#RIPINSTAGRAM: Examining user's counter-narratives opposing the introduction of algorithmic personalization on Instagram

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Abstract

When Instagram announced the implementation of algorithmic personalization on their platform a heated debate arose. Several users expressed instantly their strong discontent under the hashtag #RIPINSTAGRAM. In this paper, we examine how users commented on the announcement of Instagram implementing algorithmic personalization. Drawing on the conceptual starting point of framing user comments as "counter-narratives" (Andrews, 2004), which oppose Instagram's organizational narrative of improving the user experience, the study explores the main concerns users bring forth in greater detail. The two-step analysis draws on altogether 8,645 comments collected from Twitter and Instagram. The collected Twitter data were used to develop preliminary inductive categories describing users' counter-narratives. Thereafter, we coded all Instagram data extracted from Instagram systematically in order to enhance, adjust and revise the preliminary categories. This inductive coding approach (Mayring, 2000) combined with an in-depth qualitative analysis resulted in the identification of the following four counter-narratives brought forth by users: 1) *algorithmic hegemony*; 2) *violation of user autonomy*; 3) *prevalence of commercial interests*; and 4) *deification of mainstream*. All of these counter-narratives are related to ongoing public debates regarding the social implications of algorithmic personalization. In conclusion, the paper suggests that the identified counter-narratives tell a story of resistance. While technological advancement is generally welcomed and celebrated, the findings of this study point towards a growing user resistance to algorithmic personalization.

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1. Introduction

On 15 March 2016, the popular social media platform Instagram announced the implementation of algorithmic personalization on their official Web site as follows:

> "You may be surprised to learn that people miss on average 70 percent of their feeds. As Instagram has grown, it's become harder to keep up with all the photos and videos people share. This means you often don't see the posts you might care about the most. To improve your experience, your feed will soon be ordered to show the moments we believe you will care about the most. (...)" (Instagram, 2016)

Instagram's decision to employ algorithmic personalization quickly sparked a heated debate amongst Instagram users on Twitter, which has become a platform users turn to in order to debate ongoing societal issues (Weller, *et al.*, 2013). The discussion revolved around the hashtag #RIPINSTAGRAM (read: rest in peace Instagram), where users loudly and angrily objected to Instagram's proposed use of algorithmic personalization. In the earlier statement, Instagram argues for the changes by claiming that on average users fail to receive 70 percent of content they might actually be interested in. Hence, Instagram has committed itself to improve the user experience through the implementation of algorithms that takes timeliness, relationship between users and likelihood of interest into account (Instagram, 2016). This organizational narrative that frames the announcement as an improvement of the user experience has been contested by a passionate group of users. Using the hashtag 'RIPINSTAGRAM', these users expressed their strong discontentment with

the changes. The following study examines the views of users on algorithmic personalization in more detail. What are their main concerns? How do they discuss the announced implementation of algorithmic personalization and what alternative viewpoints are presented? Drawing on a conceptual lens of 'counter-narratives' (Andrews, 2004) and the notion of 'power' and 'counter-power' brought forth by Castells (2007), this study investigates how users oppose the implementation of algorithmic personalization. Hence, the aim of our research is twofold. Theoretically, we will discuss the algorithm-user relationship in relation to the concept of agency and how the users perceive their own agency. In the empirical part, we will analyze and explore the counter-narratives brought forth by users in greater detail. In this way, we contribute towards a better understanding of the algorithm-user relationship and how users perceive the implementation of algorithmic personalization.

2. Technology and its use(r)s

This research is carried out against the backdrop of the broader theoretical discussion of how technology is shaped and how, in turn, technology affects society. In this respect the identified counter-narratives are not only descriptive categories but they actively shape the implementation process of algorithmic personalization. In the following section we will outline the backdrop for this claim.

In the common traditional perspective of technological determinism, it is argued that technology is shaped before entering society and that it affects society in a predetermined way. Ongoing technological development is explained through advances within technology itself. In this respect, MacKenzie and Wajcman (1999) state "technologies change, either because of scientific advance or following a logic of their own; and they then have effects on society." [1] Within this perspective, users and their practices play a minor role, as their way of adapting and using technology has little-to-no influence. On the contrary, it is technology that holds the power to shape society and further creates specific societal conditions in which users operate.

In opposition to this perspective, a new line of research has emerged that advocates for the significant role that social actors have. In the perspective of social construction of technology, technology is highly shaped by society and the advancement of technology depends on the society that it is introduced to (Bijker, 2010). It is argued that technology is shaped and reproduced through a complex interplay of professional, economic, technical and political factors that exist in society. Drawing on this line of research, Mager (2012) examines contemporary search engines. In her work, she demonstrates that the current capitalist state of search engine technology is due to an ongoing process of negotiation and stabilization by a network of social actors embracing capitalist values present in contemporary society.

Enhancing the perspectives above, the concept of social shaping of technology offers an integrative view. Taking Giddens' (1984) theory of structuration as a starting point, the perspective of social shaping of technology embraces the agency of both, social actors as well as technology, and argues that the actions and interplay of the two is mutually constructive. Lievrouw and Livingstone (2006) write in this regard: "[...] we mean to suggest more of a mutual shaping process in which technological development and social practices are co-determining." [2]

In summary, social shaping of technology offers an integrative perspective on how technology is shaped. It claims that technology and society are mutually shaping each other and therefore how technology is perceived and use is co-determined. Drawing on the perspective of social shaping of technology, in the following we explore users' comments as a part of the shaping process of technology. That is to say, users actively shape the process of algorithmic personalization by voicing their opinions on Twitter. As Twitter is a public medium that is widely used and accepted, it would be inadvisable for Instagram to completely disregard them.

3. Algorithmic affordances and user agency

A valuable concept often used when discussing the social shaping of technology is that of affordances. Originating from Gibson (1979) affordances describe the various uses an environment or object offers to a specific organism. Lately, the concept has been adopted in the field of human-computer interaction as a way of discussing the flexibility and different perceptions of technology (Jensen, 2010). Within the perspective of social shaping of technology, the notion of affordances can be used to understand how the perception of a given technology might vary from one social context to another. In this respect, Hutchby (2001) argues that "[...] technologies can be understood as artefacts which may be both shaped by and shaping of the practices humans use in interaction with, around and through them." [3]

The perceived usability of a given technology, which is shaped through an interaction between the technology and its users, can be examined through the notion of affordances. Further, it points to the relevance of studying how users perceive their own actions towards shaping technology. Embedded in the discussion of affordances and in relation to the process of mutual shaping is the question of agency. Gunkel (2012) writes in this respect: "[...] it is clear that it is no longer accurate to define the computer exclusively as an instrument that is to be animated and used, more or less effectively, by a human being. The computer (...) confronts human users, calls to them, and requires an appropriate response." [4] In his work, Gunkel advocates for the understanding of the computer as a communicative other and therewith puts emphasis on the complex interplay between computer and users. As Gunkel notes, for users today it is

important to give an appropriate response and not only "to click the right button". This is of specific importance, especially when it comes to algorithmic personalization, because actions in the digital realm have complex ramifications.

