ORGANIZATION SCIENCE

Call for Papers
Special Issue of *Organization Science:* Emerging Technologies and Organizing

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Background

Emerging technologies such as artificial intelligence, data analytics, robotics, digital platforms, social media, digital traces, blockchain, and 3D printing are increasingly reshaping human action and interaction in domains as varied as consumer credit-risk assessment, product design, platform work, healthcare diagnosis, hiring, predictive policing, custom manufacturing, automated fraud detection, consumer services, and surveillance. From organizational boundaries to employment relationships to individuals' identification with organizations, these technologies are increasingly deployed in almost every process, form, and condition for organizing; their adoption and use are thereby calling into question our fundamental theories and ideas about organizations and organizing. This Special Issue seeks to advance scholarly understanding of how these theories and ideas need to evolve in the context of these new technologies.

Studies of new technologies have long been central in organization theory. Early organizational theorists treated technology as a fundamental shaper of organizational form and function (Perrow 1967; Thompson 1967; Galbraith 1973). But since those early works, only a small number of researchers have continued to foreground the role of technology in the organizing process (Zammuto et al., 2007; Orlikowski and Scott 2008; Leonardi and Barley, 2010). There is good reason why a line of inquiry that was once so central to theories of organizing has waned. Although organizations often have experienced technological change as a disruptive or difficult transition, the primary outcome of those changes has been to increase organizations' abilities to automate and informate existing processes. Consequently, until now, our existing theories of technology's role in organizing processes have been largely adequate to explain changes in work and organizing. We see the utility of prior theories of automating and informating in studies of innovation and technology adoption, strategy, entrepreneurship, organizational design, markets and business models, online communities, work practices, occupations, and employment (e.g., Barley 1990; Adler 1992; Orlikowski and Barley 2001; Hinds and Kiesler 2002; von Hippel and von Krogh 2003; Pentland and Feldman 2007; Faraj et al. 2011; Bailey et al. 2012; Barrett et al. 2012; Leonardi 2012; Yoo et al 2012; Orlikowski and Scott 2014; Bailey and Leonardi 2015; Faraj et al. 2016; Majchrzak and Malhotra 2016; Felin et al. 2017; Massa et al. 2017; Beane 2018).

Technologies currently emerging do far more than automate and informate. As a result, they pose new and significant challenges to organization science that set them apart from prior technologies. We can point to four key factors responsible for this distinction.

First, in the past decade emerging technologies have become increasingly "intelligent:" they continuously acquire knowledge and skills, possibly operating autonomously, or in consort with humans, in the world in ways that appear intentional. Current developments in such areas as robotics, machine learning, deep learning, autonomous vehicles, smart sensors, intelligent diagnostics, augmented reality, data analytics, additive manufacturing, and immersive environments are leading to the emergence of intelligent technologies that could someday

mimic or possibly outperform humans in a wide variety of skilled and cognitive acts. For example, intelligent technological actors are increasingly performing work such as collecting and processing information; dividing, assigning, and integrating tasks; allocating resources; and making decisions (Faraj et al. 2018). Industrial robots can sense and manipulate objects; using advanced vision systems, robots in agriculture can pick fruit and prune trees (Brynjolfsson and McAfee 2014; Ford 2015). Digital bots, consequential in marketing and political campaigns, can act as virtual assistants that interact online or by phone with customers and others (Gustavsson 2005). Moreover, immersive and augmented reality technologies are transforming the way organizations conduct training and work by placing distant objects or people in one's local environment (Chandler 2017; Chaykowski 2018). This ability to learn and act autonomously makes intelligent technological actors very different from most technologies historically used in organizations. For this reason, they challenge existing conceptualizations of technology in organizational theory and invite a fundamental re-examination of technology's role in organizing by a wider spectrum of organizational scholars (von Krogh, 2018).

Second, leveraging the vast troves of data gained through the digital applications that increasingly govern our social, consumer, and work lives, emerging technologies permit new forms of back-end analytics that greatly enlarge the reach of organizations in tracking, monitoring, deciphering, and directing the behaviors of individuals and groups. Social media sites collect comprehensive trace data about people's activities, preferences, and interactions. Platform work sites capture an array of worker performance information such as number of accepted jobs and client rating of work (Lazer and Radford 2017); employers of truck drivers, warehouse workers, and retail clerks, among others, minutely track their activities and transactions (Levy 2015; Wilson 2013); wellness programs encourage the use of fitness wearables that extend data collection to workers' exercise and health habits (Ajunwa et al. 2017); and all manner of organizations gather detailed performance data in the background through employees' and customers' use of computer and software systems (Zuboff 2019). The result is an increasing transparency of work processes and quantification of work outcomes, a rise in audit cultures and the use of metrics within organizations, and a "gamification" of work that promotes worker competition (Espeland and Stevens 2008; Deterding et al. 2011; Cohen 2015), culminating in what Zuboff (2019) insightfully labeled "surveillance capitalism."

Third, emerging technologies enable new approaches to innovation and collaboration within and across organizations. As people and organizations engage in new forms of collaboration such as open innovation, online knowledge communities, open science, and open source development, they accelerate the recombination of ideas and development of novel products and processes. They also rapidly disrupt existing market and industry structures. Moreover, organizational boundaries become increasingly porous: in many cases, the ideas and knowledge that prove most relevant for innovation reside without, not within, a focal organization. Overall, these new forms of collaboration erode traditional epistemic, organizational, intellectual property, and national boundaries. At the same time, geography can take on greater importance as local, civic, and financial actors attempt to develop clusters of

innovation, some based on regional strengths, some based on novel technology, and some marrying both (Cohendet and Simon 2016).

