

Introduction

Programmed Sociality

Let us for a moment consider the following scenario: Copenhagen on a rainy November day. The semester is coming to a close. Students and professors alike are stressed, but it is nonetheless a sociable time of the year. Conference trips, essays to be graded, dinner plans, and Christmas presents in the pipeline. In other words: buying plane tickets, surfing the Web for restaurant tips, streaming music, coordinating dinner plans with friends, shopping for Christmas gifts, preparing lectures, watching a movie after work. Besides describing a random day in an academic life, all these activities imply using the Internet. I found some cheap tickets using a meta-search engine, discovered a nice restaurant through a collaborative filtering system, listened to a music playlist suggested to me by a music-streaming site, bought a gift for my mother at an online designer store, chatted with friends on a social-networking site to find a suitable time for a pre-Christmas dinner, and, finally, watched an episode of my favorite TV series on a movie-streaming site.

It is not just a story about the good life of a Scandinavian academic. It suggests a life deeply entwined with media. Following media theorist Mark Deuze (2012), we might say that life is not only lived in and through media but in and through specific types of media. What these activities have in common is a high degree of interaction with algorithmic media, media whose core function depends on algorithmic operations. This book starts from the premise that life is not merely infused with media but increasingly takes place in and through an algorithmic media landscape. Key to this premise is the notion of the co-production of social life, practices, and technology. While people interact with specific media companies and platforms, these platforms interact with people as well. Users do not simply consult websites or talk to their friends online. Social media and other commercial Web companies recommend, suggest, and provide users with what their algorithms have predicted to be the most relevant, hot, or interesting news, books, or movies to watch, buy, and consume. Platforms act as performative intermediaries that participate in shaping the worlds they only purport to represent. Facebook is not simply a social networking site that

lets users “connect with friends and the world around you.”¹ As media scholar José van Dijck has argued, “Social media are inevitably automated systems that engineer and manipulate connections” (2013: 12). By the same token, Netflix is not a website that lets users “see what’s next and watch anytime, cancel anytime.”² It can’t be seen as a neutral platform that merely queries its vast database about a user’s request to show the movies they explicitly want to watch. Relying on vast amounts of data, Netflix algorithms are used to analyze patterns in people’s taste, to recommend more of the same. Popularity is not only a quantifiable measure that helps companies such as Facebook and Netflix to determine relevant content. User input and the patterns emerging from it are turned into a means of production. What we see is no longer what we get. What we get is what we did and that is what we see. In the case that Netflix suggests we watch *House of Cards*, it is largely a matter of consumers getting back their own processed data. When the show was released in 2013 it quickly became a cornerstone for data-driven programming, the idea that successful business decisions are driven by big data analytics.

Of course, there is nothing inherently wrong with this form of data-driven media production. After all, it seems, many people enjoy watching the show. The interesting and potentially troubling question is how reliance on data and predictive analytics might funnel cultural production in particular directions, how individual social media platforms code and brand specific niches of everyday life (van Dijck, 2013: 22). Starting from the basic question of how software is shaping the conditions of everyday life, this book sets out to explore the contours and implications of the question itself. In what ways can we say that software, and more specifically algorithms, shape everyday life and networked communication? What indeed, are algorithms and why should we care about their possible shaping effects to begin with?

Let us quickly return to my rainy November day. While chatting with friends on Facebook about the pre-Christmas dinner, two rather specific ads appeared on the right-hand side of my Facebook news feed. One was for a hotel in Lisbon, where I was going to travel for the conference, and the other was for a party dress. How did Facebook *know* about my upcoming trip, or that I had just bought my mother a Christmas gift from that shop? My musings were only briefly interrupted by one of my friends asking me about a concert I had recently been to. She had seen a picture I posted on Facebook from the concert a few days earlier. My other friend wondered, why hadn’t she seen the picture? After all, as she remarked, she checks her Facebook feed all the time. While these connections might be coincidental, their effects are not incidental. They matter because they affect our encounters with the world and how we relate to each other. While seeing ads for party dresses in a festive season might not appear strange, nor missing a picture posted from a concert for that matter, such programmed forms of sociality are not inconsequential. These moments are mediated, augmented, produced, and governed by networked systems powered by software and algorithms. Understood as the coded instructions that a computer needs to follow to perform a given task, algorithms are deployed to make

decisions, to sort and make meaningfully visible the vast amount of data produced and available on the Web. Viewed together, these moments tell the story of how our lives are networked and connected. They hint at the fundamental question of who or what has power to set the conditions for what can be seen and known with whatever possible effects. To address this important question, this book proposes to consider the power and politics of software and algorithms that condense and construct the conditions for the intelligible and sensible in our current media environment.

The ideas of power and politics I have in mind are both very broad, yet quite specific. For one, this book is not going to argue that algorithms *have* power. Sure, algorithms are powerful, but the ways in which this statement holds true cannot simply be understood by looking at the coded instructions telling the machine what to do. Drawing on the French philosopher Michel Foucault's (1982; 1977) understanding of power as exercised, relational and productive, I intend to show how the notion of "algorithmic power" implies much more than the specific algorithm ranking e.g. a news feed. What I am going to argue is that the notion of algorithmic power may not even be about the algorithm, in the more technical sense of the term. Power always takes on many forms, including not only the ways in which it is exercised through computable instructions, but also through the claims made over algorithms. As such, we might say that algorithmic systems embody an ensemble of strategies, where power is immanent to the field of action and situation in question. Furthermore, following Foucault, power helps to produce certain forms of acting and knowing, ultimately pointing to the need for examining power through the kinds of encounters and orientations algorithmic systems seem to be generative of.

