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Abstract

This review essay examines two recent publications that explore the relationship between Artificial Intelligence and communication. Discussing Human-Machine Communication (HMC) as an emerging area of inquiry within communication and media studies, two important implications of this body of work are highlighted. First, the "human" component still plays a key role in HMC, since what we call “AI” derives from the technical and material functioning of computing technologies as much as from the contribution of the humans who enter in communication with AI technologies. Second, HMC challenges the very concept of medium, because the machine is at the same time the channel as well as the producer of communication messages. A potential way to solve this challenge is to mobilize existing approaches in media history and theory that expand the concept of medium beyond its conceptualization as mere channel.

Keywords:

Artificial Intelligence; Digital media; Human-Machine Communication; Media theory; Media history; Communication and media studies.

Review of:

Gunkel, D. J. (2020). *An Introduction to Communication and Artificial Intelligence*. Cambridge, UK: Polity.

Guzman, A. L., ed. (2018). *Human-Machine Communication: Rethinking Communication, Technology, and Ourselves*. New York: Peter Lang.

Since its emergence in the middle twentieth century, the field of research and application called Artificial Intelligence (AI) always entertained a close relationship with communication. Cybernetics, the interdisciplinary science that posed the theoretical foundation for the field, was organised around the concept of communication (Wiener, 1948), and Alan Turing's field-defining thought experiment, later called "Turing Test," envisioned a situation in which computers and humans enter in communication with each other (Turing, 1950). Yet until very recently, interactions between AI on the one side and communication and media studies on the other were relatively scarce. Most attempts to question the notion of communication in AI remained within the confines of an engineering approach to communication and information theory. Despite some notable exceptions (e.g. Suchman, 2007; Turkle, 2005), relatively little efforts had been made to consider AI from the point of view of the cultural and sociological traditions in the study of communication.

David J. Gunkel's *An Introduction to Communication and Artificial Intelligence* and Andrea L. Guzman's *Human-Machine Communication* contribute to fill this gap, opening up crucial theoretical and practical questions with the potential to advance both AI and communication and media studies in the future. Gunkel's book is an accessible but technically savvy monograph introducing students and scholars of communication and computer science to the intersections between AI and communication. Covering areas such as machine translation and natural language processing, it reflects on how these can profit from

the application of communication studies research and concepts, and how these technologies can in turn be mobilised to advance the study of communication. The book also looks at the social and ethical implications of AI, which has been the key standpoint of Gunkel's previous research (e.g. Gunkel, 2012). Guzman's book is instead a collection of essays, a collective effort that resulted from a post-conference following the 2016 International Communication Association's (ICA) conference in Fukuoka, Japan. In her introduction that frames the theoretical underpinning of the book, Guzman proposes Human-Machine Communication (HMC) as a concept and an area of research within communication, whose subject is "the creation of meaning among humans and machines and the study of this meaning-making and related aspects" (p. 1). While she acknowledges that the notion of HMC is in itself not new, with this label Guzman advocates the emergence of more concerted endeavors to extend approaches usually limited to human communication to the study of people's interactions with machines. Such an effort would result in a better understanding of how meaning is created through the contribution of humans and machines, and of the individual, societal, and cultural implications of human-machine communication processes.

Gunkel and Guzman share the same institutional environment, the Department of Communication at the Northern Illinois University, and demonstrate broad agreement on the framing of this new area of inquiry. While the already established area of Computer-Mediated Communication (CMS) investigates communication *through* computing systems, HMC is instead characterized as the study of communication *with* computers. If CMS investigates digital technologies as channel of communicative processes, HMC interrogates the extent to which these technologies also play the role of communicators. As Gunkel points out, "with very few exceptions, the field of Communication Studies has, for better or worse, privileged one against the other" (45). This is hardly surprising, as the field tended to adapt its existing frameworks to new technologies across times, including Artificial Intelligence.

Thus its understanding of the role of technology as "medium" – in its literal meaning from Latin, what is "in between" in the process of communication – limited the field's ability to address situations and contexts in which the technology is not only the channel, but also the producer of communication.

One of the most significant implications of Gunkel and Guzman's work is their acknowledgement that studying AI and communication from an HMC perspective entails interrogating not just the "machine" but also, and perhaps especially, the "human" component. And this not only because the definition of communication within human-machine communication and human-human communication should be the same, and therefore the study of human communication provides adequate lenses to understand this "new" phenomenon. Even more crucially, by participating in the communication, humans apply interpretative frameworks and pragmatic actions that derive from social and cultural habits, knowledge and formations. One needs to acknowledge, therefore, that what we call "AI" derives from the technical and material functioning of computing technologies as much as from the contribution of the humans who enter in communication and in relationship with AI technologies. This poses HMC in continuity with existing work in Computer-Mediated Communication that interrogate the perspective of users and audiences, such as the Computers Are Social Actors framework (Reeves and Nass, 1996), as well as with more recent attempts to consider how all-to-human bias, social practices, discourses and behaviours represent an integral component of what we call "AI" (e.g. Rhee, 2018; Bory, 2019; Sweeney, 2020).

