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Information systems research on artificial intelligence and work: A commentary on "Robo-Apocalypse cancelled? Reframing the automation and future of work debate"

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In his article "*Robo-Apocalypse Cancelled? Reframing the Automation and Future of Work Debate*," Willcocks provides a critical reflection on the common assumption that artificial intelligence (AI) technologies have a massive impact on jobs. The article offers a much-needed and very helpful discussion entry that I certainly recommend to include in our teaching.

While I fully agree that it is time to cancel the Robo-Apocalypse, I will argue that we first need to get rid of the more general and persistent naïve anxiety and admiration of the power that we assign to AI technologies, what Willcocks describes as the hype and fear narrative. It seems that we tend to ignore the most urgent question: what is it exactly about these technologies that legitimates all this fuss about AI changing our work? I will argue that it is time for information systems (IS) researchers trained in the sociotechnical tradition to step on board and fight the hype and fear narrative by offering empirically validated insights on why, when and how AI changes our work.

Let me start with a disclaimer. Current research on AI technologies and work does not only address job losses. In fact, over the past 1 or 2 years, scholars from different disciplines have been studying changes in the quality of work instead of quantity of jobs. While strikingly silent during the Robo-Apocalypse debate—fearing among other things a second AI winter—computer scientists have recently joined the discussion on AI and work, stressing the need to keep the human in the loop (e.g. Dellermann et al., 2019). By developing hybrid AI, tools will become our new assistants, coaches and colleagues and thus will augment rather than automate work.

While computer scientists' aim is to build systems that increase the quality of work, a recently growing group of critical researchers aim instead to create societal awareness about the rise of low quality of work due to AI. They point,

for example, to jobs under constant surveillance (Zuboff, 2019), jobs characterized as "ghost work" (Gray and Suri, 2019) and jobs imposed by inscrutable data-driven decisions (e.g. Faraj et al., 2018).

In addition, organizational behavior scholars mainly use survey-based research to analyze, for example, the individual perceptions on the quality of work with AI (e.g. Brougham and Haar, 2017).

Even those who started the hype–fear narrative, principally labor economic scholars, conduct research that departs from the focus on changes in number of jobs. For example, Felten et al.'s 2018 study how AI technologies are associated with changes in skills and wages and found that these new technologies might trigger a different type of polarization than one related to job losses and gains.

While these latest academic contributions address the changes in quality of work instead of quantity of jobs, they share the implicit technological deterministic assumption that AI has the power in itself to change work. This is rather problematic; while technology has its own agency, it is also always socially constructed, which makes assumptions about its decisive impact unattainable and will only sustain the myths surrounding AI.

Based mainly on the tradition of the field of Sociology of Technology Studies and Actor Network Theory, sociotechnical IS researchers know how to go beyond this technological determinism (Cecez-Kecmanovic et al., 2014). By using an historical and multi-actor perspective,

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IS researchers ideally include in their empirical research on information technology (IT) and organizational change the actions of the technology and its designers, management and their implementation decisions, and the user and their work-practices. Moreover, sociotechnical research can reveal unexpected changes over time, allowing for the emergence of new skills and jobs such as translators, data-workers, data regulators and brokers (Willcocks, p. xx). For example, in our study on predictive policing, we found that the blackboxing nature of the predictive policing system was addressed by introducing a new occupational group: "intelligence officers" (Waardenburg et al., 2018). While this new occupational group started as translators to broker knowledge between the machine learning application and the police, because of the designers' inability to explain the—sometimes erroneous—predictions given by the machine, the intelligence officers took over the responsibility for giving explanations by offering an alternative decision support system.

In addition to approaching the topic of AI and work from various angles, IS researchers can add their distinctive knowledge on technologies and organizational information and knowledge. For example, "Explainable AI," a topic that has gained a lot of traction from computer science, humanities and law, lacks insights from IS scholars. So far, academic arguments against the blackboxing nature of AI lack understanding of what "explanations," and the lack of them, mean in the context of work and organizations (Hafermalz and Huysman, 2019). Likewise, IS scholars are needed to tackle the dominant tendency among most AI researchers to perceive expertise—AI's main target—as a cognitive activity, residing in individual minds. While scholars in the field of knowledge and organizations agree that expertise is shared, practiced and constantly in flux, this idea and its implications for studying work and AI has not (yet) reached, let alone influenced the general discussion (e.g. Hadjimichael and Tsoukas, 2019).

Fighting the hype–fear narrative also calls for "breaking open" the AI technology itself. This implies analyzing how the technology is developed, including understanding the algorithm, the model and the selection and construction of (training) data. These insights are needed not only to show how (and whether) AI really represents something new that legitimizes all these discussions as well as how AI has agency in influencing work. While the predecessor of machine learning, rule-based expert systems, were developed by using domain experts as the main source of input, developing the latest AI technologies using (training) data as input, makes it possible to by-pass domain experts and to outsource expertise to AI systems (e.g. Broek et al., 2019). Because these data-driven development practices are "blackboxing" the causal reasoning behind decisions, work is affected in unexpected ways.