Finally, recent decades have witnessed an unprecedented acceleration of technology diffusion and adoption. While electricity took 52 years to reach 50% of the U.S. population and the Internet took 10 years to do so, recent technologies such as social media, smartphones, and tablets took only a handful of years to do so (Rothaermel 2015). This rapid technology diffusion and adoption set the stage for organizations to more directly and quickly reach their customers, often via little more than the download of an application on a smartphone. As a result, emerging technologies are transforming how, when, and where work gets done, as well as by whom and for whom, leading to the creation of new business models (e.g., new employment arrangements via platforms whose algorithms enable the short-term contractual engagement of independent workers).

With the potential for such changes in scope, new questions arise about how organizing can and should happen in the future, including questions related to coordination, control, communication, hierarchy, professional roles and boundaries, socialization, practices, and much more. These technologies are also prompting a rethinking of the taken-for-granted separateness between human and nonhuman, organization and artifacts, action and effect, thus inviting the development of relational, performative, communicative, and sociomaterial analyses (Barley and Leonardi 2010; Orlikowski and Scott 2014; Kuhn et al. 2017). These organizing questions demand theorizing and research beyond a narrow focus on mass unemployment (which is a more distant problem) and human–artificial intelligence (AI) interactions (which are often construed only in functional work terms related to task assignment) that appears in the contemporary discourse (Brynjolfsson and McAfee 2014; Ford 2015; Kaplan 2015).

This call for papers addresses scholars across a range of communities with a shared interest in advancing organization studies in the face of emerging technologies, including work and technology, management of technology and innovation, strategic management, organization behavior, organization theory, business ethics, organizational communication, entrepreneurship, international management and more. We encourage submission of ground-breaking conceptual and empirical work that can help shape the way we understand the relationship between organizations and emerging technology. For example, we are seeking papers that propel scholarship by opening up new theoretical domains or redirecting debate on the relationship between organizing and emerging technologies. Papers that address questions on the role of emerging technology in shaping our own field of inquiry are welcome, including research that uses such technologies to help us understand and predict organizational phenomena better. The special issue will be open to papers employing qualitative, quantitative, or mixed methods.

Special Issue papers should focus on questions that investigate implications of emerging technologies for organization theory and research, including, but not restricted to:

- How do emerging technologies alter work content and processes, including the way knowledge is transformed, shared, and created?
- What happens when emerging technologies outperform their human counterparts? For example, how does technologies' performance affect workers' careers and human resource management?
- How do emerging technologies affect labor markets and transform occupational jurisdictions?
- How do emerging technologies alter the design of organizations? What tasks, functions, or domains of organizing may be enhanced, complemented, or substituted by emerging technologies?
- How do emerging technologies reconfigure organizational boundaries, possibly transforming organizing and coordinating within and across organizations?
- How do emerging technologies alter power structures inside the organization?
- How do emerging technologies affect the spatial and temporal dimensions of organizing?
- How do new technologies affect the development of organizational capabilities and shape the competitive landscape and strategies of firms?
- How are interorganizational relations and institutional fields affected by the reliance on emerging technologies? For example, to what extent does the ownership of data and intellectual property used and generated by emerging technologies change relations and fields, creating opportunities for new business models?
- In what manner does the rapid advancement of emerging technologies give rise to entrepreneurial opportunities?
- How do organizations trust or verify the work of emerging technologies?
- What is the dark side of using emerging technologies (e.g., discrimination, hidden bias, harmful behavior)? What are the ethical questions and dilemmas that come to the fore?
- How does technologically enabled monitoring influence employees' attitudes, behaviors, and performance?
- In what ways are emerging technologies enabling us to measure, analyze, or explore organizational phenomena in new ways?

2. Review Panel

Alessandro Acquisti, Carnegie Mellon University	Sara Kiesler, Carnegie Mellon University
Shahzad Ansari, University of Cambridge	Tim Kuhn, University of Colorado Boulder
Michel Anteby, Boston University	Ann Langley, HEC Montreal
Stephen Barley, UC Santa Barbara	Sheen Levine, University of Texas Dallas

Steven Johnson, University of Virginia	Batia Wiesenfeld, New York University
Jannis Kallinikos, London School of Economics	Anita Woolley, Carnegie Mellon University
Sarah Kaplan, University of Toronto	JoAnne Yates, MIT
Katherine Kellogg, MIT	Youngjin Yoo, Case Western University

3. Timeline

April 1, 2019: Call announced

January 15, 2020: Submission deadline

February 1, 2020: Initial screening decisions

April 1, 2020: First round of editorial decisions (reviews, desk rejects)

September 15, 2020: Resubmissions

November 15, 2020: Second round of editorial decisions (rejects, second review)

February 15, 2021: Final resubmission

April 1, 2021: Final decision or minor revisions handled by editors only

End of summer, 2021: Expected publication

4. Paper Development Activities

The topic of emerging technologies is rapidly building momentum in the scholarly community. Yet, recognizing the novelty of the phenomenon, the Special Issue (SI) editors plan to organize a series of meetings and a paper development workshop to help authors advance their work toward high-quality submissions. All of these events are optional. They include:

- "Meet the SI Editors" session at the Conference on Organizing in the Era of Digital Technology, ETH Zurich Conference Facility at Monte Verita: June 12–15, 2019
- "Meet the SI Editors" session at the Academy of Management: August 9–13, 2019
- Paper Development Workshop, UC Santa Barbara, Santa Barbara, CA: October 10–11, 2019 (details to follow).

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