything special or thinking anything special for that matter". In a similar way, Cameron explains how she rarely checks what her friends have "liked" on Facebook although that is one of the predominant forms of interaction on this site. Tracy makes a similar point when he says that he is mostly "passively active" on Facebook and always leaves the site shortly after logging in since there is nothing that makes him interested among his friends' posts. Rather, he

explains, "I'm online but I'm not doing anything. If the computer is turned on, Facebook is turned on. Probably because it makes me feel as if I participated".

In the diaries, Facebook is often presented as something that frames everyday life and could thus be understood as a social intermediary (Berg, 2012). It is important to note, however, that we are dealing with a mechanism that highlights certain people and their posts while casting a shadow over others. In this sense, Facebook tries to cope with the fragmented collection of friends by providing a personalized experience of the social feed. At the same time, users can apply certain filter mechanisms that hide certain individuals' updates and posts and at the same time highlight others. It is impossible to know friends' settings and this, together with the algorithmic processing that determines the information in the News Feed, suggests that Facebook users are always gathered in a social space where nobody sees the same thing as their peers and it is nearly impossible to know what a particular person or a group of persons does with shared information. In sum, in the entries participants frequently return to the composition of friends on Facebook and express an insecurity in relating to an audience that is fragmentary and linked to different times, places and phases of one's personal past. At the same time Facebook engages in technologically advanced calculations in order to present users with a seemingly solid and unified audience and this makes the social feed appear as either boring or as lacking the news value that could make it meaningful in terms of engaging in a conversation. Clearly, the above does not apply to all Facebook conversations or all Facebook users but the accounts presented above suggest that the basic design of Facebook sometimes has the opposite effect than the desired one.

Discussion

At the outset, this article stated its aim was to explore the effects of algorithmic structures on Facebook with a particular focus on how personalized social feeds affect the experienced relationship between self and others as well as the readiness to share information with a network of peers. The above has clarified that Facebook must necessarily be understood as more than an instrument used for connecting with people and sharing information with friends and others. By harvesting, merging and processing data that result from everyday interactions, Facebook establishes an understanding of users that determines what information should be visible, with what magnitude stories should be revealed and so forth. Facebook is thus a heavily structured microcosm that should not be understood as an unbound reality in which people have a wide range of possibilities to interact with each other. Rather, it seems that there is always a third party that is partaking in conversations and interactions. Assuming the function of a social intermediary, Facebook uses algorithms to structure the deliverance of social and symbolic content between users and thus provides users with more than an instrument facilitating social interaction.

Algorithms are important for Facebook as a mechanism that alters the conditions for social interaction but the user interface is of equal importance in this respect. Facebook enables social interaction that differs significantly from what is customary in everyday life for two reasons: it potentially involves others' unpredictable actions and social updates (that can be transformed into objects of social interaction) that are not necessarily directed to a clearly defined recipient. Posting a social update is always associated with a possibility or risk that one or several friends would comment upon what has been said or that the content will be perceived in an undesirable manner. Although one's social update is saved on the personal Timeline, it is most often delivered to one's friends through their News Feeds, which are always subject to algorithmic calculations and thus allow for various degrees of visibility. Importantly, these feeds do not only deliver and gather social updates but also transform them into social meeting points for friends and sometimes even friends of friends', which renders the imaginable other increasingly unclear. Not all social updates or activities are automatically visible since Facebook chooses what information to show and with what magnitude it is

activities are automatically visible since Facebook chooses what information to show and with what magnitude it is shown. In other words, Facebook enables the creation of a social context in which there is a clear tension between others' visibility and, indeed, invisibility. Evidently, there is a large amount of factors apart from the immediacy of personal action that affects the processes of social interaction on Facebook. In this article an important theme has been that Facebook enables the creation of a substantial extended network of a variety of people, such as friends from high-school, colleagues, significant others, relatives, neighbours, ex-lovers and so forth. While it is clear that the imagined audience is of a highly diverse nature, the algorithms on which Facebook is built tend to structure the social context in a way that highlights only friends whom one regularly communicates with. Subsequently, the social context on Facebook tends to lull people into a sense of social comfort by playing down the fact that many more people are (possibly) watching than expected.

The diary excerpts alert to an interesting issue – the majority of participants are not willing to share personal information. Instead, users are waiting for others to do something while at the same time feeling insecure about who is actually watching. It appears that Facebook promotes a social climate in which bonds between people can be tied in unusual ways and it is hard to keep control over how shared information is perceived as it is difficult to know what kind of interaction it would trigger. To a large extent, this is due to a problematic relationship with the potential

audience. The algorithms that Facebook uses seemingly create a social context that resembles the ordinary, the safe and the common. But there are always others out there, lurking in the dark who can, at any given moment, enter the communicative stage and thus potentially interfere with the imagined social order. In a sense, Facebook constantly uses algorithmic structures that make people interact in ways that are not overtly challenging. The very visibility of others depends upon complex calculations that tend to generate a social space in which a user is provided with social content rather than actively seeking to create such content.

There is no doubt that Facebook helps people connect through archiving and expanding their personal networks. However, the interactivity that is assumed to go hand in hand with such a connection is of a more complex kind. Together with an expanding network, an increasingly fragmented generalized other emerges to which one has to relate when acting and interacting within Facebook's structured social space. In addition, the character and effects of the algorithms that make up these structures gradually become more and more advanced. When understood this way, we can see that Facebook alters the relationship between an individual and the generalized other which, consequently, has fundamental effects on individuals and their social selves. These conclusions point in a different direction than studies that emphasize the instrumental characteristics of online platforms. It is clear that Facebook's complex architecture does not merely involve the spread of information through personalized feeds. Rather, the algorithms that are supposed to serve as a vehicle for informational exchange partake in the production of a social microcosm in which social interactions are structured in various ways. These structuring processes are the outcome of the harvesting and processing of personal and interactional data and affect the experienced relationship between self and others. As a consequence, the algorithmic structures on Facebook make a certain kind of generalized other emerge which influences the ways in which individuals are able to engage in social action and thereby getting them into participatory trouble.

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Note

1. In order to protect participants' privacy, their names have been changed.

References

- Andrejevic, M. (2011). Surveillance and alienation in the online economy. *Surveillance & Society*, 8, 278-287.
- Baym, N. K. (1998). The emergence of on-line community. In S. Jones (Ed.), *Cybersociety 2.0: Revisiting computer-mediated community and technology* (pp. 35-68). Thousand Oaks, CA: SAGE.
- Beer, D. (2009). Power through the algorithm? Participatory web cultures and the technological unconscious. *New Media & Society*, 11, 985-1002. <http://dx.doi.org/10.1177/1461444809336551>
- Beer, D., & Burrows, R. (2007). Sociology and, of and in web 2.0: Some initial considerations. *Sociological Research Online*, 12(5). <http://dx.doi.org/10.5153/sro.1560>
- Berg, M. (2011). Checking in at the urban playground: Digital geographies and electronic flâneurs. In F. Comunello (Ed.), *Networked sociability and individualism: Technology for personal and professional relationships* (pp. 171-196). Hershey, PA: Information Science Reference.
- Berg, M. (2012). Social intermediaries and the location of agency: A conceptual reconfiguration of social network sites. *Contemporary Social Science*, 7, 321-333. <http://dx.doi.org/10.1080/21582041.2012.683446>

