Archipelagic Human-Machine Communication: Building Bridges Amidst Cultivated Ambiguity

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Abstract

In this commentary, I call for maintaining the archipelagic character of human-machine communication (HMC). Utilizing the metaphor of the archipelago or a chain of connected islands indicates that HMC entails a variety of islands differing in shape, size, location, and proximity to one another. Rather than aiming for conceptual unity and definitional homogeneity, I call for embracing a cultivated ambiguity related to HMC key concepts. Ambiguity in the sense of allowing these concepts to be flexible enough to be explored in different contexts. Cultivated in the sense of demanding resonance across individual studies and theoretical lineages to allow for cumulative and collaborative theorizing. My hope is that HMC scholars can continue to build bridges that traverse the paradigmatic, methodological, theoretical, and technological archipelago of HMC.

Keywords: human-machine communication, communication studies, cultivated ambiguity, interdisciplinarity, resonance

Introduction

In 2018, Guzman described human-machine communication (HMC) as "the creation of meaning among humans and machines" (p. 1). Since then, and arguably before that, too, scholars from a variety of backgrounds have explored the ways in which humans interact, communicate, and relate with machinic entities such as artificial intelligence (AI), social robots, voice assistants, chatbots, and much more. As scholarship in this subfield of the

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communication discipline is rapidly emerging, the question remains, what exactly is HMC and what sets it apart from other scholarly endeavors into the study of humans' interactions with technology? In this commentary, I make a case for viewing the subfield of HMC as archipelagic and, by considering the implications of this metaphor, call for avoiding rigid notions of so-called "proper" theory and method of HMC in favor of embracing a cultivated ambiguity in method, theory, and paradigmatic approaches to account for the diversity of HMC phenomena and scholarship.

Traversing the Archipelago

In my use of the metaphor of the archipelago, I draw on Simmons and Brisini's (2020) similar use of the metaphor to describe the subfield of performance studies in communication. Rather than constituting a coherent landmass or a distinct separation into two dialectical shores, an archipelago is a chain or group of connected islands situated in close proximity in a body of water. Utilizing the metaphor of the archipelago to describe HMC indicates that our subfield is made up not of a coherent subject or a cohesive body of literature, but rather entails a variety of islands differing in shape, size, location, and proximity to one another. In ways comparable to performance studies in communication, HMC is thus made up of "Different subjectivities, different topoi, different practices and aesthetic traditions, different academic histories, different texts, and different cultures" (Simmons & Brisini, 2020, p. 2) in addition to a multitude of methodological practices and theoretical convictions. With HMC scholars publishing across a variety of scholarly outlets in communication and engineering, AI studies, big data studies, human-robot and human-computer interaction, and more, and with using an increasing variety of methodological approaches to the study of HMC, I find *archipelagic* an appropriate descriptor and valuable assessment for the current landscape of HMC.

Importantly, even though individual islands may be bigger in size compared to others, an archipelago refuses any claim toward a central or main island and shifts the focus more so to the connections among individual islands into a larger entanglement and the various flows of water between and betwixt them. That is, historically speaking, the majority of work on human-computer interaction (and its various disciplinary siblings) has been conducted from post-positivistic perspectives using primarily quantitative and experimental methods. As the methodological and paradigmatic landscapes continue to diversify, scholars have generated insightful scholarship in HMC from qualitative (e.g., Guzman, 2020; Rainear et al., 2021), rhetorical (e.g., Coleman, 2021; Fritz, 2018), autoethnographic (e.g., Chun, 2019), critical (e.g., Davis & Stanovsek, 2021; Dehnert & Leach, 2021; J. Liu, 2021; Moran, 2021; Rambukkana, 2021), posthumanist and new materialist (e.g., Betlemidze, 2022; Dehnert, 2022; Kubes, 2019; Rambukkana, 2021), and other approaches. The formation of these newer islands in the HMC-archipelago complements already existing approaches and allows for conceptualizing HMC from different angles and new perspectives.