In their study on Microsoft's AI Twitter-bot 'Tay', Neff and Nagy (2016) coined the phrase *symbiotic agency*, arguing that the interaction between humans and algorithms is inherently symbiotic, as both rely on the agency of the other in order to "survive" or at least in order to have a successful and beneficial interactions. Consequently, all actors involved in the process have to engage responsibly in interactions, if the relationship and the broader outcome shall be beneficial. Furthermore, Beer (2009) has argued that algorithms have a great impact on how users experience their everyday lives, especially as they emerge on an increasing number of digital media platforms. In an extension to the notion of symbiotic agency, we argue that human users hold agency to affect algorithmic personalization and therefore carry a certain responsibility. However, if users are unable to see the symbiosis that exists between them and algorithmic personalization and thus are unaware of their agency, the algorithm arguably gains an increasing amount of control over their everyday lives and may result in dysfunctional outcomes. Therefore, it is important to examine more closely users' perceptions and concerns around algorithmic personalization.

4. Narratives and counter-narratives

According to Castells (2007), communication and information are "fundamental sources of power and counter-power, of domination and social change." [5] Based on this statement, he argues that "the way people think determines the fate of norms and values on which societies are constructed" [6] and that in this "battle", social media has become the space where power is decided. In contemporary society, social media platforms such as Twitter often create visibility to opposing values and interests and users voice their opinions utilizing what Castells calls mass self-communication. Mass self-communication is "self-generated in content, self-directed in emission, and self-selected in reception by many that communicate with many." [7] Therefore, the battle over the dominating narrative and the minds of people is not only fought by politicians and social institutions but also by companies and their users. In this regard, social media has become the space users turn to when they disagree with organizational practices. From an organizational perspective this is often an unsettling situation, especially when profound changes are introduced as the Instagram case shows. Rather quickly, announced changes were debated and judged negatively. Taking a more cultural and less sociological stand, Andrews (2004) describes counter-narratives as "the stories which people tell and live which offer resistance, either implicitly or explicitly." [8] In this understanding, counter-narratives are unique stories and experiences that position such people as members of an outside group. That is to say, individuals that tell such counter-narratives challenge and deconstruct dominant narratives by suggesting alternative stories or taking on different views. Thus, the same story is told in a different way from a different perspective, often raising critical questions in relation to the dominant narrative.

In this research, the concept of counter-narrative is used as an conceptual lens that helps in delineating the organizational narrative and the user's narrative(s). This analytical distinction shall help to shed light on the rather complex discussions on values and interests revolving around algorithmic personalization. Further, it is important to note that the aforementioned notion of power and counter-power helps to distinguish the two sides of an argument, however, it makes no statement about the holder of power and the dominance of one side over the other. In fact, in our understanding both arguments are of equal weight but different in nature. While the organizational narrative is strategic and coherent, the user's narratives are mosaic and address various aspects, which we will explore in more detail in the analysis section.

5. The process of data collection, sampling and analysis

In the following section we will elaborate on the process of data collection, data sampling and analysis. More specifically, we will describe how the data were captured, stored and analyzed. In the following section 5.1 we will discuss the limitations of the study in general and the data sample in particular. The starting point of this study is a dataset of 3,913 tweets containing the hashtag "RIPINSTAGRAM" sent by 3,378 individual users. The tweets have been collected using the Twitter Capture and Analysis Toolset (TCAT), a data capture and analysis platform from the Digital Methods Initiative, also referred to as DMI-TCAT (Borra and Rieder, 2014). The data capture was initiated on 17 March 2016, two days after the announcement from Instagram. We were able to collect all tweets from the moment when Instagram made the announcement to employ algorithmic personalization, because the DMI-TCAT relies on both the streaming API as well as the REST API and is therefore able to capture prior data (Borra and Rieder, 2014; Gaffney and Puschmann, 2013).

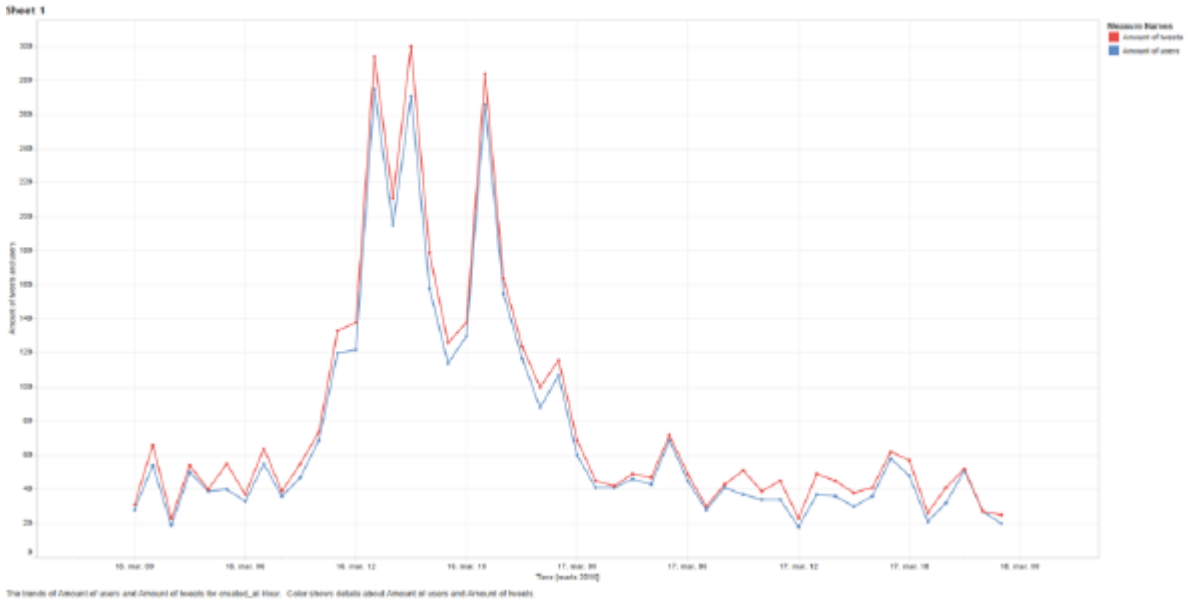

Figure 1: Graph showing the amount of users and tweets during the sample period.