Research methodologies typical to sociotechnical approaches, such as practice-based methods that allow the researcher to be there where the action is (Jones, 2014), are also well-suited to fight the hype–fear narrative. However, gaining access to study AI technologies while being designed, implemented and used calls for more effort from the side of the researcher than studying "traditional" technologies. First of all, researchers require access to organizations that are already developing and using AI technologies. Since, as Willcocks rightly points out, most AI applications are in their infancy, offering very "narrow AI" applications and thus limited insights, getting relevant access is not easy. There are, however, frontrunner organizations that provide interesting field studies on AI at work in progress, for example, in the medical field (e.g. Lebovitz et al., 2019), in art (e.g. Sachs, 2019), in police organizations (e.g. Waardenburg et al., 2018) and in human resource practices (e.g. Broek et al., 2019). Getting access also implies access to the technology and its development, and since most AI applications are developed by external vendors, this creates an additional hurdle as researchers need multi-sided access. Moreover, developing and deploying machine learning applications is often perceived by the organization (developer and user) as a sensitive and opaque research topic. Since machine learning can touch upon ethical issues such as profiling, biased data and blackboxing decisions—more than reducing jobs—access becomes even more difficult.

Despite all these extra efforts, studying AI while being developed, implemented and used seems worth it. Since the research findings will demystify AI in the context of work and organization, including Willcocks' call to cancel the Robo-Apocalypse, the empirical findings will help consultants, management, developers, users and researchers in offering the knowledge needed to ask the right questions and understand the responses.

Willcocks ends his paper with an interesting twist: "If there is going to be a Robo-Apocalypse, this will be from a collective failure to adjust to skills change over the next twelve years." Although it is hard to deny that skills will change and that we need research to study this, the persistent belief in the power of AI technologies calls first of all for research on what AI can and cannot do. It is this call to offer realistic expectations and understanding on technologies at work where the distinctive capability as well as responsibility of the sociotechnical IS researcher resides.

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References

Broek E, Sergeeva A and Huysman MH (2019) Managing data-driven development: An ethnography of developing machine learning for recruitment. In: *Paper presented at the CNOW workshop, ICIS 2019*, Munich. December 2019.

Brougham D and Haar J (2017) Smart technology, artificial intelligence, robotics, and algorithms (STARA): Employees' perceptions of our future workplace. *Journal of Management & Organization*. Epub ahead of print 24 January. DOI: 10.1017/jmo.2016.55,

Cecez-Kecmanovic D, Galliers RD, Henfridsson O, et al. (2014) The sociomateriality of information systems: Current status, future directions. *MIS Quarterly* 38(3): 809–830.

Dellermann D, Ebel P, Söllner M, et al. (2019) Hybrid intelligence. *Business & Information Systems Engineering* 61: 637–643.

Faraj S, Pachidi S and Sayegh K (2018) Working and organizing in the age of the learning algorithm. *Information and Organization* 28: 62–70.

Felten EW, Raj M and Seamans R (2018). A method to link advances in artificial intelligence to occupational abilities. In: *AEA papers and proceedings*, American Economic Association, May, vol. 108, pp. 54–57.

Gray ML and Suri S (2019) *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass*. Boston: Eamon Dolan Books.

Hadjimichael D and Tsoukas H (2019) Toward a better understanding of tacit knowledge in organizations: Taking stock and moving forward. *Academy of Management Annals* 13(2): 672–703.

Hafermalz E and Huysman M (2019) Please explain: Looking under the hood of explainable AI. In: *Paper presented at the 11th Process Symposium on Organization Studies (PROS)*, Crete.

Jones M (2014) A matter of life and death: Exploring conceptualizations of sociomateriality in the context of critical care. *MIS Quarterly* 38(3): 895–925.

Lebovitz S, Levina N and Lifshitz-Assaf H (2019) *Doubting the Diagnosis: How Artificial Intelligence Increases Ambiguity during Professional Decision Making*. New York: New York University.

Sachs SE (2019) The algorithm at work? Explanation and repair in the enactment of similarity in art data. *Information, Communication & Society*. Epub ahead of print 6 May. DOI: 10.1080/1369118X.2019.1612933.

Waardenburg L, Sergeeva A and Huysman M (2018) Hotspots and blind spots: A case of predictive policing in practice. In: Schultze U, Aanestad M, Mähring M, et al. (eds) *Living with Monsters? Social Implications of Algorithmic Phenomena, Hybrid Agency, and the Performativity of Technology: IFIP WG 8.2 Working Conference on the Interaction of Information Systems and the Organization, IS&O 2018* (Vol. 543). San Francisco: Springer, pp. 96–109.

Zuboff S (2019) *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. London: Profile Books.

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