HMC finds itself at a unique disciplinary juncture where scholars have become able to generate systematic reviews of this increasingly diverse and growing field. That is, Richards et al. (2022) examine the scholarship trends of HMC research from 2011 to 2021 in communication journals, which is complemented by Makady and Liu's (2022) review of publication

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trends across top-ranking journals in roughly the same time frame. Whereas Richards et al.'s (2022) analysis focuses primarily on communication journals, Makady and Liu's (2022) review includes journals with different disciplinary affiliations as well, thereby taking into account how many HMC scholars publish beyond communication outlets in fields such as human-computer interaction, human-robot interaction, AI studies, or psychology. Makady and Liu (2022) and Richards et al. (2022) concur with yet a third recent systematic review, F. Liu et al.'s (2022), when they all observe the highly interdisciplinary character of HMC as a subfield. All three reviews end with a call for more diversified approaches, be it related to the study of specific technologies, utilizing variegated methods, or working toward unique HMC theory. This also means recognizing the specific methodological challenges that come with researching humans and machines communicating (Greussing et al., 2022). As F. Liu et al. (2022) argue, "a complete understanding of HMC is only possible when multiple methods are used to validate results, produce new knowledge, and further define the scope of the field" (p. 26). Even though this field of HMC, as Richards et al. (2022) conclude, may benefit from a balance of methods, samples, and approaches, it already achieves networked collaboration and cross-, trans-, and interdisciplinary conversations: "HMC has defied R. T. Craig's (1999) prediction of drastically diverse fields not being able to work together" (Richards et al., 2022, p. 54). Based on these impressive reviews of the young and dynamic field of HMC, I return to the island-metaphor below and consider how to understand HMC as archipelagic.

Embracing Cultivated Ambiguity in HMC Research and Scholarship

As indicated above, Guzman (2018) originally formulated HMC as "the creation of meaning among humans and machines" (p. 1). Alongside others within the communication discipline and beyond, HMC scholars have generated insightful scholarship that investigates these four components in depth, asking about the nature of the human, the machine, how to conceptualize meaning, and how meaning is created in interactive and communicative processes between humans and machines. With ongoing difficulties in clearly conceptualizing and defining emerging technologies such as AI (Gunkel, 2020), big data (Croucher, 2022; Parks, 2014), robots (Fortunati & Edwards, 2021), and others, it will be interesting to see how HMC scholars approach the study of meaning-making processes in these contexts. Rather than calling for conceptual homogeneity by laboring toward clear definitions of these machinic constructs—which could certainly be one goal of disciplinary endeavors aimed at maintaining legitimacy—I offer a plea to cultivate an ambiguity as it relates to our conceptualization of these key components of HMC. Let me explain.

By cultivated ambiguity I do *not* mean a complete avoidance of articulating conceptual, theoretical, and operational definitions of the things that we study when we "do" HMC— humans, machines, and their interactions as they create meaning. In fact, conceptual work such as Shaikh's (2023) definitional framework for intelligent assistants or Mooshammer's (2022) proposed terminology for automation in journalism allow for clearly articulating our terms, help us explicate what technologies we study, and make comparisons across studies possible in the first place. Nor is my goal to call for scholars to intentionally confuse

our use and understanding of those fundamental terms and concepts. Rather, my hope is that, as HMC continues to unfold and as technology continues to advance at a rapid speed, we as HMC scholars remain open to different definitions of these key components of HMC instead of demanding definitional consensus among different paradigmatic convictions, methodological approaches, and contexts. What I am gesturing at is a sense of curated interpretive flexibility that allows for conceptual resonance, not homogeneity, across the various contexts in which we study HMC.