Neither are the "politics" of this book about politics with a capital P. I will not be discussing parliamentary politics, elections, campaigns, or political communication in the strictest sense. Rather, politics is understood in more general terms, as ways of world-making—the practices and capacities entailed in ordering and arranging different ways of being in the world. Drawing on insights from Science and Technology Studies (STS), politics here is more about the making of certain realities than taking reality for granted (Mol, 2002; Moser, 2008; Law, 2002). In chapter 2 I will describe this form of politics of the real, of what gets to be in the world in terms of an "ontological politics" (Mol, 2002). In ranking, classifying, sorting, predicting, and processing data, algorithms are political in the sense that they help to make the world appear in certain ways rather than others. Speaking of algorithmic politics in this sense, then, refers to the idea that realities are never given but brought into being and actualized in and through algorithmic systems. In analyzing power and politics, we need to be attentive of the way in which some realities are always strengthened while others are weakened, and to recognize the vital role of non-humans in co-creating these ways of being in the world. *If... Then* argues that algorithmic power and politics is neither about algorithms determining how the social world is fabricated nor about *what* algorithms do per se. Rather it is about *how*

and *when* different aspects of algorithms and the algorithmic become available to specific actors, under what circumstance, and who or what gets to be part of how algorithms are defined.

Programmed Sociality

Increasingly, we have come to rely on algorithms as programmable decision-makers to manage, curate, and organize the massive amounts of information and data available on the Web and to do so in a meaningful way. Yet, the nature and implications of such arrangements are far from clear. What exactly is it that algorithms “do” and what are the constitutive conditions necessary for them to do what they do? How are algorithms enlisted as part of situated practices, and how do they operate in different settings? How can we develop a productive and critical inquiry of algorithms without reducing it to a question of humans versus the machine?

Let’s begin a tentative answer with a conceptual understanding of how software induces, augments, supports, and produces sociality. Here, I suggest the concept of programmed sociality as a helpful heuristic device. Through this we might study algorithmic power and politics as emerging through the specific programmed arrangements of social media platforms, and the activities that are allowed to take place within those arrangements. Facebook and other software systems support and shape sociality in ways that are specific to the architecture and material substrate of the medium in question. To do justice to the concept of programmed sociality, it is important to highlight that it does not lead us down a pathway of technological determinism. In using the term “programmed,” I draw on computer scientist John von Neumann’s notion of “program,” for which the term “to program” means to “assemble” and to “organize” (Grier, 1996: 52). This is crucial, as it frames software and algorithms as dynamic and performative rather than as fixed and static entities. Regarding “sociality,” I refer to the concept of how different actors belong together and relate to each other. That is, sociality implies the ways in which entities (both human and non-human) are associated and gathered together, enabling interaction between the entities concerned (Latour, 2005). To be concerned with programmed sociality is to be interested in how actors are articulated in and through computational means of assembling and organizing, which always already embody certain norms and values about the social world. To exemplify how algorithmic media prescribe certain norms, values, and practices, let me describe how programmed sociality plays out in the specific context of Facebook, by focusing on friendships as a particularly pertinent form of being together online.

As Facebook has become an integral part of everyday life, providing a venue for friendships to unfold and be maintained, it is easy to forget just how involved Facebook is in what we often just take to be interpersonal relationships. Everything from setting up a profile and connecting with other users to maintaining a network

of friends entails an intimate relation with the software underlying the platform itself. As van Dijck has pointed out, “what is important to understand about social network sites is how they activate relational impulses” (2012: 161). It is important to understand *that* relationships are activated online, but also *how* and *when* they are activated: by whom, for what purpose, and according to which mechanisms.

With nearly two billion users, many of whom have been members of the platform for many years, most people have long forgotten what it felt like to become a member, how they became the friend that Facebook wanted them to be. Upon first registering with the site, the user is instantly faced with the imperative to add friends. Once a user chooses to set up an account, he is immediately prompted to start filling in the personal profile template. Users’ identities need to be defined within a fixed set of standards to be compatible with the algorithmic logic driving social software systems. If users could freely choose what they wish to say about themselves, there would be no real comparable or compatible data for the algorithms to process and work with. Without this orderly existence as part of the databases, our connections would not make much sense. After all, “data structures and algorithms are two halves of the ontology of the world according to a computer” (Manovich, 2001: 84). Being part of databases means more than simply belonging to a collection of data. It means being part of an ordered space, encoded according to a common scheme (Dourish, 2014). As Tarleton Gillespie (2014) points out, data always need to be readied before an algorithm can process them. Categorization is a powerful mechanism in making data algorithm-ready. “What the categories are, what belongs in a category, and who decides how to implement these categories in practice, are all powerful assertions about how things are and are supposed to be” (Bowker and Star, in Gillespie, 2014: 171). The template provided by Facebook upon signing in constitutes only one of many forms of categorization that help make the data algorithm-ready. The politics of categorization becomes most pertinent in questions concerning inclusion and exclusion. The recurring conflicts over breastfeeding images and Facebook’s nudity-detection systems—comprising both algorithms and human managers—represent a particularly long-lasting debate over censorship and platform policies (Arthur, 2012). The politics of categorization is not just a matter of restricting breastfeeding images but one that fundamentally links database architecture and algorithmic operations to subjectification.