Guzman, in this context, identifies in James Carey's cultural understanding of communication the key intellectual tradition to underpin her approach. She takes up Carey's contention that communication research "is about who we are, who we are to one another, and the very reality that we are creating" (p. 3). While Gunkel shares the preoccupation with

the cultural and social dimensions of communication – to the point of delving into the role of science fiction in shaping the discourse as well as the practical development of the AI field –, he expresses more caution against applying the framework of human communication to AI. This in fact bears the risk, according to Gunkel, of creating similar problems to those produced by long-standing attempts in the field of AI to measure "machine intelligence" against the model of human intelligence (Ekbia, 2008). In contrast, Guzman contends that "the definition of 'communication' within human-machine communication and human-human communication is the same—as it should be if they are to occupy the same discipline" (p. 17).

Guzman and Gunkel's pioneering works still leave many open queries regarding the full implications of their proposals and approaches. What could be seen as a limitation, however, should actually be regarded as additional evidence of the importance of these contributions. The framework of HMC, in fact, and more broadly the study of AI from a communication and media studies perspective, implies a new set of questions that will need to be addressed more widely within the field as an all, from a theoretical as well as an empirical perspective.

For what concerns communication theory, the discussion mentioned above on the concept of medium appears particularly significant, as it ultimately encourages to ask if the notion still holds relevance and utility to describe situations – think, for instance, of voice assistants (Hoy, 2018) or social media bots (Gehl and Bakardijeva, 2016) – in which the technology is not only the channel but also the producer of communication messages. One potential way to solve this conundrum could be to look at existing approaches that expanded the concept of medium beyond its conceptualization as 'mere' channel. Media history, in this regard, might help reconsider the excessive exceptionalism that is often accorded to "new" media (Park et al., 2011). Historical approaches that contextualize the development of AI not

only within the history of computer science but also within the history of communication may unveil the extent to which non-digital and also pre-digital technologies of communication already blurred the distinctions between channel and producer. Think, for instance, at the complexity of communication networks, from the telegraph and the railway in the nineteenth century to the telephone in the twentieth century, where the distinction between human operators and technical media evaporated in the complex interactions produced under the auspices of the network.

Powerful theoretical tools, moreover, already exist that can help expand the concept of medium towards the direction envisioned by Gunkel and Guzman. One of these tools is the adoption of frameworks originally developed within cultural anthropology and STS, such as the social life of things, which has stimulated much reflections also from a communication and media studies perspective (e.g. Silverstone, 2006; Lesage, 2013; Balbi et al., 2016). If media, like all sorts of artefacts, are embedded within circuits of meaning and affect in which they play the role of veritable social actors, then the exchange of messages with a medium-communicator such as Apple's Siri or Amazon's Alexa is less of a *unicum* within the history of communication. It is not a coincidence, in fact, that Reeves and Nass' *The Media Equation* (1996), a milestone that anticipated in many ways Gunkel and Guzman's approach, focused on the computer alongside "old" media such as the television set. Ultimately, what is a communicator and what is a mere channel is also a decision of the person involved in communication: it is this person that attributes a personality to Siri beyond what constitutes a "simple" interface (Natale, 2020). If it is true that computers are increasingly adopting the position "of another social actor with whom one communicates and interacts", as Gunkel notes (59), one should also ask: who decides who's a social actor? As Armin Appadurai (1986) but also Sherry Turkle (2007) taught us, things play social roles in multiple situations, and people attribute agency and even personality to things – not just to computing devices.

This calls upon a recalibration of the understanding of the key roles played by different agents, including but not only AI, as part of the process of communication.

Looking at the continuities between media history and theory on the one side and HMC on the other, therefore, helps remind us that – as Guzman rightly underlines – in any process of communication where humans are involved, humans are ultimately responsible for the construction of sense. The anthropomorphization of robots and communicative AI appears therefore in continuity with the ways in which audiences and users have always projected meaning towards media and technology (see Natale, forthcoming). After all, media including photography (Leonardi, 2018), cinema (Casetti, 2008) and television (Boddy, 2004) stimulated visions of cyborgs and human-machine hybrids before the rise of communicative AI and even before the introduction of electronic digital computers in the middle 20th century.

In terms of readership, the books will also appeal to scholars, graduate students, and professionals in other areas such as computer sciences, AI, interface design, cognitive psychology, and sociolinguistics. Gunkel's book will also be a particularly useful resource to instructors, not only due to its accessible language and wide-reaching scope, but also thanks to the five "Maker exercises" included in the last section. These provide useful entry points for students that are not versed in computer programming for experimenting with simple computer programs, such as a chatbot, a machine translation program, and a punk rock lyric generator. This welcomed addition to Gunkel's theoretical explorations calls for an expansion of existing curricula in communication and media studies through the inclusion of practical experiences that aim not much or not only at improving hands-on skills in programming, but at enhancing critical engagement with computing technologies from a social sciences and humanities perspective.

In summary, the new challenges and questions posed by Gunkel and Guzman's books contribute not only a better understanding of the meanings and implications of AI. They also represent an invitation for scholars of communication and media to mobilize existing and new lenses in order to revaluate key concepts and stretch, once again, the very boundaries of this discipline – exactly like the emergence of social media, the Web, personal computing, or television did at different moments within the history of the field. More than the adoption of HMC as the key framework to guide the analysis (as opposed to alternative definitions that have been proposed, e.g. Hepp, 2020 on "communicative robots"), the most significant impact of Gunkel and Guzman's books is the extent to which they will help introduce the problem of the relationship between AI and communication into the very core of communication and media scholarship.

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