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Kruikemeier, Sanne; Boerman, Sophie C.; Bol, Nadine

Veröffentlichungsversion / Published Version
Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:
Kruikemeier, S., Boerman, S. C., & Bol, N. (2021). How Algorithmic Systems Changed Communication in a Digital Society. *Media and Communication*, *9*(4), 116-119. https://doi.org/10.17645/mac.v9i4.5005

COGITATIO

Media and Communication (ISSN: 2183–2439)
2021, Volume 9, Issue 4, Pages 116–119
https://doi.org/10.17645/mac.v9i4.5005

Editorial

How Algorithmic Systems Changed Communication in a Digital Society

Sanne Kruikemeier [1,*], Sophie C. Boerman [1] and Nadine Bol [2]

[1] Amsterdam School of Communication Research, University of Amsterdam, The Netherlands;
E-Mail: s.kruikemeier@uva.nl (S.K.), s.c.boerman@uva.nl (S.C.B.)
[2] Department of Communication and Cognition, Tilburg Center for Cognition and Communication, Tilburg University, The Netherlands; E-Mail: nadine.bol@tilburguniversity.edu

* Corresponding author

Submitted: 28 October 2021 | Published: 18 November 2021

Abstract
This thematic issue invited submissions that address the opportunities and controversies related to algorithmic influence in a digital society. A total of 11 articles address how the use of algorithms has changed communication in various contexts, and cover topics such as personalized marketing communication, self-tracking for health, political microtargeting, news recommenders, social media algorithms, and urban experiences. The articles also include a wide variety of methods such as surveys, experiments, expert interviews, computational methods, and theoretical work developing frameworks and typologies. They are all united by one central question: How have algorithms and artificial intelligence changed communication, for both senders and receivers? We believe that the collection of topics and methods provide new insights into the different perspectives regarding algorithmic-driven communication—highlighting both the opportunities and challenges—and advance the literature with new findings, frameworks, and typologies.

Keywords
algorithms; automated decision making; communication; digital divides; health trackers; media personalization; online privacy; political microtargeting; recommender systems; transparency

Issue
This editorial is part of the issue "Algorithmic Systems in the Digital Society" edited by Sanne Kruikemeier (University of Amsterdam, The Netherlands), Sophie Boerman (University of Amsterdam, The Netherlands), and Nadine Bol (Tilburg University, The Netherlands).

Algorithms and artificial intelligence (AI) have changed communication delivery modes in society. This is especially noticed by a shift from "mass communication" to increasingly more personalized and automated communication. For instance, by using a vast amount of data, communicators can increasingly personalize (i.e., match messages to characteristics of an individual) and target (i.e., send these matched messages to specific people) their messages. Consequently, algorithms may increasingly be used for automated decision-making. This means that data-driven technologies can be used to make decisions about our life without the interference of humans. This thematic issue addresses the opportunities and challenges related to algorithmic influence in a digital society. A total of 11 articles address how the use of algorithms has changed communication in various contexts, and cover topics such as personalized marketing communication, self-tracking for health, political microtargeting, news recommenders, social media algorithms, and the algorithmic curation of urban experiences. The articles also represent a wide variety of methods such as surveys, experiments, expert interviews, and computational methods, as well as more theory-driven approaches, such as developing frameworks and typologies.

The issue starts with a literature review of academic research on transparency and control in personalized (marketing) communication (Segijn et al., 2021). With its focus on transparency and control, this article addresses an important issue of algorithmic and data-driven communication. Based on their literature review,

the authors conclude that there is little consensus about the definitions of personalization transparency and control. The authors conceptualize personalization transparency and control, and propose that *transparency* involves the degree to which the sender is open about data collection, processing, and sharing, whereas *control* involves the extent to which receivers can start, stop, or maintain data processing. The authors ultimately present the transparency–awareness–control framework which illustrates how the constructs are related and provide concrete propositions to guide future research based upon this framework.

The article by Zarouali et al. (2021) provides further insights into the receiver side of algorithmic communication. The authors present the outcomes of a large survey, which shows that misconceptions about algorithms in the media are highly prevalent among the general population in the Netherlands. Additionally, they show that erroneous representations about media algorithms are more common among older people, lower-educated people, and women, suggesting that algorithms may be expanding digital divides.

Algorithmic-driven processes are also used in health technology, such as in self-tracking applications. Festic et al. (2021) discuss the results of a large representative survey that examines users' risk perceptions and coping strategies to deal with the risks associated with their use of self-tracking applications. They conclude that users' risk awareness is generally low and only a small proportion of the sample applied coping strategies, such as checking the accuracy of self-tracking measurements, to retain autonomy and mitigate the risks of self-tracking. A substantial proportion of the sample indicated to be willing to share their health data with their health insurance if they receive financial advantages for doing so. They further discuss their findings in the light of the privacy calculus by arguing that the expected benefits of using self-tracking technology may outweigh the potential risks.

The fourth contribution by Schäwel et al. (2021) moves to another important topic in which algorithms play a crucial role. Their work focuses on political microtargeting and online privacy. They elaborate on social media users' privacy perceptions and potential regulating behaviors when confronted with political microtargeting. The authors follow the lines of the social media privacy model (Trepte, 2020), and focus on the process of social media privacy as experienced by users when being confronted with political behavioral targeting. Based on their model, they present propositions for future research when analyzing political microtargeting. First, they argue that it is important to consider the complexity of the social media context and individuals' perceptions of it. Second, they argue that it is important to understand users' privacy experiences affecting the outcome of microtargeting. Lastly, they make an important point that it is very important to conduct research regarding microtargeting and privacy along with ethical guidelines.