To understand how sociality is programmed—that is, how friendships are programmatically organized and shaped, let us consider the ways in which the platform simulates existing notions of friendship. As theorists of friendship have argued, shared activity and history are important aspects of considering someone a friend (Helm, 2010). Simulating and augmenting the notion of a shared history, Facebook provides several tools and techniques dedicated to supporting memory. As poorly connected or unengaged users pose a threat to the platform’s conditions of existence, programming reasons for engagement constitutes a key rationale from the point of view of platforms. On Facebook, connecting users to potential friends

provides the first step in ensuring a loyal user base, because friendships commit. Functioning as a memory device, algorithms and software features do not merely help users find friends from their past, they play an important part in maintaining and cultivating friendships, once formed. As such, a variety of features prompt users to take certain relational actions, the most well-known being that of notifying users about a friend's birthday. While simulating the gesture of phatic communication represented in congratulating someone on his or her birthday, the birthday-reminder feature comes with an added benefit: The birthday feature is the most basic way of making users return to the platform, by providing a concrete suggestion for a communicative action to be performed. As I've described elsewhere, platforms like Facebook want users to feel invested in their relationships, so they are continually coming up with new features and functionalities that remind them of their social "obligations" as friends (Bucher, 2013).

While the traditional notion of friendship highlights the voluntary and durational aspects of becoming friends and becoming friends anew (Allan, 1989), the software, one may claim, functions as a suggestive force encouraging users to connect and engage with the people in ways that are afforded by and benefit the platform. From the point of view of critical political economy, sociality and connectivity are resources that fuel the development of new business models. Platforms do not activate relational impulses in an effort to be nice. Ultimately, someone benefits financially from users' online activities. This is, of course, a familiar story and one that many scholars have already told in illuminating and engaging ways (see Andrejevic, 2013; Couldry, 2012; Fuchs, 2012; Gehl, 2014; Mansell, 2012; van Dijck, 2013). From the perspective of companies like Facebook and Google, but also from the perspective of legacy news media organizations (discussed in chapter 6), algorithms are ultimately folded into promises of profit and business models. In this sense, a "good" and well-functioning algorithm is one that creates value, one that makes better and more efficient predictions, and one that ultimately makes people engage and return to the platform or news site time and again. The question then becomes: What are the ways in which a platform sparks enough curiosity, desire, and interest in users for them to return?

The subtle ways of software can, for example, be seen in the manner in which Facebook reminds and (re)introduces users to each other. When browsing through my Facebook news feed it is almost as if the algorithm is saying, "Someone you haven't spoken to in five years just liked this," or, "This person whom you haven't heard from in ages, suddenly seems to be up to something fun." Somehow, I am nudged into thinking that these updates are important, that I should pay attention to them, that they are newsworthy. Rather than meaning that friendships on Facebook are less than voluntary, my claim is that the ways in which we relate to each other as "friends" is highly mediated and conditioned by algorithmic systems. People we do not necessarily think about, people we might not remember, or people we might not even consider friends continue to show up on our personalized news

feeds, as friend suggestions, in birthday reminders, and so forth. While it is often difficult to recognize how Facebook “actively steers and curates connections” (van Dijck, 2013: 12), moments of everyday connectivity provide a glimpse into the ways in which the effects of software might not necessarily *feel* as incidental as they might appear to be.

The programmed sociality apparent in Facebook is about more than making people remember friends from their past with the help of friend-finding algorithms. From the very beginning, a friendship is *formed* and the friendship is “put to test.” From a political economic standpoint, this is very important, as not every friendship is equally valuable. Some relations are more “promising” and “worthwhile” than others. With more friends than the news feed feature allows for, friendships are continuously monitored for affinity and activity, which are important measures for rendering relations visible. Friendships in social media are programmed forms of sociality precisely because they are continuously measured, valued, and examined according to some underlying criteria or logic. As this book will show in more detail, the news feed algorithm plays a powerful role in producing the conditions for the intelligible and sensible, operating to make certain users more visible at the expense of others. The Facebook 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 at top of the feed. Every action and interaction connected to Facebook, be it a status update, comment on someone’s photo, or “like button” clicked, may become a story on someone’s news feed. Not every action, however, is of equal importance, nor is every friend for that matter. Friendships are put to test, because friendships need to be nurtured and maintained to stand the “test of time.” Algorithms decide which stories should show up on users’ news feeds, but also, crucially, which friends. Rachel, a 24-year-old journalist from New York City, whom I interviewed for this book about her perceptions of algorithms, exclaimed that “Facebook ruins friendships.” With more than seven hundred friends, Rachel says that she is constantly taken aback by all the information and people Facebook seems to be hiding from her feed:

So, in that sense, it does feel as if there is only a select group of friends I interact with on the social network, while I’ve practically forgotten about the hundreds of others I have on there. An example of this is a friend from high school, who liked one of my posts a few weeks back. I’d totally forgotten she was even on Facebook until she liked it and we started chatting.

