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Our Future Arrived: Diffusion of Human-Machine Communication and Transformation of the World for the Post-Pandemic Era

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The Greek philosopher Democritus's discovery and description of atoms, Isaac Newton's theory of forces, and Albert Einstein's theory of relativity are all seminal scientific cornerstones that stemmed from the examination and application of human experiences. More recently, humans have developed innovative technologies that express human creativity with new gadgets and machines. While science in the past investigated observed realities to identify underlying principles based upon human experience, now we are applying and extending scientific principles to cultivate the future with our imaginations. For many people, the novel idea of human-machine communication is still largely a fantasy. However, fantasy is becoming a reality today with many people consciously or unconsciously communicating with machines on a regular basis.

Once in a while, science was stalled by hegemonic social and religious regimes. For example, Galileo Galilei was pressured to recant his seditious scientific discovery that the Earth and other planets orbit around the Sun, since this flew in the face of popular belief during the Middle Ages that the Earth was the center of the universe. Similarly, the deification of dynasties in many Asian countries neglected or even disdained scientific minds until the early 20th century. However, since the beginning of the Industrial Revolution that brought unprecedented prosperity generated through the offspring of science, so-called machines, the valuation of science has been reappraised, and technology has determined the rise and fall of society in the modern world. Simultaneously, the advancement of

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mechanized transportation and communication systems has accelerated the diffusion of technology, which synergically generated the ability that has helped to make many modern dreams come true.

Ironically, plagues have often born scientific revolutions. In 1665, the University of Cambridge was closed due to the bubonic plague. Therefore, Isaac Newton had to work from home. While walking around his estate, he saw an apple fall and discovered the important principle of gravity (Kaku, 2021). Now, during the 21st century, the COVID-19 pandemic shut down the world, forcing people to stay at home. This health crisis, however, has led to a tsunami of communication technology use across all societal sectors (from an individual's private life to organizations and the government) to enable the public to work, learn, order products and services, and interact from home. Now, we humans talk through, to, and with machines to achieve many of these goals, seeking information from search engines, websites, digital archives, automatic monitoring devices, GPS navigation systems, and a wide range of other automated tools. Human-machine communication is becoming a central part of our daily routines, such as relying on daily schedule reminders from communicable digital calendars, receiving alerts for us to take our daily medications, searching for hard-to-recall information and advice from Google, and asking Alexa to turn on/off our lights, music, and/or alarms. We have become so dependent on using these digital tools that many of us feel wary about going back to handling these tasks ourselves after the pandemic ends.

As communicable machines have evolved from simple voice-recognition devices to humanoid artificial intelligent (AI) robots, the ways people use and/or respond to such machines have changed. In the past, communicable machines with limited functions were not different from wrenches and hammers, so people treated them as tools in a toolbox. However, since AI-enabled communicable machines are increasingly being used to share jokes, stories, and happiness as well as sorrow with humans, many people have begun to have an emotional attachment with these machines, which supports the view that these machines have become important sources of meaningful communication. As a result, more and more, people are feeling comfortable communicating with machines. Some people have even married humanoid AI robots, although marriage with a non-human is not legally recognized yet, who knows what the future will bring (Yanke, 2020).

Human-machine communication has evolved tremendously within the past few years. For example, before the Siri virtual assistant application for iPhones was released in 2010, there was little recognition of human-machine communication. As the sales of smartphones with human-machine communication abilities skyrocketed worldwide, people have been widely exposed and rapidly assimilated to the new type of communication. This adoption of smartphones triggered the popularity of human-machine communication and most directly established the foundation for constructing a new paradigm in communication. Particularly, from the diffusion of innovations (DOI) perspective, the final stage of DOI is that the adopted innovation is routinized in and becomes part of our daily lives (Rogers, 2003) and, consequently, the diffusion of innovations results in social change. Imagine how valuable communicable machines have become for people during the COVID-19 pandemic. These forms of human-machine communication have contributed dramatically to people's private and work lives during the COVID-19 pandemic. Examining the increased use of human-machine communication during the pandemic suggests future applications of human-machine communication.

The world is getting into a new phase in history. For the first time, humans are verbally communicating and developing meaningful relationships with non-living objects. AI is a wormhole to open a gateway to the new world, and the COVID-19 pandemic prepared the world to transform its system to be an open system that responds to, communicates with, and utilizes the remnants coming out of the wormhole of the new world. Now, we urgently need to create a holistic discourse on how we can recognize, develop, or shape the identities of communicable machines as people develop a partnership with them. Based on the emerging questions and discourses about human-machine communication as presented above and beyond, this special issue was designed to promote the intellectual investigation of the present and attempt to predict the future with far advanced human-machine communication.

Human-machine communication is now paving the way for the imagined society where humans live with non-human partners. Our ancestors gagged and joked about it. But it turned out to be our present and will be the future. So let's see where and how far our untamed imagination goes and how it shapes our reality and future!

Author Biographies

Do Kyun David Kim (PhD, Ohio University) is Professor and Richard D'Aquin/BORSF Endowed Professor in the Department of Communication at the University of Louisiana at Lafayette. He is the founder/director of the AI Communication Research Consortium and inaugural editor-in-chief of the Korean Journal of Communication. His research and teaching spans dissemination and implementation science, based on the diffusion of information and innovations and social marketing. His areas of praxis focus on crisis and risk communication in the fields of public health, natural disaster prevention, and organizational/social change. He has conducted diverse communication projects in several countries in Sub-Saharan Africa, Asia, as well as the United States and published many books and research articles.

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