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Oasis 2019 panel report

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published in

Communications of the Association for Information Systems
2020

DOI (link to publisher)

[10.17705/1CAIS.04727](https://doi.org/10.17705/1CAIS.04727)

document version

Publisher's PDF, also known as Version of record

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citation for published version (APA)

Parmiggiani, E., Teracino, E. A., Huysman, M., Jones, M., Mueller, B., & Mikalsen, M. (2020). Oasis 2019 panel report: A glimpse at the "post-digital". *Communications of the Association for Information Systems*, 47(1), 583-596. [29]. <https://doi.org/10.17705/1CAIS.04727>

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12-21-2020

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Recommended Citation

Parmiggiani, E., Teracino, E., Huysman, M., Jones, M., Mueller, B., & Mikalsen, M. (2020). OASIS 2019 Panel Report: A Glimpse at the “Post-Digital”. *Communications of the Association for Information Systems*, 47, pp-pp. <https://doi.org/10.17705/1CAIS.04727>

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OASIS 2019 Panel Report: A Glimpse at the “Post-Digital”

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OASIS 2019 Panel Report: A Glimpse at the “Post-Digital”

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Abstract:

The information systems (IS) discipline has long focused on digitalization processes' nature. Currently, substantial hype around the opportunities that digital technologies offer exists. But what can IS expect from an apparently near “post-digital” era when the “digital” becomes so ubiquitous that no one sees it as worthy of separate attention any longer? We summarize a panel discussion that addressed this question at the 2019 OASIS pre-ICIS workshop that the Working Group 8.2 of the International Federation for Information Processing (IFIP) organized. Spurred by a deliberately provocative theme, the panelists discussed the implications of a shifting focus in research and policy from phenomena that *become* digital to those that simply *are* digital. While the panelists agreed that no widely accepted vision of what the “post-digital” might entail exists, they all problematized the digitalization rhetoric from different, complementary perspectives. Their discussion highlights the invisibilities that digitalization initiatives surface, the socio-ethical consequences of future technologies for work and organizing, and the methodological apparatus that IS scholars need to investigate a still largely uncharted terrain. We summarize the panel to elicit further discussion on these pressing concerns for the IS discipline.

Keywords: Digital, Digitalization, Post-digital, Work, Invisibility, Ethics, Data, Algorithms, Artificial Intelligence.

This manuscript underwent editorial review. It was received 03/09/2020 and was with the authors for three months for one revisions. Lauri Wessel served as Associate Editor.

1 Introduction

In this paper, we report the major points and key insights from a panel discussion at the bi-annual “Organizations and Society in Information Systems” (OASIS) pre-ICIS workshop that the Working Group 8.2 of the International Federation for Information Processing (IFIP) organized¹.

The workshop’s organizers chose the workshop’s overall theme to be deliberately provocative based on the idea that, while everyone thinks about digitalization these days, we can expect the excitement surrounding all things digital to die down eventually as the “digital” becomes so ubiquitous that no one sees it as worthy of separate attention any longer. In particular, the organizers wanted to see what a genuinely digitalized world might mean for the information systems (IS) a discipline: would IS groups consume business schools (and perhaps even beyond) or would, conversely, the digital become so pervasive that we would not need a standalone IS discipline any longer?

While researchers have dedicated much attention to phenomena *becoming* digital, we argue that already digital phenomenon will require the IS community to think in new ways to stay relevant. In this context, the organizers designed the panel to elicit reflections that might contribute to plotting the discipline’s path forward. At the same time, we hoped to also look critically at the promises associated with the elusive ideal of the “post-digital” world.

Led by Elena Parmiggiani from the Norwegian University of Science and Technology as the moderator, three panelists shared their thoughts on the post-digital: Elizabeth A. Teracino, Marleen Huysman, and Matthew Jones. Their position statements served as the basis for an intense and controversial discussion on the state of all things digital, which we gladly share in this paper.

2 Background

Digitalization and its implications for organizations and society currently attract a lot of interest in both the IS literature and in broader, popular discussions. At the heart of these discussions lies the observation that the widespread adoption of digital technologies has led to intense disruptions in various domains (Skog, Wimelius, & Sandberg, 2018). For example, research shows how more and more industries have become sucked into digitalization and that the resultant threats intensify over time (Wade, 2017; Yokoi, Shan, Wade, & Macaulay, 2019). In response to this disruption, researchers have reassessed several existing phenomena according to how they change due to digital technologies (i.e., when becoming digital).

For instance, research on IT-enabled organizational transformations has a long tradition in the IS discipline (e.g., Besson & Rowe, 2012; Yates & van Maanen, 1996). And, while much literature has emerged around this theme, recent literature proposes that transformations we witness in response to digital disruption do not simply represent a special case of IT-enabled organizational transformation. Rather, researchers have argued that digitalization changes organizations in more fundamental ways (Wessel, Baiyere, Ologeanu-Taddei, Cha, & Blegind-Jensen, forthcoming). The impact that researchers predict digitalization to have beyond the corporate or organizational realm further supports this argument (Majchrzak, Markus, & Wareham, 2016).