Rachel’s experience is reminiscent of what I mean by programmed sociality, the notion that social formations and connections are algorithmically conditioned and governed by the sociotechnical and political-economic configurations of specific media platforms. Rachel’s worry about Facebook ruining friendship should also remind us that algorithms need to be understood as powerful gatekeepers, playing

an important role in deciding who gets to be seen and heard and whose voices are considered less important. Programmed sociality, then, is political in the sense that it is ordered, governed, and shaped in and through software and algorithms. If we want to consider everyday life in the algorithmic media landscape, we need to pay attention to the ways in which many of the things we think of as societal—including friendship—may be expressed, mediated and shaped in technological designs and how these designs, in turn, shape our social values. As we will see throughout the book, such considerations, however, do not stop with values in design, but exceed the purely technical (whatever that is taken to mean) in important ways.

A key argument of this book is that the power and politics of algorithms stems from how algorithmic systems shape people's encounters and orientations in the world. At the same time, I claim that this shaping power cannot be reduced to code. Specifically, I argue for an understanding of algorithmic power that hinges on the principle of relational materialism, the idea that algorithms "are no mere props for performance but parts and parcel of hybrid assemblages endowed with diffused personhood and relational agency" (Vannini, 2015: 5). Thus, it is important to acknowledge that while we start with the question of how software and algorithms shape sociality by looking at materiality in the more conventional sense as "properties of a technology," the answer cannot be found *in* these properties alone, but rather the ways in which programmed sociality is realized as a function of code, people, and context.

Computable Friendships

The concept of friendship provides an apt example for the understanding of programmed sociality and algorithmic life, because it shows the discrepancies between our common-sense notions of friendship and the ways in which friendship becomes embedded in and modeled by the algorithmic infrastructures. Friendships are deeply rooted in the human condition as a fundamental aspect of being together with other people, and which is always already contested based on cultural and historical contexts. Traditionally, friendship has been thought of as an exclusive social relation, a private and intimate relation between two persons (Aristotle, 2002; Derrida, 2005; Hays, 1988). For this reason, true friendship has been regarded as something that one cannot have with many people at the same time, simply because it requires time to build, nurture, and maintain. Compared to Aristotle's conception of friendship as something rather precious that one cannot have with many people at once (Aristotle, 2002), Facebook seems to promote the completely opposite idea.

The way the platform puts friendships at the center of a business model is no coincidence, of course, and is probably one of the core reasons Facebook has evolved into an unprecedented media company during the past decade. In a patent

application filed by Facebook concerning the People You May Know (PYMK) feature, no doubt is left as to the value of friendships for Facebook: “Social networking systems value user connections because better-connected users tend to increase their use of the social networking system, thus increasing user-engagement and corresponding increase in, for example, advertising opportunities” (Schultz et al., 2014). Software intervenes in friendships by suggesting, augmenting, or encouraging certain actions or relational impulses. Furthermore, software is already implicated in the ways in which the platform imagines and performs friendships. Contrary to the notion that “friendship clearly exists as a relation between individuals” (Webb, 2003: 138), friendship on Facebook exists as a relation between *multiple actors*, between humans and non-humans alike. As Facebook exemplifies in another patent document:

[T]he term friend need not require that members actually be friends in real life (which would generally be the case when one of the members is a business or other entity); it simply implies a connection in the social network. (Kendall and Zhou, 2010: 2)

The disconnect between how members usually understand friendship and the ways in which Facebook “understands” friendship becomes obvious in the quote above. According to Facebook, a user can be “friends” with a Facebook page, a song, a movie, a business, and so on. While it might seem strange to consider a movie a friend, this conception of friendship derives from the network model of the Web in which users and movies are considered “nodes” in the network and the relationship that exists between them an “edge” or, indeed, a friend. Indeed, “the terms ‘user’ and ‘friend’ depend on the frame of reference” (Chen et al. 2014). It is exactly the different and sometimes conflicting frames of reference that are of interest in this book. A core contention is that media platforms and their underlying software and infrastructures contain an important frame of reference for understanding sociality and connectivity today. If we accept that software can have a frame of reference, a way of seeing and organizing the world, then what does it mean to be a friend on Facebook or, more precisely, what are friends for, if seen from the perspective of the platform?

Facebook friendships are, above all, computable. In an age of algorithmic media, the term *algorithmic*, used as an adjective, suggests that even friendships are now subject to “mechanisms that introduce and privilege quantification, proceduralization, and automation” (Gillespie, 2016a: 27). Measuring the performance of individuals and organizations is nothing new, though. As sociologists Espeland and Sauder (2007) suggest, social measurements and rankings have become a key driver for modern societies during the past couple of decades. According to philosopher Ian Hacking, “society became statistical” through the “enumeration of people and their habits” (1990: 1). Hacking connects the emergence of a statistical society to

the idea of “making up people,” meaning that classifications used to describe people influence the forms of experience that are possible for them, but also how the effects on people, in turn, change the classifications:

The systematic collection of data about people has affected not only the ways in which we conceive of a society, but also the ways in which we describe our neighbour. It has profoundly transformed what we choose to do, who we try to be, and what we think of ourselves. (1990: 3)

If we accept Hacking’s notion of “making up people,” it becomes necessary to interrogate the ways in which counting, quantification, and classification limits the condition of possibility for subjects on Facebook. The manner in which the categories and classifications are constituted is not arbitrary or neutral; nor are the implications incidental. Here, I want to suggest that Facebook friends are “made-up people” in the sense described by Hacking. Friends are not natural kinds but, rather, constructions that serve specific purposes in a specific historical and cultural context. As has already been pointed out, the category “friend” as used by the Facebook platform does not even require members of that category to be human beings. While all Facebook users may belong to the set of “friends,” subsets of “friends” or “users” are dynamically being made up to serve different purposes. As exemplified in a Facebook patent application detailing the idea of adaptive ranking of news feed: “The social networking system divides its users into different sets, for example, based on demographic characteristics of the users and generates one model for each set of users” (Gubin et al., 2014). In other words, sets are powerful classification devices implying a politics in terms of demarcating who or what belongs and what does not, “what the set ‘counts’ in, what counts as members in the set” (Baki, 2015: 37). Subsets are “made up” based on demographic information, attributes of connections, frequency of interaction, and other factors affecting the features used for modeling what users can see or not see (we will return to the politics of visibility in chapter 4). If friends are not of a natural kind, what kinds of friends or, rather, subsets are there? Again, we might turn to Facebook patent applications for some tentative answers. According to a document describing a technique for optimizing user engagement, some friends seem more valuable than others (Chen et al., 2014). Particularly useful friends are called “top friends,” defined as persons having the highest measures of relatedness to a specific user (Chen et al., 2014). The determinants of relatedness are generated using a so-called coefficient module. These, in turn, depend on a variety of factors (as is the case with all of Facebook’s computations)—for example, “based on how many times or how frequently interactions occurred within the last 30 days, 60 days, 90 days, etc.” (Chen et al., 2014). Top friends are used for a number of purposes and in a variety of contexts such as:

To identify participants to play online games; to identify relevant connections to the user for inclusion in her social network; to display a listing of photos of persons having highest relevance to the user; to otherwise display or list an identification of persons having highest relevance to the user; to identify persons with whom the user can engage in an instant message or chat session; etc. (Chen et al. 2014)

Above all, top friends are used to prioritize information associated with them above others. Top friends are made-up people insofar as “those kinds of people would not have existed, as a kind of people, until they had been so classified, organized and taxed” (Hacking, 2007: 288). The subset of algorithmic top friends can be seen as a new category of people, emerging in the age of programmed sociality and algorithmic life. There are many more. As the notion of top friends shows, computable friendships hinge on measuring and evaluating users in order to be able to determine their friendship status. While friendships have always been qualitatively determined, as the notion of “best friend” suggests, the extent to which Facebook now quantifiably produces and classifies friendships works to dehumanize sociality itself by encouraging an empty form of competitiveness. Like most social media platforms, Facebook measures social impact, reputation, and influence through the creation of composite numbers that function as a *score* (Gerlitz & Lury, 2014: 175). The score is typically used to feed rankings or enhance predictions. The computing of friendships is no different. In another patent application Facebook engineers suggest that the value of friendship is not confined to users but also serves an essential role in sustaining the social networking system itself. As Schultz et al. (2014) suggest, better-connected users tend to increase their use, thereby increasing advertising opportunities. A so-called friendship value is not only computed to determine the probability of two users “friending” but also to make decisions as to whether to show a specific advertising unit to a user. The higher the score, the “better” Facebook deems the friendship to be, increasing the likelihood of using the connection to help promote products. The value of a friendship is produced as a composite number based on a “friendship score, sending score, receiving score or some combination of the scores as determined by value computation engine” (Schultz et al., 2014). According to Schultz et al., “the sending and receiving scores reflect the potential increase in the user’s continued active utilization of the social networking system due to a given connection” (2014: 2). From a computational perspective, friendships are nothing more than an equation geared toward maximizing engagement with the platform.

Far from loving the friend for the friend’s own sake, which would be exemplary of the Aristotelian notion of virtue ethics and friendship, Facebook “wants” friendships to happen in order to increase engagement with the social network, ultimately serving revenue purposes. The quantification and metrification of friendship are not merely part of how connections are computed by Facebook’s algorithmic infrastructure but increasingly make up the visuals of social networking systems

through the pervasive display of numbers on the graphical user interface. With more than 3 billion likes and comments posted on Facebook every day, users are both expressing their sentiments and engagement and reminded and made aware of these actions and affects through the visual traces thereof. As the software artist Ben Grosser notes, “A significant component of Facebook’s interface is its revealed enumerations of these ‘likes,’ comments and more” (Grosser 2014: 1). Grosser questions whether people would add as many friends if they were not constantly confronted with how many they have or whether people would “like” as many ads if they were not always told how many others have liked them before them. Grosser’s artwork *The Demetricator* is a software plugin that removes all metrics from the Facebook interface and critically examines these questions. According to Grosser, Facebook draws on people’s “deeply ingrained ‘desire for more’ compelling people to reimagine friendship as a quantitative space, and pushing us to watch the metric as our guide” (Grosser, 2014). The pervasive enumeration of everything on the user interface function as a rhetorical device, teaching users that more is better. More is also necessary if we consider the operational logics of the platform. The drive toward more is evident when considering the value of friendship, given that more friends increases the likelihood of engaging with the site. Friends are suggested based on mutual friends, but also on factors such as low activity or few friends. The idea is that, by suggesting friends with low activity level, Facebook “can enable those users to likely have more friends as a result of being suggested [...] and thereby likely increasing the candidate user’s engagement level with the social networking system” (Wang et al., 2012: 6). Friendships, then, are variously made and maintained by humans and non-humans alike. The specifics of how friendships are susceptible to computation is immeasurable in and of itself. The purpose, however, of explicating the term “programmed sociality” as core to understanding algorithmic life is to draw attention to software and computational infrastructure as conditions of possibility for sociality in digital media.