Note: Larger version of figure available here.

Figure 1 above shows the allocation of tweets during the capture period. As the Figure illustrates, we captured the initial phase of the debate, the peak and the fading phase and used this data for creating the initial coding categories. After capturing the tweets, this initial dataset has been cleaned in order to produce a valuable data set that could serve as the basis for the following qualitative analysis. From the initial dataset consisting of 3,913 tweets, we extracted a second dataset that contained only English tweets resulting in a dataset of 1,242 tweets. Afterwards, the second data set was stripped of re-tweets in order to avoid duplicates. The resulting dataset consisted of 650 tweets. These tweets were categorized as either descriptive (*e.g.*, repeating the Instagram announcement) or commentary (*e.g.*, attitudes towards Instagram's announcement) and because we were only interested in the users' comments, all tweets that solely repeated the Instagram announcement were disregarded. This led to the final dataset of 531 tweets, which then was anonymized and modified in order to secure the identity of the Twitter users (Beurskens, 2013).

Drawing on the initial data set, the first system of qualitative categories was inductively created. Throughout the whole analysis, we followed the analytical steps proposed by Mayring [9]:

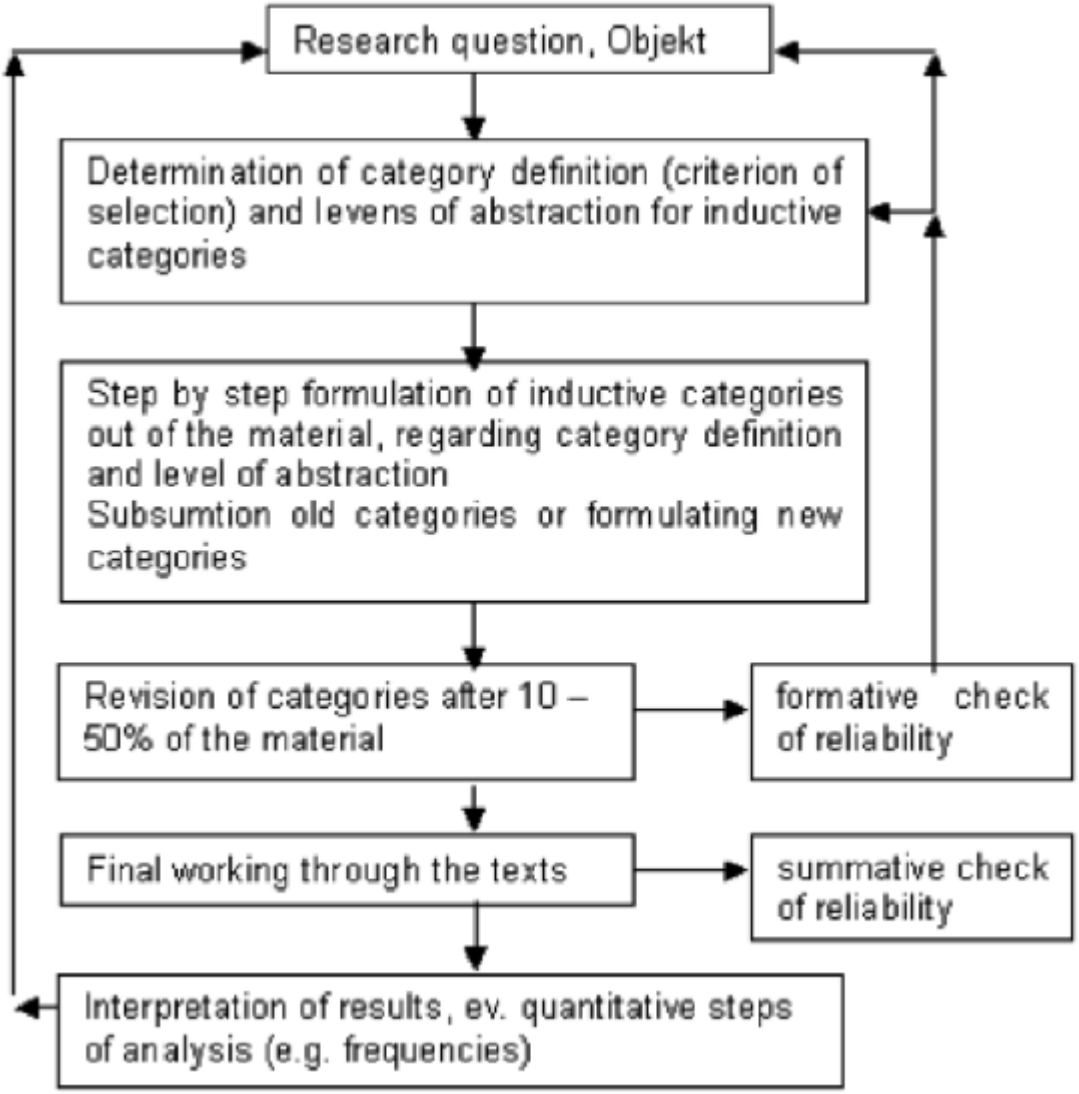

Figure 2: Mayring's iterative step model of inductive category development.

The process of initial coding was carried out in three iterative stages. First we read through the whole dataset in order to find recurring themes. Keeping in mind that the categories should reflect the essence of what was being expressed, we carried out some initial labeling. This led to a sampling of quotes, divided into 23 clusters, which we further explored in a second coding process. Reading through the clusters, we looked for patterns, in which users directly addressed the organizational narrative presented by Instagram. In the third and final coding process, we further explored the identified patterns with the aim of gaining a solid conceptual understanding of each. Corbin and Strauss (2008) state in this regard that the idea behind open coding is not to take a phrase from "raw" data and use it as a label, but to come up with interpretative labels that describe conceptually what the researchers believe is indicated by the data. Therefore, we gave each category a conceptual name that represented the main idea of that particular group of data.

Drawing on these initial categories, we then coded the data material extracted from Instagram. During the systematic coding process of the Instagram data we were open to new categories, while at the same time refining the categories extracted from the Twitter data set. The Instagram data consists of 4,732 posts published between 15 March 2016 and 28 February 2017, scraped using the commercial tool MagiMetrics (Honig and MacDowall, 2016).

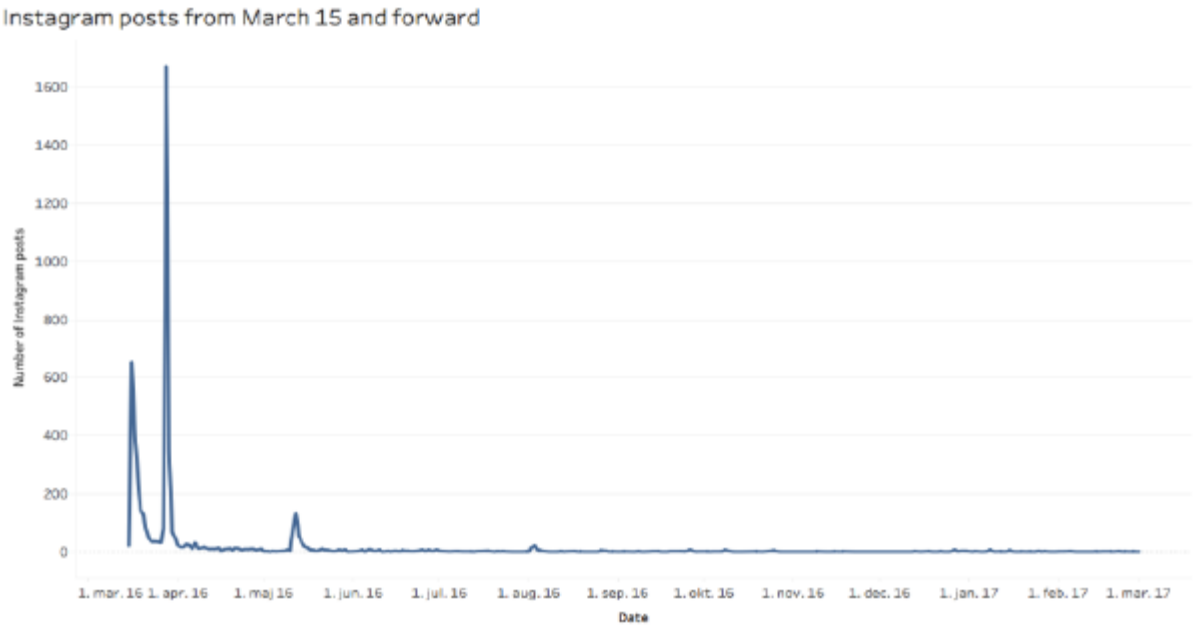

Figure 3: Graph showing the amount of users and tweets during the sample period.

Note: Larger version of figure available here.

Figure 3 above shows the amount and distribution of posts on Instagram under the #RIPINSTAGRAM hashtag. From the entire data set we extracted all English posts, which were systematically coded as described earlier. In the second step of data analysis we coded 2,349 user comments. After coding both the Twitter as well as the Instagram data, the following four final categories emerged during the process of analysis: (1) algorithmic hegemony, (2) violation of autonomy, (3) prevalence of commercial interest and 4) deification of mainstream. We will describe these in further detail later in section 6.

5.1. Limitations of this study

In the following, we elaborate on the limitations of our data set and briefly discuss alternative methods. The captured Twitter data set has two particular limitations. First, with regards to the sample size, an additional use of Twitter's Firehose stream could have been an option (Morstatter, *et al.*, 2013). However, as we were interested in a qualitative analysis, using DMI-TCAT seemed most beneficial to us. Secondly, a known limitation of the REST API is that some tweets may be omitted during capture (Borra and Rieder, 2014). We consider this also of less importance because we were interested in the overall themes of the tweets and not a statistical analysis. The aim of this research is a study of users' reactions — not the #RIPINSTAGRAM movement in general and therefore this paper does not include an overall analysis of the hashtag, but focuses on the examination of user comments relating to the implementation of algorithmic personalization.

In this inductive approach, we let the content of the tweets guide the analytical process aimed at a construction of broader analytical categories. As stated earlier, the labels we gave the categories represent the broader theme and are not one-on-one reproductions of tweets. Interpretation is at center of this study, while the performative aspects are left out, which also means that online self-representational bias or related issues do not play a decisive role in the analysis.

An alternative approach to the data analysis could have been a discourse analysis, however, as our motivation was neither political nor ideological but interpretative, qualitative coding was the most valuable method as it allowed us to approach the dataset with an open mind towards all possible meanings.

In relation to the examined data sample, it is important to note that only users from Twitter and Instagram were taken into account in this study. Twitter was a valuable platform to study users' comments and first reactions, because Twitter has become the primary medium where ongoing societal issues are instantly discussed (Weller, *et al.*, 2013). The extracted Instagram data then helped to shed light on broader long-term discussions. Using Twitter and Instagram data to study user comments has some obvious implications with regards to the generalizability of this study. This study does not examine counter-narratives from the entire spectrum of Twitter and Instagram users but only from tweets and Instagram comments using the hashtag #RIPINSTAGRAM. The nature of the hashtag excludes all tweets that welcome the announced changes from the analysis. Thus, the analysis and drawn conclusions need to be understood in relation to its oppositional undertone. Keeping these limitations with regards to the data sample in mind, the following analysis provides valuable insight into user perspective on algorithmic personalization.

6. User's counter-narratives

When Instagram announced the implementation of algorithmic personalization the main argument for these changes was the improvement of the user experience. Hence, for Instagram, employing algorithmic personalization is tied to the hope of creating a valuable feed with relevant content regardless of the time of usage. Instagram users, however, have a different view on this matter. In the following sections, we will explore, describe and discuss users' discontent through the conceptual lens of counter-narratives (see section 4).

6.1. Algorithmic hegemony

A present and reoccurring theme throughout the analysis of the #RIPINSTAGRAM debate has been the implicit understanding of algorithms as something that rules and controls the user. We have termed this counter-narrative algorithmic hegemony in order to address the perception of algorithmic dominance. During our analysis, we found that many users feel oppressed by algorithms and hence, view algorithms as a hegemony that decides on their behalf. An Instagram user comments on the announced changes with "As I'm sure you all have heard by now curated feeds are coming to Instagram. What this means is Facebook/Instagram will now implement an algorithm to pick and choose what creative content it thinks we all want to see (...) But now they're going to use an algorithm to show us photos that they think we will like. It is impossible for an algorithm to know anything about what our brains are thinking or want to see while we see this content (...)". An interesting point in this comment is that the user seems to perceive himself or herself as having no influence on algorithmic personalization. One user on Twitter expresses these concerns with the rather harsh comment "Algorithm @instagram? It's not enhancing, it's controlling". Another writes "Hey @instagram why do you want to kill yourself? Don't change the chronological feed. So sick of algorithms ruling our lives." The choice of verbs such as "controlling" and "ruling" points towards the users' belief in algorithmic hegemony. This understanding is often combined with an "us" vs. "them" attitude. That is to say, the "us" in this paradigm represents users, and "them" the algorithm, or Instagram as a corporate entity. A number of users compare algorithmic personalization to the previous chronological order. One of the users writes "@instagram wtf? Some of us like chronology. Not everything has to be algorithm based". This discussion addresses the fundamental question of accountability. While the users agree on time as the underlying mechanism of their feed, they do not trust algorithms taking over this task. Another user even creates an analogy between algorithms and his parents, the user writes "seriously instagram? i already have parents, don't be mine. don't tell me what to see". In this user's understanding, algorithms take on the supervisorial role of rigorously deciding what users get to see and not see.

In relation to the earlier discussed notion of agency, the hegemonic understanding of algorithmic personalization points towards a dominating experience of algorithms. One Instagram user writes: "(...) if you don't already know, IG [Instagram] will soon be like Facebook. They are planning to change YOUR feed and tell YOU what to like (...)". Following this experience, users seem to disregard the possibility of a mutually-shaped algorithmic performance. In this relation, Beer (2009) describes the use of algorithms as "reflexive play with the algorithm power", which then "direct[s] the way that the software reacts to them [the user]." [10] According to our analysis, the understanding of playing with algorithmic power is not represented in the collected data material. This might be of no surprise, since the discussion arose due to a disagreement with algorithmic personalization. However, what the data analysis points to is that the idea of algorithms as a ruling and dominating entity is rather widespread. This finding mirrors what Eslami, *et al.* (2016) found in their study on the Facebook algorithm. They found that a majority of users were unaware of the Facebook algorithm, and once they were exposed to it, they felt betrayed. Further, the users taking part in the study did not see themselves as possessing agency in changing the results they were exposed to. On the contrary, users took Facebook's newsfeed as given. The findings of their study matches our analysis, in which users counter-narrate the introduction of algorithmic personalization by telling the alternative story of algorithms dominating the user experience.

6.2. Violation of autonomy

In addition to the above-described counter-narrative algorithmic hegemony, the following counter-narrative, which we termed violation of autonomy, refers to users arguing that their scope of action is narrowed by algorithms. In this regard, one user writes on Twitter: "Dear @instagram: I'm fully capable of passing by photos I don't care about. Thanks though" and on Instagram a user states: "Dear, @instagram, keep it chronological! The fact that you think I'd rather see my favorite musician BEFORE my family and friends means you DON'T know what I care about most and thusly aren't qualified to make that decision". Another user states on Twitter "IG [Instagram] is turning your feed over to the robots"; here the expression "the robots" is used as a metaphor for algorithmic personalization and refers to the automatization of the process.

In extension of the parent metaphor mentioned in the previous section, which likens algorithms to parents, the counter-narrative's violation of autonomy revolves around the representation of algorithms as an entity that exercises authority over the user, and thereby narrows their possibility to act as they like in the Instagram environment. In this regard, one user argues "Tech bros love AI, but my brain is way more better in knowing what it likes. Creativity is NOT about identifying a 'Cat'!". Another user urges Instagram to leave the choice up to the users: "Hey @instagram: Let me choose what I want to see in my IG [Instagram] feed. My feed, my choice, not an algorithm's" and yet another writes: "For the love of God please make this something optional". All these tweets have in common that they feel belittled by the choices that Instagram' algorithm may make. Apparently, the chronological order works best for them and seems to be something users can relate to. An Instagram user writes: "I've already organised my feed based on the content I'm most likely to be interested by following those that I am most interested in. It's pretty simple really and no algorithm is going to improve my use of the app (...)".

Dietvorst, *et al.* (2015) argues that people tend to have an aversion to algorithms, and therefore choose themselves or others humans over algorithmic personalization, especially if they have experienced algorithmic malperformance. This accounts as true, if the algorithm overall performs better than themselves. When users articulate their perceived violation of autonomy, the Facebook's algorithm is often mentioned as a common reference point. It appears that the majority of users seem to have had a negative experiences with the Facebook algorithm: "@instagram thinks it knows what you want to see. Well, my FB feed is a mess it doesn't work ..." The dissatisfaction with Facebook's algorithmic newsfeed has arguably become additional kindling fueling the aversion to algorithms represented in this counter-narrative. In particular, users understand of algorithms as phenomena that limit their agency in shaping their own experience, and renders them as incapacitated bystanders.

6.3. Prevalence of commercial interests

The counter-narrative described in the following section called prevalence of commercial interests represents an understanding of algorithmic personalization as a mechanism that centers around commercial interests. In this perspective, algorithmic personalization is understood as creating a market for advertisement at the expense of the specific user's needs. Users comment on this system alteration with "Great now the rest of us can never be seen on Instagram to. Once again the internet is showing how only the high class matter" and "Instagram wants you now to pay to be seen! Pay as you play for small business now". In our analysis of the comments, users view algorithms as an entity that prioritizes money over users, provoking in some sort of sense a "class struggle". This is especially evident in the second part of the user comment, where the user addresses a certain "high class". This idea of high class is tied to the deification of mainstream counter-narrative as it is created through the logic of algorithmic personalization, in which popular content is preferred to independent artistic content. This perceived hierarchy plays out further between different actors in the market including big and small businesses. A user on Instagram states: "(...) Instead of the feed appearing in chronological order, it will be displayed in order of posts they think are most interesting to you or most popular. This is a MAJOR blow to small businesses who rely on Instagram to reach their customers. I can only imagine that small posts and accounts will be filtered out or placed at bottom (...)". It is commonly assumed that bigger organizations have greater financial means and therefore it is assumed that they can buy their way into visibility. A user commented on this with a rather sarcastic joke: "Exec: How could we screw things up at the expense of our users and really hurt small businesses? Intern: Ummmm....change our algorithm so what WE want is shown first? No, wait. That would really piss peopl..... . Exec: Brilliant! Let's do it!!" To underline this statement even more, one Twitter user adds the hashtag "capitalism" to the debate. The entire tweet reads as follows: "So, if you're just starting out, the only way to go up is to pay for Ads. #capitalism #RIPINSTAGRAM". In this relation, on Instagram the following comment could be found; "And I guess it won't be long before our posts are only shown to a small fraction of our followers unless we pay, and our feeds will be full of posts from those that can pay, as well as more advertiser content from accounts we don't follow". An additional user is concerned about the implications for certain professionals and writes on Twitter "Wow. Algorithmic ordering of posts = death to some professionals on social media. Not so sure I agree with that". Overall, users seem to assume that the market possibilities of algorithmic personalization may offer stand in stark conflict with their desired user experience. One user states,"Instagram attempts to increase their profits at the cost of our user experience" and a different user remarks, "So, thanks for making another social media outlet more annoying and less effective, for the sake of you and not users". Taking this matter further, another user calls Instagram out by saying "If the rumored feed changes in Instagram are true, I just have to #smh at how little these companies understand their users". In sum, the describes counter-narrative prevalence of commercial interests points towards user perception that an increased emphasis on market values displaces the social dimensions of Instagram, which the following tweet summarizes as "How about we buck the trend of algorithmic timelines. Great for advertising but terrible to follow friends & fam".