Similarly, traditional innovation models have come under pressure. Indeed, the literature suggests that digital innovation differs from traditional innovation because the digital context has specific and unique characteristics. For example, Fichman, Dos Santos, and Zheng (2014) suggest that one needs to reinterpret traditional innovation stages for digital innovation and identify various implications that make it necessary for IS scholars to update how they teach innovation and innovation management. Similarly, Nambisan, Lyytinen, Majchrzak, and Song (2017) show how digitalization challenges key assumptions that innovation-related research often holds. They present new logics that distinctly underpin digital innovation and argue that they require new research perspectives.

We can also observe related discussion in research that considers the ethical implications in developing and using IT. This domain also has a rich and long tradition in IS and beyond, especially computer science. This specific research stream has a rather unique nature among our examples because it recognized relatively early that (then) contemporary computer technology would create new ethical challenges that society did not traditionally encounter in a “non-digital” realm (e.g., Mason, 1986; Moor,

¹ See <https://ifipwg82.org/node/1364> for details.

1985); however, researchers did and continue to contest this position (e.g., Johnson, 1985). Recently, however, research has begun to suggest that IT-related ethical challenges' proposed specificity requires organizations to update their governance and compliance schemes. In other words, traditional perspectives on corporate social responsibility cannot address the digital's specific nature and rather require a dedicated look at corporate digital responsibility (Lobschat et al., 2020)—a conceptual discussion that has begun to gain traction in terms of managerial implications (Wade, 2020).

Finally, research on corporate strategy seems to have suffered a fate similar to the domains that we discuss above. The extant literature on IT strategy had already begun to suggest that organizations upgrade their IT strategy and emancipate it from a purely functional substrategy to an ever more encompassing element of corporate strategy a decade ago (Chen, Mockler, Preston, & Teubner, 2010). More recent takes continue this trajectory by suggesting that IT strategy and corporate strategy will increasingly fuse into one, which will make any distinction between the two artificial and potentially even dysfunctional (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013). Interestingly, Bharadwaj et al. (2013) argue that future digital business strategy needs to naturally acknowledge that any corporate strategy is digital in nature, which makes the explicitly using the label "digital" superfluous.

Taken together, these examples highlight the implications for the work we do here. Many researchers have recently begun to reinterpret much research that has traditionally related to the IS literature from a distinct digital angle (such as change, innovation, ethics, and strategy). The "digital X" literature has a united focus on demonstrating how a digital take on focal phenomena is unique and novel; that is, how digital X differs from what came before. Clearly, we need such efforts to understand ongoing digitalization processes' conceptual uniqueness and distinctness in the respective domains. It also helps researchers develop construct clarity (Suddaby, 2010), an aspect that they widely recognize as an important foundation for a coherent research discourse on agreed-on phenomena (Mueller & Urbach, 2017). However, backward-looking attempts to argue for digital X's uniqueness and novelty do not account for digitalization's potentially transient nature. For example, will it still make sense to speak of *digital* innovation in 10 years' time when innovation as such will have become so naturally and inherently digital that any *non-digital* innovation will constitute the noteworthy exception? In this sense, we extend and complement the currently prevalent push towards the digital X by focusing on the long-term impact that the ongoing digitalization will have for organizations and society. Specifically, we ask what will come next; that is, when the digital will become the new normal and when it will not make sense anymore to talk about things such as change, innovation, ethics, or strategy as anything but digital. This question extrapolates and makes explicit the argument that Bharadwaj et al. (2013) hint at in analyzing digital business strategy.

For OASIS 2019, we picked up this thinking and asked what will happen once the temporary excitement about digitalization ceases and phenomena currently discussed as digital—such as digital innovation (e.g., Nylén & Holmström, 2015; Svahn, Mathiassen, & Lindgren, 2017), digital transformation (e.g., Berghaus & Back, 2017; Mueller & Renken, 2017), or digital business strategy (e.g., Grover & Kohli, 2013; Sia, Soh, & Weill, 2016)—have become inherently and so naturally digital that we do not discuss them separately anymore. While researchers currently dedicate much attention to these phenomena *becoming* digital, we suggest that we now need to think about a world in which these phenomena *naturally are* digital. However, as yet, no widely accepted vision for the post-digital world exists. On the contrary, debates seem to link different ideas to the concept.

One view strongly revolves around technological advances. This view's proponents suggest that even more advanced technology that combines distributed ledger technology, artificial intelligence, extended reality applications, and quantum computing (DARQ) will overpower the current digital technology stack and trigger a whole new wave of technology-driven innovation. