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Searching for the Right Metaphors to Understand and Interrogate the AI Age

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The invention of the printing press allowed the rapid dissemination of science, culture, and knowledge that many refer to as the Enlightenment, the Renaissance, or the Scientific Revolution (Dewar, 1998; Kissinger, Schmidt, & Huttenlocher, 2023). Many scholars and experts believe AI will be as transformative as the printing press and usher in unprecedented growth in knowledge and human potential (Ball, 2023; Kissinger et al., 2023; Sforza, 2023). Of course we can't yet know whether AI will be as transformational as the printing press, but this comparison invoked by thought leaders reveals the human impulse to use metaphors to make sense of an unpredictable future.

My sense is that we are entering a new era of knowledge production that will profoundly impact civilization. We see glimpses everywhere of the potential of AI. Business professionals are rapidly adopting these tools to create content and communicate. The major software vendors are integrating AI into personal productivity software. More than any other reason, I believe we are entering a new era because AI is now available for any person to use in novel ways. People need no technical skills. They can use natural language to engage AI applications to imagine and create. I'll refer to this new era as the AI Age.

Business communication scholars and instructors are uniquely positioned to provide guidance in the AI Age. The rapid adoption of AI tools in the past year is largely to support communication tasks, which I'll refer to as AI-mediated communication (AI-MC) (Hancock, Naaman, & Levy, 2020). Business practitioners engage in the following AI-MC activities: researching ideas, drafting emails and reports, creating images for logos and business plans, creating social media posts, revising text in communications, and other similar applications. While business communication scholars have increasingly explored the impact of AI on business communication in the past five years (e.g., Getchell et al., 2022; Lee, 2020; Son, Lee, & Chang, 2019), this moment is unique: only in the past year have nearly all business professionals had easy access to generative AI. We are entering unchartered terrain.

In early 2023, several colleagues and I surveyed around 340 business communication instructors about AI and writing instruction. Business communication instructors are uniquely qualified to evaluate how new technologies influence communication. Many experts and software vendors tend to emphasize the technical side of new technologies, whereas these instructors were able to identify the profound influences AI may have on human relationships, capabilities, and autonomy. Instructors in this project specifically commented on the challenges and opportunities associated with AI-assisted writing. They collectively suggested that AI literacy requires competencies in application, authenticity, accountability, and agency (Cardon, Fleischmann, Aritz, Logemann, & Heidewald, 2023a).

Interestingly, business communication instructors in our study sought to make sense of generative AI in terms of metaphors. They referred to AI as similar to various tools, applications, and services, such as a calculator, Wikipedia, a computer,

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a mobile phone, Roomba, Google Maps, PhotoShop, and Chegg. The impulse to look for metaphors is common. Metaphors can help people make sense of complex and uncertain phenomena (Dioko, Harrill, & Cardon, 2013). AI metaphors and narratives have been featured prominently in movies and television for decades. These metaphors serve to help people make sense of the impact of AI on people, yet these metaphors can distort or even inaccurately portray reality (Hermann, 2023).

In this essay, I seek to offer metaphors that may be used in the context of AI literacy, which is comprised of application, authenticity, accountability, and agency (Cardon et al., 2023a). I start with an evaluation of the calculator metaphor. It is the most common metaphor in public discourse about AI in the context of education (Warner, 2023). Then, I offer a variety of metaphors for discussion and exploration. These metaphors can be helpful to practitioners who are often perplexed about how to develop norms and policies for AI in the workplace (Cardon, 2023; Cardon, Getchell, Carradini, Fleischmann, & Stapp, 2023b). These metaphors may also help business communication scholars and instructors think about how to discuss AI with students and how to frame questions for research.

One reason to explore metaphors is because they can counter the dominant and sometimes one-sided public course about AI. Specifically, software vendors seek to frame the conversation about AI exclusively in positive terms with limited acknowledgement of the downsides. For example, Microsoft has sought to control the conversation by referring to the current phase of AI adoption as moving from *autopilot* to *copilot*, suggesting AI will give working professionals more agency, creativity, and productivity (Microsoft, 2023). By exploring metaphors to capture positive and negative possibilities of AI use, instructors and students are better able to navigate the profoundly disruptive changes that AI may cause.