6.4. Deification of mainstream content

The following counter-narrative termed *deification of mainstream content* relates to what Bucher (2012) describes as the game of (in)visibility in relation to the Facebook newsfeed algorithm. Relevance, or popularity, lies at the center of social networking platforms. The counter-narrative deification of mainstream content addresses the prominence of algorithms. The logic of popularity is overarching, especially because a quantitative amount of "likes" fuels the idea of relevance. On Instagram, a user ironically writes "Just because Kim Kardashian's ass is bigger than mine doesn't mean you want to see it first #RIPINSTAGRAM". According to Bucher (2017) giving certain posts on social media greater visibility happens at the expense of others. Whether or not this is true from a programming perspective remains unclear. However, it seems to be common knowledge that the amount of user reactions to a specific post increase the perceived relevance. Hence, the counter-narrative deification of mainstream content is related to the understanding that when certain posts become more popular, it is mostly at the expense of other, less popular posts. This might be one of the reasons why users may prefer a chronological order, as the amount of likes plays a less prominent role. Generally speaking, users are especially worried about the effects algorithmic personalization will have on media content. One user writes, "a lot of talent that won't be seen now", while another states "nobody cares about art". Interestingly, they directly criticize the possible outcome of algorithmic relevance. Furthermore, a user tweets sarcastically "the upcoming Instagram change is going to be great ..., said no photographer ever". A recurring argument on the user's side is that algorithms praise popular and mainstream culture, disregarding niche topics and themes. One user judges the announced changes as "a dick move," continuing by claiming that "small businesses need ways to interact with their people and Instagram was so great". Another one asks "What if we don't want to always be bombarded with the top liked pictures?" and yet another states "The beauty of this social net is that you can discover new amazing galleries which are also unpopular! This will be the end". The main concern expressed by users is that algorithmic personalization will result in mass culture dominating their feeds, while less popular art and artists will lose relevance and significance on Instagram. Similarly, a user writes "They forget that diversity is the fuel of success. Not more of the same" and another "If Instagram changes its algorithm, all I will ever see in my newsfeed are puppies and food". Yet another user writes more straightforward "Naked girls, cats, dogs & makeup-tips, (...)", and yet another declares that algorithmic personalization results in "a mess of useless content that I don't want to see". A common topic in the statements above is the lack of trust in algorithmic personalization. None of the users seem to trust algorithms to be able to aggregate content in a useful, valuable and

beneficial way — and all of them seem to associate this experience with Facebook. Whether this has to do with the prematurity of algorithmic technology, or if this is rather common judgement, remains open. What became visible in the analysis is that the majority of users make dualistic distinctions between "popular" and "unpopular" or "independent" and "mainstream". This perception of algorithmic personalization is interesting insofar, as is frames the change of Instagram from a well-functioning chronological feed to a mainstream experience; an experience users are not looking for.

7. Discussion

In this analysis we have identified four counter-narratives that oppose the organizational narrative Instagram has put forth. According to Instagram, algorithmic personalization is an effort to improve the user experience and to provide users with valuable content at any given point in time. However, leaving chronological order behind and having algorithms personalize content has not been met with approval from users. The analysis showed that users are concerned with algorithms dominating their experience, resulting in highly commercialized experience. While it is important to take these concerns seriously, it also shows that users are mostly unaware of how they can influence algorithmic performance. These results are in line with an earlier mentioned study on algorithmic awareness (Eslami, *et al.*, 2015). Many users are disappointed that Instagram has decided to leave chronological order behind and that it is no longer an option for users. Further, it seems like several users have had poor experiences with the Facebook algorithms and are therefore discontent with Instagram's decision. However, according to Eslami's study, gaining knowledge about algorithmic personalization has led to greater user engagement and higher user satisfaction in the long run. In relation to Instagram, this means that Instagram can engage their users if they make an effort to educate their users about the principles underlying algorithmic personalization. At the point of writing, Instagram remains conservative with regards to how their system of algorithmic personalization works. As mentioned in the introduction, Instagram has announced that they take timeliness, users' relationships and interests into account, however, what that exactly entails remains unclear to Instagram users.

Viewing the analysis from the perspective of folk theories is another way of shedding light on user perceptions. A further study carried out by Eslami, *et al.* (2016) examines how users reason about algorithmic personalization in relation to Facebook's Newsfeed. The study resulted in the identification of 10 "folk theories" describing how users make sense out of algorithmic personalization. One rather common theory amongst users is the "personal engagement theory" [11], in which users argue that the frequency of interactions, such as liking content, chatting with friends or browsing profile sites strongly influences the visibility of information in their Newsfeed. Other rather surprising theories are the so-called "OC theory" [12], arguing that self-generated content is ranked higher in comparison to shared content, and the "global popularity theory" suggesting that "having many friends itself implied a higher level of personal popularity which might trigger the algorithm to show more of that person's stories" [13]. In relation to these findings our analysis shows that Instagram users reason in similar ways. This is not that surprising, given that algorithmic performance is expected to be similar to Facebook's Newsfeed. Instagram users also reason along the lines of popularity, however, from a market perspective. What both studies show is that even though users have several theories available to draw on when interacting with algorithmic personalization, they still perceive themselves with very little agency due to the unavailability of factual information regarding the practical functionality of algorithms.

In this relation, Bucher (2017) suggests the notion of the "algorithmic imaginary" in order to understand users' "ways of thinking about what algorithms are, what they should be, how they function and what these imaginations in turn make possible." [14] She argues that "Facebook's algorithms become part of 'force-relations' and are generative of different experiences, moods and sensations" [15] and that is why it is of crucial importance to explore the affective dimensions of algorithmic personalization in more detail. Hence, it can be stated that research on algorithmic personalization through a user's lens has shown that algorithmic awareness is still limited. and hence it is of importance to gain further knowledge about what users think and feel, and how they perceive algorithmic personalization. Our work aims at contributing to this.