Guilt by Association

Whereas “friend” in the sociological sense signifies a voluntary relationship that serves a wide range of emotional and social aims, “friends” as seen from the perspective of the platform are highly valuable data carriers that can be utilized for a variety of reasons. One of the core principles underlying networked media is that information is derived as much from the edges (connections) as it is from the nodes (users, businesses, objects). This means that users do not just provide data about themselves when they fill out profiles, like things, or comment on posts; in doing so, they simultaneously reveal things about the people and things they are interacting with. If data are missing from a user’s personal profile or that user is not as engaged as the platforms would prefer, the best way to extract more information about the user is

through his or her various connections. From a platform perspective, friends are in the data delivery business. This becomes particularly evident when looking at the patent documents by Facebook describing techniques related to advertising. For example, given the insufficient personal information provided by a particular member, ads are tailored and targeted based on friends. Facebook calls this “guilt by association” (Kendall & Zhou, 2010: 2). While the authors of the patent document acknowledge that they are “giving credence to an old adage,” the word “guilt” is worth pondering. Guilt evokes notions of responsibility, autonomy, and accountability. Who or what is responsible for the content shown on Facebook, and who might be held accountable? While it might be easier to understand how users’ own actions determine what content they see online, it seems more difficult to come to terms with the notion that users also play a crucial role in determining what their friends see on their feeds. Guilt by association, as Facebook uses the term, implies that users are made “complicit” in their friends’ ad targeting, which seems highly problematic. While it is now commonplace to say users are the product, not the media platforms they are using, the extent to which users are *used* to promote content and products—often, without their explicit knowledge—is unprecedented in the age of algorithmic media. If the classical notion of friendship is political in the sense that it assumes gendered hierarchy through the notion of brotherhood (Derrida, 2005), the politics of algorithms suggests hierarchies of a different sort—of what is “best,” “top,” “hot,” “relevant,” and “most interesting.”

When examining the contours and current state of algorithmic life, it is important to understand the mechanisms through which algorithmic media shaping sociality is deeply intertwined with power and politics. This book is not just about highlighting the role of algorithms as a core governing principle underlying most online media platforms today, but also about showing how algorithms always already invoke and implicate users, culture, practice, ownership, ethics, imaginaries, and affect. It means that talking about algorithms implies asking questions about how and when users are implicated in developing and maintaining algorithmic logics, as well as asking questions about governance, who owns the data, and to what end it is put to use? While friends have always been valuable for advertisers, algorithms seem to lessen the autonomy and intentionality of people by turning *everything* they do into a potential data point for the targeting of ads and news feed content. Such is the network logic, which users cannot escape. For neoliberalism, “friendship is inimical to capital, and as such, like everything else, it is under attack” (Cutterham, 2013: 41). Moreover, as Melissa Gregg holds, “friendship’ *is* labour in the sense that it involves constant attention and cultivation, the rewards of which include improved standing and greater opportunity” (2007: 5). As Langlois and Elmer point out, “social media seek to mine life itself” (2013: 4). That is, social media platforms “do much more than just sell users’ attention to advertisers: they actually help identify the very strategies through which attention can be fully harnessed” (Langlois & Elmer, 2013: 4). Algorithms are key to this end. If we want to understand the ways in which

power and politics are enacted in and through contemporary media, we need to look more closely at the ways in which information, culture, and social life are being processed and rendered intelligible. In this book, I set out to do so.

Examining algorithmic media and the ways in which life is increasingly affected by algorithmic processing, means acknowledging how algorithms are not static things but, rather, evolving, dynamic, and relational processes hinging on a complex set of actors, both humans and nonhumans. Programmed sociality implies that social relations such as friendships are not merely transposed onto a platform like Facebook but are more fundamentally *transduced*. The concept of transduction names the process whereby a particular domain is constantly undergoing change, or *individuation*, as a consequence of being in touch or touched by something else (Mackenzie, 2002; Simondon, 1992). Rather than maintaining an interest in what friendship *is*, transduction and the related term “technicity” help to account for how domains such as friendship come into being because of sociomaterial entanglements. Using Facebook to access a social network transduces or modulates how a person connects with friends. When using Facebook, the technicity of friendship unfolds as conjunctions between users and algorithms (e.g., the PYMK feature), coded objects (e.g., shared video), and infrastructure (e.g., protocols and networks). As Kitchin and Dodge point out: “This power to affect change is not deterministic but is contingent and relational, the product of the conjunction between code and people” (2005: 178). Transduction and technicity become useful analytical devices in exemplifying the concept of programmed sociality as they point toward the ways in which software has the capacity to produce and instantiate modalities of friendship, specific to the environment in which it operates. The productive power of technology, as signified by the concept of technicity, does not operate in isolation or as a unidirectional force. Algorithms and software, in this view, do not determine what friendships are in any absolute or fixed sense. Rather, technicity usefully emphasizes the ways in which algorithms are entities that fundamentally hinge on people’s practices and interaction, in order to be realized and developed in the first place. Taking such a perspective allows us to see friendship and other instances of programmed sociality as emerging sociomaterial accomplishments.