- boyd, d. (2012). Participating in the always-on lifestyle. In M. Mandiberg (Ed.), *The social media reader* (pp. 71-76). New York and London: New York University Press.
- boyd, d., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13, 210-230. <http://dx.doi.org/10.1111/j.1083-6101.2007.00393.x>
- Bucher, T. (2012a). A technicity of attention: How software 'makes sense'. *Culture Machine*, 13, 1-23.
- Bucher, T. (2012b). Want to be on the top? Algorithmic power and the threat of invisibility on Facebook. *New Media & Society*, 14, 1164-1180. <http://dx.doi.org/10.1177/1461444812440159>
- Bucher, T. (2013). The friendship assemblage: Investigating programmed sociality on Facebook. *Television & New Media*, 14, 479-493. <http://dx.doi.org/10.1177/1527476412452800>
- Burrows, R. (2009). Afterword: Urban informatics and social ontology. In M. Foth (Ed.), *Handbook of research on urban informatics* (pp. 450-454). Hershey, PA: Information Science.
- Davis, A. (2010). New media and fat democracy: The paradox of online participation. *New Media & Society*, 12, 745-761. <http://dx.doi.org/10.1177/1461444809341435>
- Dodge, M., & Kitchin, R. (2009). Software, objects, and home space. *Environment and Planning A*, 41, 1344-1365. <http://dx.doi.org/10.1068/a4138>
- Feenberg, A. (1999). *Questioning technology*. London and New York: Routledge.
- Fuller, M. (2003). *Behind the blip: Essays on software and culture*. New York: Autonomedia.
- Galloway, A. R. (2004). *Protocol: How control exists after decentralization*. Cambridge, MA: The MIT Press.
- Gehl, R. W. (2011). The archive and the processor: The internal logic of web 2.0. *New Media & Society*, 13, 1228-1244. <http://dx.doi.org/10.1177/1461444811401735>
- Gil De Zuniga, H., Puig, I. A. E., & Rojas, H. (2009). Weblogs, traditional sources online and political participation: an assessment of how the internet is changing the political environment. *New Media & Society*, 11, 553-574. <http://dx.doi.org/10.1177/1461444809102960>
- Gustafsson, N. (2013). *Leetocracy: Political participation, social network sites and inequality*. (Doctoral thesis). Lund University, Lund.
- Horvath, K. J., Beadnell, B., & Bowen, A. M. (2013). A daily web diary of the sexual experiences of men who have sex with men: Comparisons with a retrospective recall survey. In C. Hine (Ed.), *Virtual research methods Vol. I, Vol. II* (pp. 355-373). London: SAGE.
- Larsson, A. O. (2013). Rejected bits of program code": Why notions of "politics 2.0" remain (mostly) unfulfilled. *Journal of Information Technology and Politics*, 10, 72-85. <http://dx.doi.org/10.1080/19331681.2012.719727>
- Mackenzie, A. (2006). *Cutting code: Software and sociality*. New York: Peter Lang.
- Manovich, L. (2001). *The language of new media*. Cambridge, MA: The MIT Press.
- Manovich, L. (2013). *Software takes command*. New York: Bloomsbury.
- McStay, A. (2011). Profiling phorm: An autopoietic approach to the audience-as-commodity. *Surveillance & Society*, 8, 310-322.
- Mead, G. H. (Ed.). (1934). *Mind, self, and society: From the standpoint of a social behaviorist*. Chicago: University of Chicago Press.
- O'Reilly, T. (2007). What is web 2.0: Design patterns and business models for the next generation of software. *Communications & Strategies*, 65, 17-37.
- Rheingold, H. (1995). *The virtual community: Finding connection in a computerized world*. London: Minerva.
- Sanghvi, R. (2010). *Focus on feed*. Retrieved from: http://www.livestream.com/f8techniques/video?clipId=pla_5219ce25-53c6-402d-8eff-f3f8f7a5b510
- Thrift, N. (2005). *Knowing capitalism*. London: Sage.
- Turkle, S. (1995). *Life on the screen: Identity in the age of the Internet*. London: Phoenix.
- Zimmer, M. (2008). Preface: Critical perspectives on web 2.0. *First Monday*, 13(3). <http://dx.doi.org/10.5210/fm.v13i3.2137>

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