Calculator as an Acceptable but Incomplete Metaphor of Application

In our study of business communication instructors, the AI literacy competency of application involves "an understanding of AI tools and how well they align with communication tasks" (Cardon et al., 2023a, p. 10). Many business communication professors compared ChatGPT to a calculator. One common statement is that the "ChatGPT is to writing as the calculator is to doing math" (Warner, 2023). The calculator metaphor is somewhat useful for *application*. ChatGPT can be used to assist in routine writing tasks (Cardon et al., 2023b). It is also a useful metaphor in the context of teaching in that instructors should learn to teach in new ways that focus on more critical thinking and higher-order learning (Cardon et al., 2023a). However, the calculator metaphor rests on an assumption of complete accuracy. For nearly all basic math problems, calculators retrieve the same answer, and the answers are always correct. By contrast, generative AI produces varying content to the same prompts and is often incorrect or biased (Cardon et al., 2023a; Scheider, Bartholomeus, & Verstegen, 2023).

As far as application, a more useful metaphor may be that of Wikipedia. Here are a few statements from business communication instructors in our study about Wikipedia:

- I will be talking about chat GPT [in my classes], however, and letting students know that it can be a beneficial and useful tool for professional writers. This controversy reminds me of the controversy surrounding Wikipedia when it was first introduced. Many believed that it was the Wild, Wild West, and that information on Wikipedia could not be validated. Now we see that Wikipedia, because it is moderated by experts all around the globe, is a useful source of information and a great place to start research. There's no reason to fear Wikipedia or ban its use. The same should be said for ChatGPT.
- Instructors should not fear it [generative AI]. It can be the starting point for creative writing, just like Wikipedia is the starting point for deeper research on many topics, academic or otherwise.

Wikipedia is a useful metaphor because people generally understand its value and limitations. It is one of the most popular websites because most people understand they can quickly answer questions with it. At the same time, they recognize that much of the content on Wikipedia is subjective, changing, and debatable, since it was co-written by volunteers who constantly edit page entries.

Exploring Other Metaphors for Authenticity, Agency, and Accountability

Our study of business communication instructors was particularly useful in expanding the view of AI literacy. Historically, most conceptualizations of AI literacy have been created primarily by technologists and, as a result, are primarily technical in nature. One transformative aspect of generative AI is that it is available to nearly everyone and requires little to no technical background. Thus, issues of content accuracy, relationship building, and ethics are more significant considerations in AI literacy. Here we explore some metaphors that could be useful in terms of authenticity, agency, and accountability.

In the context of the AI literacy model, authenticity involves

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"focus on genuine communication and prioritizing the human element" (Cardon et al., 2023a, p. 10). Business communication scholars and instructors have long emphasized the importance of relational concepts such as sincerity, honesty, trust, and voice in both substance and style. As AI-MC becomes more common, the relational foundations of communication may be threatened. Emerging research already suggests that AI-MC is perceived as less authentic (Glikson & Asscher, 2023).

In a world of AI-MC, the ideal remains authenticity. Many business communication instructors refer to the importance of voice, an important metaphor that refers to a person's unique individuality (Bowden, 1995). Thus, *voice* can serve as a metaphor for people who maintain authenticity. Conversely, those who are perceived as using AI-MC in generic and essentially automated ways might be referred to as inauthentic and *robotic*. An important element of authenticity in the AI literacy model is building relationships. A positive metaphor for the ability to develop relationships with AI-MC could be a *bridge*, whereas a negative metaphor for how AI-MC might damage relationships could be a *sinking ship*.

Agency involves "professionals retaining control to make their own choices" (Cardon et al., 2023a, p. 10). Many business communication instructors in our study referred to AI as a short cut in the context of writing. They were deeply concerned that AI could limit or even inhibit human development and human flourishing as AI effectively makes many decisions for us. Thus, useful metaphors might be a *crutch* or even a *cage*. On the other hand, many people envision ways in which AI could empower professionals and students to learn faster and enhance creativity, effectively becoming super thinkers (Davenport & Mittal, 2022; Eapen, Finkenstadt, Folk, & Venkataswamy, 2023; Malone, 2018). For people who can use AI to enhance their thinking to make more strategic, conscious, and informed decisions, AI might be a *ladder* since AI literally gives a step up in their thinking and uncovers a larger view of what is possible from up above.

Accountability involves "taking responsibility for the accuracy and appropriateness of AI-generated content and using generative AI in a fair and equitable manner" (Cardon et al., 2023a, p. 10). As far as accuracy, one metaphor might be to put all AI-generated content under a *microscope*. The clear implication would be that all professionals and students should fact-check everything. On the other hand, people who do not fact check might be referred to as viewing the world with *broken glasses*, not accurately interpreting the AI output they see.

