

Mediatization and Human-Machine Communication: Trajectories, Discussions, Perspectives

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Abstract

As research fields, mediatization and Human-Machine Communication (HMC) have distinct historical trajectories. While mediatization research is concerned with the fundamental interrelation between the transformation of media and communications and cultural and societal changes, the much younger field of HMC delves into human meaning-making in interactions with machines. However, the recent wave of “deep mediatization,” characterized by an increasing emphasis on general communicative automation and the rise of communicative AI, highlights a shared interest in technology’s role within human interaction. This introductory article examines the trajectories of both fields, demonstrating how mediatization research “zooms out” from overarching questions of societal and cultural transformations, while HMC tends to “zoom in” to approach the concrete situatedness of the interaction between humans and machines. It is argued that we need to combine both perspectives to better understand how the automation of communication transforms the social construction of culture and society. This article offers an overview of the key themes explored in this thematic issue, highlighting the productive intersection of HMC and mediatization within each article. Additionally, it identifies potential avenues for future research emerging from this fruitful intersection.

Keywords: human-machine communication, mediatization, communicative AI, media theory

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1. Looking at Trajectories

Despite their distinct approaches and traditions, mediatization and HMC research share a key area of interest: the role of technology in human communication. The ongoing discussion surrounding communicative AI exemplifies this shared ground. In engaging with this emerging class of technologies, both fields offer valuable and complementary contributions. While taking into account various kinds of mediated communication, the core principal of mediatization research is to investigate the broader relationship between the transformation of media and communications on the one hand and culture and society on the other (Couldry & Hepp, 2013; Hjarvard, 2017; Lundby, 2014). Despite varied approaches and empirical foci, both mediatization research and HMC share the core tenet that “the media”—encompassing organizations, communication technologies, and symbolic systems—do set their mark on society, and give character to the cultural environments in which we live (Bolin & Hepp, 2017; Ekström et al., 2016; Hjarvard, 2013; Krotz, 2009). HMC, a younger field, emerged in response to the increasing ability of machines to act independently or simulate human-like behavior. It focuses on how humans create meaning in communication with such machines and the implications for both individuals and society (Guzman, 2018b; Guzman et al., 2023b; Spence, 2019). HMC centrally involves rethinking the ontological assumptions surrounding the nature of communication and media theory (Gunkel, 2012a; Guzman & Lewis, 2020). As this special issue demonstrates, the contrasting approaches of mediatization research and HMC can serve as a starting point for a productive mutual enrichment. To understand this better, a brief look back at the trajectories of both research fields is helpful.

Mediatization research originally grew out of a media environment dominated by the mass media—the printed press, radio, and television. The original idea of mediatization theory, emerging from its origins in mass communication research, was to understand media as an independent domain, with its own “media logic” (Altheide & Snow, 1979; Asp, 1990; Mazzoleni, 2008), increasingly influencing other societal domains, systems, or fields, often in tension with other logics. According to a frequently quoted definition, media logic is understood as a “shorthand for the various institutional, aesthetic, and technological modus operandi of the media, including the ways in which the media distribute material and symbolic resources, and operate with the help of formal and informal rules” (Hjarvard, 2013, p. 17). Beyond its theoretical development, mediatization research received a significant boost through its institutionalization when incorporated into a working group in 2011 and then a section (2016) of the European Communication Research and Education Association (ECREA), maintaining research-led links with Latin American mediatization scholars (Scolari & Rodriguez-Amat, 2018).