Not only are we exploring the interplay of humans and machines across all contexts of communication—be it interpersonal (e.g., Ryland, 2021; Spence et al., 2014), organizational (e.g., Piercy & Gist-Mackey, 2021; Spence et al., 2018), instructional (e.g., Edwards & Edwards, 2017), or mass-mediated (e.g., Lewis et al., 2019), to name but a few—we are also tasked with apprehending a multitude of technical features that make up what we capture under the umbrella of "machine"—be it artificial intelligence (an ambiguous term in itself consisting of some form of algorithms, machine learning, deep learning, natural language processing, and more; cf. Gunkel, 2020), voice assistants (Etzrodt & Engesser, 2021; Moran, 2021), chatbots (Croes & Antheunis, 2021; van der Goot, 2022), social robots (Chun, 2019; Fritz, 2018; J. Liu, 2021), or more. Taking these technical differences, the rapid speed at which they are advancing, as well as the variegated contexts in which humans interact with machines into consideration, alongside the multitude of methodological, theoretical, paradigmatic, and political approaches in HMC, I find it both challenging and radically limiting for the larger HMC project if we were to call for conceptual homogeneity and definitional unity.

In fact, once we start calling for rigid definitions of the key concepts and technologies we study, we foreclose potentiality, theory-building, and innovation in our field. Removing all conceptual "wiggle room" by demanding that our definitions of human, machine, and human-machine communication remain similar across all contexts would result in our young HMC project idling, turning into a stalling field that becomes outpaced and outdated as technology advances and our human-machine experiences become ever more interrelated. While a high degree of conceptual unity might result in high internal validity across studies, our field's external validity would increasingly shrink with the lack of alternative perspectives, theories, and approaches. The result would be a field that has become out of touch with its subjects and objects of study, losing its critical edge. And finally, with unity in definitions comes unity in approaches, with which comes unity in scholars and scholarship represented. And with such unity comes the necessary exclusion of perspectives, approaches, and scholars who think and theorize otherwise. As debates related to canonization in the discipline of communication and its subfields (e.g., rhetoric; Baugh-Harris & Wanzer-Serrano, 2018) have made abundantly clear, conceptually unified fields bring not only epistemological flaws, but more consequentially political violence (Calvente et al., 2020). And this is not only represented on citational levels, but has much deeper implications (Freelon et al., 2023).

But where does this call for conceptual unity or coherence come from? Those of us who are familiar with the disciplinary origins and character of communication studies are aware of the many ongoing debates related to what makes the communication field a field. With oft-cited work such as Craig's (1999) hallmark essay and others as prominent examples,

commentators and scholars have long expressed the values of a more coherent field. The question about the identity of the field of communication and, by extension, of HMC, is however a complicated one. Pushing against the desire for a coherent field, McCann et al. (2020) poignantly write: "Our identity as a discipline lies in the very truth we wish to jettison: our field's theoretical and methodological plurality, promiscuity, and fragmentation" (p. 249). Operating within a fragmented and promiscuous field, then, we as communication and HMC scholars may consider alternatives to striving for a coherence and unity that is beyond our reach, especially given the unique qualities of the field of HMC as I discuss later.

Hence, the plea I put forth in this commentary is one that calls for embracing a cultivated ambiguity as it relates to the key components that make up HMC. *Ambiguity* in the sense of allowing these concepts to be flexible enough to be explored in different contexts and from different angles, thereby avoiding the foreclosure of non-post-positivistic and nonquantitative approaches to the study of HMC. *Cultivated* in the sense of demanding a certain sense of resonance across individual studies and theoretical lineages within the larger frame of HMC to allow for cumulative and collaborative theorizing, where future work can build on and extend previous research. The task is to engage in this elaborate dance between cultivated ambiguity and conceptual resonance of concepts within and across individual studies, theoretical perspectives, and paradigmatic and methodological approaches to the study of HMC.