Though as mentioned above, several scholars have explicitly studied how users perceive their own agency towards algorithms and their role in shaping algorithmic processes, the topic still draws attention to a broader ongoing discussion of the relationship between humans and technology. As mentioned in section two, the question of how technology is shaped by and with humans continues to spark discussions of how to understand the development of technology in contemporary society. In his theorising of algorithms in the everyday, Beer (2009) explicitly argues that the algorithm does not hold power over the user in a controlling sense, but rather the user and algorithm have the power to mutually shape each other. Beer (2009) further suggests that users would begin to reflexively play with algorithms in order to shape it to their own advantage. However, as we have seen, this is not necessarily the case yet. Although algorithms have become an integral part of the everyday, based on our analysis users do not see themselves as an active agent in shaping the relationship. Thus, although Beer (2009) hoped for a mutual shaping, the reality is far from a balanced symbiosis between algorithms and users.

This poses new challenges for researchers, designers and developers to work towards shifting user perspectives and raising awareness towards algorithmic personalization. Traditionally, the processes and workings of algorithms have been "black-boxed" and made invisible to the users as a way of making it all seem more effortless and less complicated (Hamilton, *et al.*, 2014). As the analysis shows, the question is whether this benefits the organization or not. As argued, educating users about algorithm functionality may increase their engagement. One way to do so is what is called seamful design (Eslami, *et al.*, 2016), which embraces the idea of visualizing how machines work and therewith provoke users to think about the operation mode of algorithms. In their study of Facebook users, Eslami, *et al.* (2016; 2015) found that when they introduced users to a seamful version of the Facebook Newsfeed and made them interact with it, users started

to speculate about how the algorithm worked and how they could influence it. The use of seams is also discussed by Hamilton, *et al.* (2014) as a possible way to make users understand the effects of algorithms. Seamful design is presented as a method that might invite users to a more explorative approach and innovative use of technology: "[...] 'seams' around an interface's construction should remain highly visible, so as to facilitate experimentation and innovative use." [16] A more explorative and speculative approach to how algorithms work and how users can influence their own newsfeed is arguably something that will enhance the feeling of agency and make it clearer to users how they can participate in the shaping of algorithmic personalization and therewith their experience. However, to our understanding further research is required in the field of symbiotic agency and seamful design in order to better be able to determine the actual effect of such an approach.

8. Conclusion

In the digital realm, algorithmic personalization has become the norm for information management and relates to the fact that algorithms are widely employed to "curate everyday online content by prioritizing, classifying, associating" (Eslami, *et al.*, 2016). It has been argued that algorithms play a major role in shaping everyday user experiences (Beer, 2009) and their further social consequences are widely debated (amongst others Introna and Nissenbaum, 2000; Berg, 2014; Crawford, 2016). According to Pariser (2011) algorithmic personalization has been one of the most profound changes on the Internet. Ever since, users of digital media platforms have encountered algorithmically personalized content on a daily basis. Facebook's Newsfeed is a well-known and often-studied example of this. Studies on Facebook's Newsfeed have shown that general knowledge about algorithms has spread amongst the majority of users. However, specific knowledge, especially in relation to how to influence algorithmic personalization towards users' own benefit, is still sparse. Further, we could observe that the discussion on Twitter leans towards the political side, while comments on Instagram appear to be more pragmatic and advice-oriented.

Overall, our analysis confirms previous research on algorithmic personalization. We found that users have various concerns in relation to algorithmic personalization on Instagram. Specifically, we have identified, examined and discussed the four counter-narratives: (1) algorithmic hegemony, (2) violation of autonomy, (3) prevalence of commercial interests and (4) deification of mainstream content. All of these counter-narratives tell an alternative story about algorithmic personalization from a user perspective and reveal several concerns users have. While the counter-narrative termed algorithmic hegemony addresses the point that users perceive algorithms as a dominant, the counter-narrative termed violation of autonomy present user's discontent with the action possibilities given to them as users. Many users fear that their needs are being ignored. The counter-narrative prevalence of commercial interests centers around the concern that advertisement will stand in the center of Instagram's efforts. The fourth and final counter-narrative called deification of mainstream content asks questions related to visibility. Users are especially concerned that Instagram will disregard independent subcultures.

This paper proposes to think about the debate as an emergence of counter-narratives opposing the organizational narrative brought forth by Instagram. Users resist the organizational narrative of enhancing the user experience by putting a range of arguments forth that tell an alternative story. Often this story includes making profit on Instagram's side on the expense of user agency. Hence, it is advisable for organizations to take the user's concerns seriously and address them properly. By doing so, organizations can initiate appropriate steps of action that contribute towards a valuable relationship with their users.

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Notes

1. MacKenzie and Wajcman, 1999, p. 1.

2. Lievrouw and Livingstone, 2006, p. 4.

3. Hutchby, 2001, p. 444.

4. Gunkel, 2012, p. 21.

5. Castells, 2007, p. 238.

6. *Ibid.*

7. Castells, 2007, p. 248.

8. Andrews, 2004, p. 1.

9. Mayring, 2000, para. 11.

10. Beer, 2009, p. 997.

11. Eslami, *et al.*, 2016, p. 2,375.

12. Eslami, *et al.*, 2016, p. 2,378.

13. *Ibid.*

14. Bucher, 2017, p. 40.

15. Bucher, 2017, p. 39.

16. Hamilton, *et al.*, 2014, p. 633.

References

M. Andrews, 2004. "Counter-narratives and the power to oppose," In: M. Bamberg and M. Andrews (editors). *Considering counter-narratives: Narrating, resisting, making sense*. Amsterdam: Benjamins, pp. 1–7.
doi: http://dx.doi.org/10.1075/sin.4.02and, accessed 31 March 2017.

D. Beer, 2009. Power through the algorithm? Participatory Web culture and the technological unconscious, *New Media & Society*, volume 11, number 6, pp. 985–1,002.
doi: http://dx.doi.org/10.1177/1461444809336551, accessed 31 March 2017.

M. Berg, 2014. "Participatory trouble: Towards an understanding of algorithmic structures on Facebook," *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, volume 8, number 3, article 1.
doi: http://dx.doi.org/10.5817/CP2014-3-2, accessed 31 March 2017.

M. Beurskens, 2013. "Legal questions of Twitter research," In: K. Weller, A. Bruns, J. Burgess, M. Mahrt and C. Puschmann (editors). *Twitter and society*. New York: Peter Lang, pp. 123–137.