Given its focus on the media’s role in social and cultural change, it is unsurprising that mediatization theory itself adapts alongside the evolution of media technologies and communication forms. In response to these developments, mediatization research underwent a fundamental reformulation over the years. After initial criticism for not sufficiently integrating the digitization of media into its own analysis (Finnemann, 2011), the original concepts of mediatization theory, originating from mass communication research, were increasingly called into question (Couldry & Hepp, 2016; Lundby, 2014). The rapid rise of social media and digital platforms necessitated a closer examination of the relationship between media

and communication, and their role for culture and society. However, the evolving media landscape demanded analytical concepts beyond those tailored for traditional mass media. Consequently, the concept of a singular “media logic” was called into question as it failed to capture the diverse forms and functionalities of digital media’s institutionalizations and materializations (Hepp, 2020b, pp. 59–67; Lundby, 2009). Arguably there was never one media logic, but a plurality of media logics (Thimm et al., 2018; van Dijck & Poell, 2013). The assumption that digital media existed as a distinct sphere of society became increasingly tenuous as it became deeply integrated into the production of journalistic content. The spread of platforms, for example, has fundamentally transformed journalism as a specific social domain (Kramp & Loosen, 2018; Loosen, 2018), and similar impacts are felt across various other domains such as health care and sports, although the specific dynamics of change differ in each case. Digital media and their infrastructures uniquely “weave” themselves into all domains of society, with varying transformation dynamics in each case. Additionally, since these media inherently generate data and that parts of their cultural and social influence are based on the processing of this data, the examination of datafication became an integral part of mediatization research (Bolin & Schwarz, 2015; Couldry & Hepp, 2016; Kaun, 2023; Livingstone, 2019). Expanding its scope, mediatization research now delves into a wider range of cultural and societal domains, including fashion, war, sports, finance, and everyday life (Kopecka-Piech & Bolin, 2023a).

Within mediatization research, the technologies, interactions, and implications of human-machine communication have largely played a subordinate role. This might be attributed to the field’s inherent focus on “media” rather than “communication” (see Bolin in this issue). However, this has also changed with the evolving understanding of media that has emerged with digitalization. Reflecting this shift, mediatization research has begun engaging with the concept of “communicative machines,” which share some clear parallels with the field of HMC. Even in the early days of mediatization research, with the first mentions emerging in the mid-1990s, individual scholars explored the communicative role of robots (Krotz, 2014; Nowak, 1996). A concrete example is Friedrich Krotz’s investigation into the appropriation of a Sony robot dog AIBO and the Tamagotchi. Krotz argued that communication with such systems involves the “projection of the [. . .] interacting human” that deviates from typical human to human communication (Krotz, 2007, p. 147). Krotz saw both as “interactive media,” which he described as a manifestation of the progressing mediatization of everyday life. Building on this foundation, mediatization research has expanded to understand “communicative robots” within the broader context of automated communication (Hepp, 2020a; Hepp, 2020b, pp. 77–82), a term that encompasses various systems including artificial companions, social bots, and workbots used in automated journalism. These examples demonstrate that mediatization research approaches HMC’s field of interest with two key distinctions: first, by contextualizing automated communication within long-term societal transformations; and second, by emphasizing its connections to wider societal changes like individualization and commercialization. While proceeding along different trajectories, with mediatization following a much longer arch given its status as a more established line of inquiry, both mediatization and HMC meet in the technological advances of “communicative AI” (Guzman & Lewis, 2020; Hepp et al., 2023; Natale, 2021; Ng, 2022; Stenbom et al., 2023).

Human-machine communication as a recognized area of research within the study of communication is much newer than mediatization. Mediatization research dates back to the 1920s (Averbeck-Lietz, 2014),¹ while Human-Machine Communication traces its origins to 2015 when efforts began to formalize it as a distinct field within communication² (Guzman et al., 2023a, p. xl). However, as demonstrated in reviews of the developing field (e.g., Fortunati & Edwards, 2021; Guzman, 2018a; Makady & Liu, 2022; Mays & Katz, 2023; Richards et al., 2022), research within HMC is influenced by and builds upon rich scholarly trajectories within communication and media studies dating back to the mid-20th century, including cybernetics (e.g., Wiener, 1948), medium theory (e.g., McLuhan, 1994), computer-mediated communication (e.g., Walther, 1996), and Human-Computer Interaction (HCI) research (e.g., B. Reeves & Nass, 1996; Sundar, 2008). It also builds upon foundational works in cognate fields such as HCI and Science and Technology Studies (e.g., Latour, 2007; Suchman, 1987) as well as computing and engineering (e.g., Weiser, 1991) which, interestingly, have, in part, the same historical origin (Tinnell, 2023).