The following contributions focus on news. First, Jia and Liu (2021) examine whether the source attribution of a news article (human or algorithmic or human-assisted algorithm) affects hostile media perceptions. They found, among other things, that the relative hostile media effect occurs when people read headlines attributed to an algorithmic author. As pointed out by the authors, this indicates that positive perceptions regarding the neutrality of algorithms may not always be true. The next contribution by van der Velden and Loecherbach (2021) focuses also on news consumption and examines the reasons and motivations towards algorithmic versus human gatekeepers. While the focus is different, they found that for surveillance gratifications (keeping up with politics), algorithms are more appreciated. Conversely, when users consume news to pass time, escape from daily worries, or for entertainment, people are less likely to prefer algorithmic news selection. They also found in their study an interesting conditional effect: Users who are more confident in their own abilities are more likely to prefer algorithmic gatekeepers for surveillance gratifications.

The next study focuses on newsroom innovation labs. Cools et al. (2021) examine how algorithmic news recommenders may affect the gatekeeping role of news workers in the newsgathering process and the autonomy of the news workers' role as media agenda setters. The results show that when news workers interact with algorithmic news recommenders, they rely on them to evaluate what is newsworthy, in particular during specific periods, such as an election or a pandemic. They also found that the news workers are fully autonomous, but the algorithmic news recommenders seem to have a positive effect on how certain topics are put on the agenda. Lastly, Wieland et al. (2021) look at news recommenders from the user perspective. The authors report a survey containing an innovative self-programmed recommendation system to study how users evaluate algorithmic news recommendations. They find that users prefer recommendations of the most similar, and not necessarily unexpected, articles, but evaluations also differ depending on personal characteristics.

Another context in which algorithms may play a crucial role is that of social media. Their platforms have received a lot of criticism over the years for reasons related to privacy breaches and manipulative practices. Saurwein and Spencer-Smith (2021) propose a typology of "algorithmic harm" to describe the various harmful or negative effects upon individuals, markets, and society caused in part or in full by the use of algorithms. Their typology includes harms related to algorithmic errors, undesirable or disturbing selections, manipulation by users to achieve algorithmic outputs to harass other users or disrupt public discourse, algorithmic reinforcement of pre-existing harms and inequalities in society, enablement of harmful practices that are opaque and discriminatory, and strengthening of platform power over users, markets, and society. Based on their discussion, they reflect on potential governance strategies to

combat algorithmic harm and reduce platform power by introducing effective ways of external oversight.

Matamoros-Fernández et al. (2021) zoom in on the specific algorithmic selection processes of YouTube's "up next" feature. By combining computational and qualitative methods, they investigate the type of content displayed by the algorithms underpinning the "up next" feature and discuss to what extent negative claims—such as limiting users' exposure to diverse media content—regarding these algorithms can be empirically proven to be true. This article shows that despite YouTube's diverse algorithmic-driven recommendations, clear "winners" tend to dominate the "up next" selection.

Algorithms also increasingly shape aspects of urban life. As such, the impact of algorithms and their selection processes do not only pertain to the online world, but also impact many offline practices, such as choices of where we sleep, eat, and go. Smets et al. (2021), discuss how the widespread diffusion of digital communication technologies has entered all aspects of urban life and how selection processes shape urban experiences. Based on a literature review, they identify the vast amount of work on algorithmic selection in the online world and use this to construct an analytical lens to study the algorithmic urban experiences. They conclude their article by proposing an integrative framework on algorithmic curation of urban experiences, in which the multiple ways for algorithms to curate urban experiences have been illustrated.

This thematic issue offers a collection of articles that show more refined insight into how algorithms and AI changed communication in different contexts. We believe that the collection of topics, concepts, ideas, methods, findings, and discussed implications provide new insights into the different perspectives regarding algorithmic-driven communication. The articles included in this thematic issue highlight both the opportunities and challenges of algorithmic-driven communication, provide a more nuanced picture of algorithmic impacts by discussing the different boundary conditions in different contexts and advance the literature with new findings, frameworks, and typologies.

Conflict of Interests

The authors declare no conflict of interests.

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About the Authors

Sanne Kruikemeier (PhD, University of Amsterdam, 2014) is associate professor of political communication and Journalism at the University of Amsterdam and the Amsterdam School of Communication Research. Her research focuses on the consequences and implications of online communication for individuals and society.

Sophie C. Boerman (PhD, University of Amsterdam, 2014) is assistant professor of persuasive communication at the Amsterdam School of Communication Research at the University of Amsterdam. Her research addresses empowerment and resilience in the context of persuasive and/or data-driven communication, with a focus on transparency, literacy and persuasion knowledge, and privacy.

Nadine Bol (PhD, University of Amsterdam) is assistant professor of health communication in the Department of Communication and Cognition at Tilburg University. Her research expertise lies at the intersection of digital technologies, health communication, and vulnerability, centering on how digital health technologies impact vulnerable populations and create (new) digital inequalities.