Building Bridges Across Islands: A Plea for an Enmeshed Archipelagic HMC

Rather than heralding the importance of particularly prominent islands in the HMC-archipelago, then, or rather than focusing on prevalent formations across individual islands and their surrounding bodies of water, this embracing of cultivated ambiguity calls for building bridges across (perceived) divides—connecting islands in an increasingly entangled network or enmeshment of trans-methodological, trans-theoretical, and trans-paradigmatic conversations. The field of HMC is particularly well-suited for archipelagic bridge-building. Although its more formal characterizations can be dated to 2018 with Guzman's edited collection, to 2019 with the creation of the HMC Interest Group at the International Communication Association, and to 2020 with this journal's first issue, HMC scholarship and scholars can be traced back much earlier and found in fields such as science and technology studies, sociology of communication, human-machine relations, or human-robot interaction, among others. Functioning as an interdisciplinary umbrella framework encapsulating approaches within and beyond communication studies (Guzman, 2018), HMC consists of many islands that approach the study of human-machine interaction by centering communication, its context, and its impact on the sociotechnical subjects in relation. At this juncture of more formally and more consciously articulating the character of the field of HMC, being aware of the risks that come with disciplinary coherence is crucial for not repeating what we have seen in other subfields of communication, such as rhetoric. Archipelagic bridge-building and cultivated ambiguity can serve as powerful metaphorical heuristics that generatively question a desire for coherence.

Outlets like this subfield-specific journal *Human-Machine Communication* provide an excellent space for such archipelagic conversation (the journal has published an impressive variety of scholarship focused on HMC in its first volumes; cf. Fortunati & Edwards, 2021), and my hope is that this impetus will resonate across other outlets as well. In so doing, HMC can continue to pose demanding questions to the communication discipline. For example: What does it mean to be human or machine in communicative encounters? What are the boundaries of what constitutes communication? What—or who—constitutes a necessary condition for the creation of meaning in HMC? These questions can be asked while remaining on top of technological developments and how they impact and implicate the human communicative condition.

Examples of such bridge-building and island-traversing projects include historiographical work such as Bory et al.'s (2021), which allows for contextualizing canonical histories of technological developments related to AI, machines, and robots more firmly from a communication perspective. In doing so, they span interdisciplinary conversations yet articulate the contributions of a communication and media studies perspective (cf. Gunkel, 2020). Natale and Guzman's (2022) recent special issue calls for reclaiming the human in machine cultures across a variety of use-cases and contexts, and Sundar and Lee's (2022) recent special issue calls for rethinking communication in the era of AI. Etzrodt et al.'s (2022) recent special issue maps the landscape (dare I say archipelago) of HMC research, surveys its trends, and discusses future possibilities and challenges for our young field.

Bridge-building amidst cultivated ambiguity means recognizing the value of collaboration—across stages of careers, geographical and cultural distances, technological contexts, methodological approaches, and theoretical lenses. It means bringing scholarship and scholars with variegated disciplinary affiliations in conversation with each other. It means recognizing the value of interdisciplinary publications and publications outside communication journals for tenure and promotion cases. And it means embracing different, sometimes even opposing, perspectives on the technologies we study, theories we develop, and methods we utilize.

As an archipelago, then, rather than a coherent landmass or set of dialectical shores, HMC provides ample space for embracing diversified approaches to the study of human-machine interaction and can foster the growth of unique, innovative, and insightful research and scholarship. Cultivated ambiguity in this sense then celebrates interpretive flexibility as we articulate and rearticulate HMC across its diverse aspects coupled with the need to hold ourselves accountable as we express connections and disconnections between various traditions, approaches, and theories within HMC. The practice and art of cultivating this archipelago emerges through ongoing reflexive praxis aimed at fostering resonance and reverberation rather than uniformity. A consequence of such an archipelagic conceptualization of HMC is the recognition that this—*our*—subfield's boundaries are open to (re)formation and (re)connection—across islands within this archipelago as well as beyond its perceived coherence into communication studies and other adjacent disciplines. The goal is to maintain this archipelagic spirit in the subfield of HMC.

Author Biography

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