The techno-cultural context in which HMC was formed and has begun to evolve is different from that of mediatization; although both find their roots in historical moments of significant and inextricably intertwined media, technology, and cultural change. It was the interactive elements of computers that prompted scholars to shift their thinking toward computers as a type of message source (e.g., Nass et al., 1994; Rafaeli, 1988). As applications and devices became increasingly agentic, scholars began to theorize media more fully in the role of a communicator, closer to the human sense of the term, while also considering the larger disciplinary, philosophical, and cultural implications of such a shift from people as communicators and machines as channels to machines as channel and communicator (e.g., Gunkel, 2012a; Jones, 2014; Zhao, 2006). Efforts to develop HMC as a subfield of communication were in response to advances in artificial intelligence and robotics that enabled the development of technologies with sophisticated and increasingly human-like communicative abilities and their integration into everyday life (Guzman, 2018a; Spence, 2019).

HMC has positioned itself as a subfield that values philosophical, theoretical, and methodological diversity, including research that spans the social sciences and humanities. The chapters of the recently published *SAGE Handbook of Human-Machine Communication* reflect the significant breadth of this currently institutionalizing area of media and communication, which results not least from the diversity of its interdisciplinary relations (Hepp & Loosen, 2023). As HMC is evolving, certain approaches and theories are more pronounced than others (Makady & Liu, 2022; Richards et al., 2022). The Computers Are Social Actors, or CASA, paradigm (Nass et al., 1994) and the media equation (B. Reeves & Nass, 1996) have been particularly influential as HMC scholars consider new ways of theorizing interactions with more sophisticated forms of media (e.g., Gambino et al., 2020; Lombard & Xu, 2021). In line with CASA's influence are a focus on social science theories and methods, particularly experiments, investigating a myriad of aspects regarding people's use and perceptions of chatbots, robots, and related technologies (Makady & Liu, 2022; Richards et al., 2022). Interpretivist and qualitative approaches are valued but are represented to a lesser degree, leading some scholars to advocate for their increased presence given their potential to provide insights into people's everyday encounters with communicative technologies (e.g., Fortunati & Edwards, 2020; Guzman, 2023; Richards et al., 2022). The need to understand the critical and cultural implications of the "automation of communicative labor"

(J. Reeves, 2016, p. 150), the development of human-machine relationships (e.g., Gehl & Bakardjieva, 2016), and to consider the larger philosophical and ethical questions (e.g., Ess, 2018; Gunkel, 2012b) also served as a key motivator in the establishment of HMC. While a preponderance of HMC scholarship focuses on direct encounters between people and technology, scholars working from feminist and critical cultural paradigms also are examining larger societal questions and issues (e.g., Coleman, 2023; Iliadis, 2023).

Considering their historical development and research trajectories in relation to one another, we can say that while mediatization research is concerned with “zooming out” to overarching questions of societal and cultural transformations, HMC has largely formed around “zooming in” to an examination of the concrete situatedness of the interaction of humans and machines. And while mediatization research has developed particularly in the European and Latin American tradition of media and communication research, HMC emerged particularly in the Anglo-American context.

Our descriptions up to this point make clear where research on mediatization and HMC differ, but above all, where they can complement each other productively. Both formed in response to significant technological and cultural change and seek to illuminate the implications of media in everyday life as it gains a greater and more powerful presence. In both traditions, we share the argument that “communicative AI” stands for a comprehensive current thrust of change in our media environment and is evident in the increasing automation of communication—which is why we need an intensive dialog between the two areas of media and communication research. From mediatization research, we need the perspective on and the competence to critically investigate the long-term transformation of culture and society. From HMC, we need the perspective on and the competence to investigate human-machine interactions. And, indeed, at certain points, we can already identify shared roots from which to bridge the gaps between. If we combine both—which is advocated here—then we will be able to better understand how the automation of communication transforms the social construction of culture and society.