In the AI Age, I think each of the nearly 8 billion people on earth should become AI ethicists. We will rely on our collective wisdom to ensure that there is always a *human in the loop* in ethical ways (Fügener, Grahl, Gupta, & Kette, 2021; Zanzotto, 2019). To the degree that people are thoughtful about AI ethics, they will be able to provide informed input about AI-mediated policies and practices (Cardon, Ma, & Fleischmann, 2021). A useful metaphor for ethics might be a *moral compass* (Figure 1). On the other hand, a metaphor for the dangers of AI not guided by human values might be a *paper clip*. The paper clip metaphor was developed by Nick Bostrom, who fears that AI could become a superintelligence that carries out directives without considering consequences to people. He famously wrote about scenario in which AI is told to make as many paper clips as possible. AI decides to kill people and make their remains into paper clips (Bostrom, 2014; Leswing, 2023).

I opened with a reference to the printing press. This reference itself is metaphorical. Even if AI proves to be as transformative as the printing press, there are problems with this metaphor. As Kissinger et al. (2023) explain:

- A new technology bids to transform the human cognitive process as it has not been shaken up since the invention of printing. The technology that printed the Gutenberg Bible in 1455 made abstract human thought communicable generally and rapidly. But new technology today reverses that process. Whereas the printing press caused a profusion of modern human thought, the new technology achieves its distillation and elaboration. In the process, it creates a gap between human knowledge and human understanding.

Figure 1. Can we engage in AI-mediated communication with our moral compasses to build bridges? Image created with AI in Midjourney (https://www.midjourney.com/).

> If we are to navigate this transformation successfully, new concepts of human thought and interaction with machines will need to be developed. This is the essential challenge of the Age of Artificial Intelligence.

This interpretation by Kissinger et al. (2023) of how the printing press metaphor does not entirely align with the influence of AI on civilization is thought provoking. This is an example in which metaphors—even when not perfect—help guide conversations about the past in ways that can inform our views and plans for the future.

Research and Discussion Questions for Business Communication Scholars

I hope business communication scholars and instructors will adopt a leading role in building evidence-based, consensus driven norms, values, and practices for AI-MC. The AI metaphors I suggest can support a variety of broad research and discussion questions as displayed in Table 1. Admittedly, these metaphors are far from perfect, but they can be conversation starters. I encourage instructors to lead discussions around metaphorical language to stretch students' imagination and critical thinking. These discussions will likely lead to more accurate and more interesting metaphors. I also encourage scholars to use metaphors as they consider research questions. As we enter new terrain, these metaphors may inspire new types of questions and lines of inquiry.

Conclusion

Each of us is now on an AI journey, whether we like it or not. We will likely need to grapple with the profound changes and disruptions created by AI. Metaphors can help us in this sensemaking journey and interrogate the degree to which AI improves or harms our lives at home and in the workplace. I trust the business communication community to lead this conversation in ways that allow people to use AI as a ladder rather than a crutch, as a bridge rather than a sinking ship, and with a moral compass rather than a paper clip.

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Table 1. AI metaphors and related questions for research and the classroom

Metaphor	Broad research and discussion question
Voice versus robot	• To what degree do communicators insert their unique views and feelings into AI-MC? • To what degree to communicators accept the recommendations of AI in the process of AI-MC?
Bridge versus sinking ship	• To what degree does AI-MC contribute to better relationships? • To what degree does AI-MC lead to less trust in relationships? • How does disclosure that AI is part of AI-MC contribute to trust between peoples involved in AI-MC?
Crutch versus ladder	• To what degree does AI limit people's choices for any given decision? • To what degree does AI reduce people's learning and development (and ability to make informed choices in the future)? • To what degree does AI expand the choices for any given decision? • To what degree does AI increase people's learning and development (and ability to make informed decisions in the future)?
Microscope versus broken glasses	• To what degree have all the facts and reasoning in AI output been verified by a communicator? • To what degree has a communicator relied on AI output without careful factchecking?
Moral compass versus paper clip	• To what degree do communicators rely on shared human values to develop and craft messages and other content? • To what degree is AI-MC informed and guided by consent and consensus among all parties involved? • To what degree do communicators rely on the normative recommendations of AI to develop and craft messages and other content? • To what degree is AI-MC undisclosed to some parties involved in the communication?

Note. AI-MC, AI-mediated communication.

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