W. Bijker, 2010. How is technology made? — That is the question! *Cambridge Journal of Economics*, volume 34, number 1, pp. 63–76.
doi: https://doi.org/10.1093/cje/bep068, accessed 31 March 2017.

E. Borra and B. Rieder, 2014. "Programmed method: Developing a toolset for capturing and analyzing tweets," *Aslib Journal of Information Management*, volume 66, number 3, pp. 262–278.
doi: http://dx.doi.org/10.1108/AJIM-09-2013-0094, accessed 31 March 2017.

T. Bucher, 2017. "The algorithmic imaginary: Exploring the ordinary affects of Facebook algorithms," *Information, Communication & Society*, volume 20, number 1, pp. 30–44.
doi: http://dx.doi.org/10.1080/1369118X.2016.1154086, accessed 31 March 2017.

T. Bucher, 2012. "Want to be on the top? Algorithmic power and the threat of invisibility on Facebook," *New Media & Society*, volume 14, number 7, pp. 1,164–1,180.
doi: http://dx.doi.org/10.1177/1461444812440159, accessed 31 March 2017.

M. Castells, 2007. "Communication, power and counter-power in the network society," *International Journal of Communication*, volume 1, pp. 238–266, and at http://ijoc.org/index.php/ijoc/article/view/46/35, accessed 31 March 2017.

K. Crawford, 2016. "Can an algorithm be agonistic? Ten scenes from life in calculated publics," *Science, Technology, & Human Values*, volume 41, number 1, pp. 77–92.
doi: http://dx.doi.org/10.1177/0162243915589635, accessed 31 March 2017.

J. Corbin and A. Strauss, 2008. *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Third edition. Los Angeles: Sage.

B. Dietvorst, J. Simmons and C. Massey, 2015. "Algorithm aversion: People erroneously avoid algorithms after seeing them err," *Journal of Experimental Psychology*, volume 144, number 1, pp. 114–126.
doi: http://dx.doi.org/10.1037/xge0000033, accessed 31 March 2017.

M. Eslami, K. Karahalios, C. Sandvig, K. Vaccaro, A. Rickman, K. Hamilton and A. Kirlik, 2016. "First I 'like' it, then I hide it: Folk theories of social feeds," *CHI '16: Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, pp. 2,371–2,382.
doi: http://dx.doi.org/10.1145/2858036.2858494, accessed 31 March 2017.

M. Eslami, A. Rickman, K. Vaccaro, A. Aleyasen, A. Vuong, K. Karahalios, K. Hamilton and C. Sandvig, 2015. "'I always assumed that I wasn't really that close to [her]': Reasoning about invisible algorithms in news feeds," *CHI '15: Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, pp. 153–162.
doi: http://dx.doi.org/10.1145/2702123.2702556, accessed 31 March 2017.

D. Gaffney and C. Puschmann, 2013. "Data collection on Twitter," In: K. Weller, A. Bruns, J. Burgess, M. Mahrt and C. Puschmann (editors). *Twitter and society*. New York: Peter Lang, pp. 55–67.

J. Gibson, 1979. *The ecological approach to visual perception*. Boston: Houghton Mifflin.

A. Giddens, 1984. *The constitution of society: Outline of the theory of structuration*. Berkeley: University of California Press.

D. Gunkel, 2012. "Communication and artificial intelligence: Opportunities and challenges for the 21st century," *communication +1*, volume 1, at http://scholarworks.umass.edu/cpo/vol1/iss1/1/, accessed 25 March 2016.
doi: http://dx.doi.org/10.7275/R5QJ7F7R, accessed 31 March 2017.

K. Hamilton, K. Karahalios, C. Sandvig and M. Eslami, 2014. "A path to understanding the effects of algorithm awareness," *CHI EA '14: CHI '14 Extended Abstracts on Human Factors in Computing Systems*, pp. 631–642.
doi: http://dx.doi.org/10.1145/2559206.2578883, accessed 31 March 2017.

C. Honig and L. MacDowall, 2016. "Audience constructed genre with Instagram: Street art and graffiti," *First Monday*, volume 21, number 8, at http://firstmonday.org/article/view/6810/5600, accessed 25 March 2016.
doi: http://dx.doi.org/10.5210/fm.v21i8.6810, accessed 31 March 2017.

I. Hutchby, 2001. *Conversation and technology: From the telephone to the Internet*. Cambridge: Polity Press.

Instagram, 2016. "See the moments you care about first" (15 March),
at http://blog.instagram.com/post/141107034797/160315-news, accessed 25 March 2016.

L. Introna and H. Nissenbaum, 2000. "Shaping the Web: Why the politics of search engines matters," *Information Society*, volume 16, number 3, pp. 169–185.
doi: http://dx.doi.org/10.1080/01972240050133634, accessed 31 March 2017.

K. Jensen, 2010. *Media convergence: The three degrees of network, mass, and interpersonal communication*. London: Routledge.

L. Lievrouw and S. Livingstone, 2006. *Handbook of new media: social shaping and social consequences of ICTs*. Updated student edition. London: Sage, pp. 1–14.

D. MacKenzie and J. Wajcman, 1999. "Introductory essay: The social shaping of technology," In: D. MacKenzie and J. Wajcman (editors). *The social shaping of technology*. Second edition. Buckingham: Open University Press, pp. 3–27.

A. Mager, 2012. "Algorithmic Ideology: How capitalist society shapes search engines," *Information, Communication & Society*, volume 15, number 5, pp. 769–787.
doi: http://dx.doi.org/10.1080/1369118X.2012.676056, accessed 31 March 2017.

P. Mayring, 2000. "Qualitative content analysis," *Forum: Qualitative Social Research*, volume 1, number 2, article 20, at http://www.qualitative-research.net/index.php/fqs/article/view/1089/2385, accessed 31 March 2017.

F. Morstatter, J. Pfeffer, H. Liu and K. Carley, 2013. "Is the sample good enough? Comparing data from Twitter's streaming API with Twitter's Firehose," *arXiv* (21 June), at https://arxiv.org/abs/1306.5204, accessed 31 March 2017.

G. Neff and P. Nagy, 2016. "Talking to bots: Symbiotic agency and the case of Tay," *International Journal of Communication*, volume 10, pp. 4,915–4,931, and at http://ijoc.org/index.php/ijoc/article/view/6277, accessed 31 March 2017.

E. Pariser, 2011. *The filter bubble: What the Internet is hiding from you*. New York: Penguin Press.

K. Weller, A. Bruns, J. Burgess, M. Mahrt and C. Puschmann (editors), 2013. *Twitter and society*. New York: Peter Lang.