2. Themes of Discussions

If we look at the contributions to this thematic issue, they converge in the argument that communicative AI and the automation of communication point to the need to further advance the conceptual tools of mediatization research. HMC offers great potential for achieving this goal. A total of five concepts are introduced into the academic discussion or accentuated anew by the articles: That of the “human fix” as a characteristic of the current deep mediatization; “machine agency” as an experiential dimension of the mediatization of family; arguments to develop an approach of “technological mediatization”; an understanding of “artificial sociality” in automated communication not as its property but as a human attribution; and the urge for “mediatized immediacy” in the use of systems. Each article elaborates on these themes at the intersection of HMC and mediatization.

The article “Smoothing Out Smart Tech’s Rough Edges” by Christian Katzenbach, Christian Pentzold, and Paloma Viejo Otero ties in directly with current research on deep mediatization and the discussion regarding the automation of communication. The main argument of the contribution at this point is that although mediatization research has

generally pointed to the revelation gain of automated communication, there is also “a lack of understanding with respect to the practical implications of automated media.” The objective of this article is to be a step toward filling this gap. To this end, two case studies are combined that from a HMC perspective focus on interactions with machines and from the tradition of mediatization research concern completely different domains: the front end of self-service checkouts and the back end of content moderation. Such a comparison shows first of all that what is described as the automation of communication is subject to different dynamics in each case, which refer to the respective situational and social context. At the same time, however, three overarching patterns also become clear: the ad-hoc sociality in situated practices of automation, the capture of mundane expertise, and the inverted assistance of humans to machines. In this sense, the so-called “human fix” is not a temporary repair of malfunction, but a permanent and constitutive feature of automated systems and therefore a characteristic of a deeply mediatized society.

Giovanna Mascheroni explores whether smart speakers in family life are mere interfaces or if they begin to represent new family members. As she argues, today, voice assistants and other conversational agents are common, and human-machine communication is “domesticated” into family settings, which makes questions of communication, and how the activity of communication should be understood, defined, and theorized, unavoidable. Mascheroni analyzes how family members, that is, young families with small children, communicate *through* as well as *with* smart speakers in the home, and how the family figurations change with the domestication of these technologies. On this basis, she reflects on what this means for our understanding of “machine agency” as a characteristic of deep mediatization. She comes to the conclusion that smart speakers acquire a form of agency by intensifying the datafication and algorithmization of everyday life, thus entailing a shift in the power dynamics between humans and machines.

The concept of the “machine” also plays a role in the article “Communicative AI and Techno-Semiotic Mediatization: Understanding the Communicative Role of the Machine” by Göran Bolin; although, he gives it a different twist in the context of mediatization research. His argument is that mediatization research has so far focused primarily on an institutional or social-constructivist approach, which means that the focus has been more on “the media” rather than on “communication.” By contrast, Bolin locates his arguments more strongly in an approach that focuses on the technology itself and its communicative affordances and limitations. He argues that this will make it possible to integrate findings from HMC research into mediatization research to a much greater extent than before. Using the example of an automated recruitment interview, it is shown what this could look like. In parallel to social constructivist approaches, Bolin argues that mediatization research should focus much more on questions of communication instead of overemphasizing an institutional perspective. Including the HMC perspective, however, is particularly about an appropriate examination of the automation of communication. All this could be better understood in a framework of “techno-semiotic mediatization” (i.e., in situations where technology and the semiotic codes and procedures of communication are taken into account).

The central concept of Simone Natale and Iliana Depounti’s contribution is “artificial sociality.” Unlike existing literature focused on new forms of machinic sociality, their research delves into the emergence of a new type of social interaction, one that takes on new “appearances.” It is therefore about “mechanisms of projection” that encourage users

to assign social meanings to interactions with social robots and communicative AI. To make their case, Natale and Depounti employ several examples of the anthropomorphization of automated communication systems: the public discourse around Alphabet/Google's LaMDA-based chatbot that is supposed to have reached sentience, the use of humanlike voices for voice assistants, and the functionality of the GPT-4-based chatbot Replika, to name a few. Working from these examples, Natale and Depounti conclude that "artificial sociality" is an important dimension of today's broader mediatization processes, the analysis of which should also consider questions of anthropomorphization.