Back to the rainy November day introduced at the beginning of the chapter: The question of what categories were used to determine the specific ads or the content of my and my friends’ news feeds persists. Was it my clicking behavior, my age and gender, pages that I have liked, the cookies set by the online design store where I bought the gift for my mom, my friends’ clicking behavior, the friends of my friend, everything or nothing of the above? Whatever the exact reason might be, online spaces are always computed according to underlying assumptions, norms, and values. Although we simply do not know and have no way of knowing how exactly our data and the algorithmic processing are shaping our experiences online, a critical perspective on sociotechnical systems, along with personal encounters and experiences with algorithmic forms of connectivity and sociality, might help to

illuminate the ways in which “categorization is a powerful semantic and political intervention” (Gillespie, 2014:171). Judging solely by the content and ads served up on my news feed, I am perceived as having children, being overweight, and single—none of which is true, at least for the time being. While the case of Facebook and programmed friendship provides a useful entry point to questions of how information is governed and organized online, an understanding of algorithmic power and politics cannot simply be reduced to a single social media platform. As this book will show, how we come to know others, the world, and ourselves as mediated through algorithms is the result of complex sociomaterial practices that exceed the specific coded instructions. Facebook and the notion of programmed sociality are but one way in which algorithmic arrangements bring new possibilities, realities, and interventions into being. And there are many more.

By now, I hope to have instilled enough curiosity in the reader to keep you exploring the power and politics of algorithms in the contemporary media landscape with me throughout the next chapters. The goal of the book is for readers to not simply be the subjects of algorithmic judgment but, rather, to be in a position to critically judge the workings of the algorithmic apparatus for themselves.

Outline of the Book

The overall aim of this book is to sketch the contours of an algorithmic media landscape as it is currently unfolding. While algorithms and software are starting to catch the interest of social scientists and humanities scholars, having become somewhat of a buzzword in media and communication studies during the past years, we are only at the beginning of understanding how algorithms and computation more broadly are affecting social life and the production and dissemination of knowledge as we know it. This book seeks to contribute to these discussions by offering conceptual, theoretical, and empirical analyses of the ways in which algorithms produce the conditions for the sensible and intelligible.

In the chapters 2 and 3, which comprise the conceptual framework of the book, I focus on the ontological, epistemological, and methodological dimensions of algorithms. Chapter 2 provides an outline for understanding what algorithms are and how they are conceptualized in different manners. While the chapter functions as a conceptual introduction to the interdisciplinary field of critical algorithms studies, merging perspectives from computer science, social sciences and the humanities, it mainly does so for analytical reasons. I argue that these are not simply different perspectives on a static object called an algorithm, but rather, following insights from STS (Law, 2002; Mol 2002), provide different *versions* of what an algorithm is. Even if we assume that we are talking about the same algorithm (say, *the* “Facebook algorithm” or “K-nearest neighbor”), the algorithm is always “many different things. It is not one, but many” (Law, 2002: 15).

Chapter 3 tackles the question of how algorithms can be known, proposing an epistemology of algorithms that moves beyond the popular conception of the algorithm as a black box. I draw on the concept of the black box as a heuristic device to discuss the nature of algorithms in contemporary media platforms, and how, we might attend to and study algorithms, despite, or even because of, their seemingly secret nature. The chapter develops a conceptual repertoire that moves beyond the textbook definition of algorithms as step-by-step instructions for solving a computational problem. It does so to better account for the fundamental interlinking or entanglement of the social and material implicated by algorithms. To support such a view, chapter 3 builds on insights from relational materialism and process-relational philosophy (e.g., Barad, 2007; Mol, 2002; Whitehead, 1978). Here, I suggest a conceptual vocabulary that allows for investigating algorithms as *eventful*, understood as constituents that co-become, and their power and politics as tied to the ways in which these configurations have the capacity to produce certain orderings and disorderings of the world. In chapter 2 I introduced the notion of “ontological politics” (Mol, 2002) to convey how realities are never given but shaped and emerge through interactions. In chapter 3 I expand on these ideas by suggesting, perhaps somewhat paradoxically, that algorithms are not always important. Rather, their agency emerges as important only in particular settings or constellations. The argument is made that by shifting attention away from asking *what* and *where* agency is, to *when* agency is and *to whom* it belongs in specific situations, we see how the notion of algorithms as black boxes is a political claim. The chapter concludes by offering some possible methodological routes for the study of algorithms premised on their eventfulness, which are operationalized in the chapters that follow.

Having outlined the ontological and epistemological contours of algorithms, the chapters 4–6 turn to specific constellations of algorithmic power and politics as it materializes in the contemporary media landscape. Each chapter presents a case study that is meant to get at two related concerns: the ways in which algorithmic systems govern the possible field of action of others, and how these possibilities are made more or less available or unavailable to certain actors in specific settings. Taken together, these case studies are concerned with the world-making capacities of algorithms, questioning how algorithmic systems shape encounters and orientations of different kinds, and how these systems are endowed with diffused personhood and relational agency.