Drawing on their expertise in HMC, Fortunati, Edwards, and Edwards offer a distinct perspective in their contribution. Under the title "The Perturbing Contribution of Virtual Assistants to Mediatization," they deal with the case of Alexa. The empirical basis of the article is a survey of 655 university students in the US and Italy on how they use Alexa to access news. This empirical evidence opens up a new perspective on current mediatization processes. Their findings highlight the desire for "mediatized immediacy" in Alexa's news delivery that is expressed in expectations on virtual assistants to function as reliable providers of news and information "in an instantaneous, personalized, and potentially interactive manner." This type of direct real-time interaction with a voice-based assistant's news delivery service may have implications for the representational dimensions of human-machine communication that adds another mediatized layer to social reality.

3. Future Perspectives

As demonstrated in the contributions to this thematic issue—"human fix," "machine agency," "technological mediatization," "artificial sociality," and "mediatized immediacy"—reveal that the intersection of mediatization research and HMC is indeed highly productive. But what further-reaching perspectives result from these individual points? In our view, raising this question leads to three perspectives, into which the individual arguments of the articles in this thematic issue can also be integrated. These perspectives result from the combination of "long-term" and "in-depth" approaches, from relating "sensitizing" and "definitive" concepts to one another, and from the fusion of research on "domain-specificity" and "actor-relatedness."

The first *perspective emerges by combining "long-term" and "in-depth" approaches on automated communication*. Mediatization research has gradually come to move toward a long-term view on media and communication-related transformations (Bolin, 2014; Krotz, 2001; Lunt & Livingstone, 2016; Nowak, 1996; Petersen, 2023), something that can also be said to have influences from Latin American mediatization research where a "the longer the better" (Verón, 2014, p. 164) position dominates. Current phenomena are therefore contextualized in a much broader historical perspective. With regard to communicative AI this means that the changes associated with this phenomenon can be seen in a sequence of "waves of mediatization" (Couldry & Hepp, 2016, p. 34), starting with mechanization, across electrification culminating ultimately with digitalization—which has subsequently made the datafication and automation of communication possible, for example in the form of GPT-4 and comparable large language models (Hepp et al., 2023, pp. 44–45). From the perspective of mediatization research, it would therefore be a matter of embedding the study of automated communication in broader historical processes, and slightly refocusing

to more clearly include aspects of communication that have gradually faded into the background for most mediatization scholarship. HMC—as the name already makes clear—is emerging and has established its foundations around the current techno-cultural moment (Guzman, 2018a, pp. 11–14). Despite its recent emergence, HMC has rapidly established a strong foundation in its field. Notably, it draws upon existing theories and paradigms shaped by earlier technologies, contributing to the evolving understanding of media as active communicators. Therefore, we believe that effectively investigating communicative AI, a key driver of communication automation, necessitates employing both comprehensive historical and contemporary lenses. As Richards et al. (2022) suggest, HMC’s expertise offers a valuable current in-depth perspective. However, a thorough understanding also requires examining the broader historical and societal context that has shaped the development of communicative AI.

A second perspective emerges by placing “sensitizing” and “definitive” concepts in relation to one another. “Definitive concepts,” according to Herbert Blumer, are those that refer “precisely to what is common to a class of objects, by the aid of a clear definition in terms of attributes or fixed bench marks” (Blumer, 1954, p. 7). By contrast, “sensitizing concepts” are those that provide “a general sense of reference and guidance in approaching empirical instances” (Blumer, 1954, p. 7). However, we need both concepts for productive research. And here, mediatization research opens up the “sensitizing” perspective in particular. As Klaus Bruhn Jensen (2013) has made clear, mediatization itself is a “sensitizing concept.” It offers guidance toward focusing on questions of transformation, namely on mutual relationships and processes. However, as various mediatization researchers have noted, mediatization research also requires “definitive concepts” in order to operationalize its own studies (Hepp, 2020b, pp. 62–67; Hjarvard, 2013, p. 5; Kopecka-Piech & Bolin, 2023b, p. 1). These have already been taken from general media and communications research. Examples include concepts such as “affordance” (Gibson, 1967), “media logic” (Altheide & Snow, 1979) or “media practice” (Couldry, 2004), all of which have made it possible to conduct concrete empirical research on questions of mediatization. This is exactly what HMC offers for the field of automation of communication. Examples include the adaptation of CASA (Gambino et al., 2020) or “media-as-social-actor presence” (Lombard & Xu, 2021; Xu & Jeong, 2023). Other “definitive concepts” such as “affordance” (Nagy & Neff, 2023) are redefined in HMC. It is precisely this encounter between “sensitizing” and “definitive concepts” that is important to us when investigating the automation of communication.

A third perspective emerges from considering the relationship between “domain specificity” and “actor relatedness.” Media and information studies research has consistently shown that the spread of (digital) media and their infrastructures does not lead to a uniform transformation across all domains; instead, the impact is always specific to the domain in question. In education (e.g., Rawolle & Lingard, 2014), politics (e.g., Esser & Strömbäck, 2014), religion (e.g., Lundby, 2023) or sport (e.g., Frandsen, 2023), for example, the mediatized transformations operate quite differently, meaning that one cannot assume a uniform process of change. One of the particular achievements of mediatization research can be seen in investigating such differences and their underlying patterns (Hepp et al., 2018; Hjarvard, 2013; Livingstone & Lunt, 2014). Much HMC scholarship focuses on questions involving direct interactions among humans and machines (Mays & Katz, 2023) while taking into account the context for those interactions, such as newsrooms (Lewis et al., 2019).

The domain is important, and in some instances may come to the fore, but often it is the point of contact between human and machine that is given primacy. Given their complementary nature, we believe this perspective of relating mediatization research and HMC holds significant value for developing a nuanced understanding of the automation of communication.

While these three perspectives—focusing on historical context, current dynamics, and the interplay between domain specificity and actor relatedness—only represent a starting point, they effectively illustrate the immense potential of the intersection between mediatization research and HMC. This fruitful dialogue holds immense promise for advancing our understanding of communicative AI and the broader phenomenon of communication automation. Our hope is that this thematic issue can be a starting point for further joint conversations.

This thematic issue has its roots in a panel we organized at the European Communication Research and Education Association (ECREA) conference in October 2022 under the title “What is automated communication ‘enabling’? Communicative AI, deep mediatization and the good life” and at which some of the papers now available in essay form were presented. At the conference productive discussion arose around the question of how mediatization research and HMC can be more closely allied, which then led to the idea of this thematic issue. We would like to thank various people who made this possible, first of all the chairs of the ECREA section “Mediatization,” for their encouragement in hosting this panel. We would also like to thank the reviewers for both the ECREA conference and the articles in this thematic issue, especially as it is not easy to review articles that bring together different strands of research. Finally, we would like to thank the editors of the journal *Human Machine Communication*, who have opened up the space to continue this discussion as a publication.

Notes

1. As Averbeck-Lietz (2014) concludes, the first use of the concept of mediatization in a similar way as it is used today dates back to the 1920s. Other early uses include Baudrillard (1971, 1981), who used it for a more technological and semiotic approach. The general role of media in culture and society has, from processual perspectives as well, been discussed broadly throughout communication studies’ history, not least in medium theory (e.g., McLuhan, 1964), although the specific mediatization concept has not been used.
2. The term “human-machine communication” is not unique to the study of communication. Indeed, along with the oft-used “man-machine communication,” human-machine communication can be found within the literature on early computing and ergonomics and within fundamental texts of HCI and STS (e.g., Suchman, 1987). Within computing, the terminology fell out of use and was replaced by human-computer interaction. See Guzman (2018a) regarding the centrality of the concept of communication in early computing and the purposeful decision by communication scholars to reclaim “human-machine communication.”

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