Chapter 4 pays attention to the mechanisms of power that work as a concerted distribution of people, information, actions, and ways of seeing and being seen. It uses Facebook’s news feed as a case study to develop the argument that algorithms now play a fundamental role in governing the conditions of the intelligible and sensible. The chapter looks at how the news feed operates algorithmically to govern the “distribution of the sensible [...] defining what is visible or not in a common space” (Ranciere, 2004: 12–13). While users feed Facebook with data, the techniques and procedures to make sense of it, to navigate, assemble, and make meaningful

connections among individual pieces of data are increasingly being delegated to various forms of algorithms. The question raised in this chapter is, how does this kind of algorithmic intervention into people's information-sharing practices take place? What are the principles and logics of Facebook's algorithmic form of editing the news feed? What implications do these algorithmic processes have for users of the platform? Through an analysis of the algorithmic logics structuring the flow of information and communication on Facebook's news feed, I argue that the regime of visibility constructed, imposes a perceived "threat of invisibility" on the part of the participatory subject. As a result, I reverse Foucault's notion of surveillance as a form of permanent visibility, arguing that participatory subjectivity is not constituted through the imposed threat of an all-seeing vision machine, but by the constant possibility of disappearing and becoming obsolete. The intention is not so much to offer a definite account of the role played by Facebook in capturing the world in code, but to open avenues for reflection on the new conditions through which in/visibility is constructed by algorithms online.

Chapter 5 considers the barely perceived transitions in power that occur when algorithms and people meet, by considering how social media users perceive and experience the algorithms they encounter. While it is important to interrogate the operational logics of algorithms on an infrastructural level, materiality is only half the story. To do the topic of algorithmic power and politics full justice, there is a need to understand how people make sense of and experience the algorithms with which they persistently interact. Technical systems and infrastructure alone do not affect use. Users' perceived knowledge of how the systems work might be just as significant. The questions raised in chapter 5 are: How do social media users imagine algorithms, and to what extent does their perception and knowledge affect their use of social media platforms? The chapter reports findings from an exploratory study of 35 social media users who were asked about their perceptions of and experiences with algorithms online. The chapter examines the specific situations in which users notice algorithms and start reflecting and talking about them. Focusing on a few of these user-reported situations, the chapter shows how users respond to and orient themselves differently toward algorithms as. Moving beyond a call for intensified code literacy, I argue that these personal algorithm stories provide important insight into the ways in which algorithms are currently imagined and understood, and how users negotiate and resist algorithms in their everyday life.

Chapter 6 looks at how algorithms acquire the capacity to disturb and to compose new sensibilities as part of situated practices, particularly in terms of how they become invested with certain political and moral capacities. While the previous chapters considered how algorithms are publicly imagined and how they work to produce impressions of engagement, chapter 6 looks at how algorithms materialize in the institutional setting of the news media. More specifically, in this chapter we continue to consider how algorithms are not just matters of fact but also an

important matter of concern (Latour, 2004). By taking the field of journalism as a case in point for understanding the politics and power of algorithms as they are manifested in the current media landscape, I aim to illuminate how algorithms are always differently materialized—how they are made out and carved into existence at the intersection of technology, institutional practice, and discourse. I make an argument to the effect that the ontology of algorithms is up for grabs. Based on 20 interviews with digital editors and managers at leading Scandinavian news organizations, as well as on field observations at the Swedish news app *Omni*, chapter 6 explores how institutional actors are responding to the proliferation of data and algorithms. If algorithms have an audience or are otherwise consumed, as previous chapters have highlighted, they are also produced and variously put to work, which is the focus of this chapter. The question is how and when algorithms come to matter and whom they matter for. On the one hand, news organizations feel the pressure to reorient their practices toward the new algorithmic logic governing the media landscape at large, and often with a close eye to what's perceived as one of their biggest competitors—Facebook. On the other hand, the interview data suggest that algorithms work to disturb and question established boundaries and norms of what journalism is and ought to be. In order to understand the power and politics of algorithms in the contemporary media landscape, my claim is that it is vital to understand how algorithms are neither given nor stable objects, but rather made and unmade in material-discursive practices. Sometimes algorithms are rendered important, at other times, they are deemed insignificant. Knowing more about processes of mattering, I suggest, enables us to understand the multiple realities of algorithms, and how these relate and coexist.

Taken together, the chapters offer different versions of how and when algorithms are made present and important to individual and institutional actors. An important suggestion here is that power and politics are never reducible to question of materiality *or* perception, but rather about making algorithms matter in specific ways and for specific purposes. In the concluding chapter, I revisit the core arguments of the book, and suggest that there's a need to blend an understanding of the material substrates of algorithmic media with an understanding of the multiple ways on perceiving, feeling, acting, and knowing which coalesce around algorithms as an object of social concern. Here, I revisit some of the initial questions asked at the beginning of the book (including this introduction), and look at how algorithmic power and politics can be understood if power and politics are not necessarily about imposing force from above (or below for that matter, if understood as code). Ultimately, this chapter serves to summarize the key contributions of the book in terms of: (1) providing an understanding of algorithms that is not committed to one ontological position, but instead sees algorithms in terms of a multiple and variable ontology; (2) helping to identify forms of algorithmic power and politics; and (3) offering a theoretical framework for the kinds of work that algorithms do and the landscapes they help to generate.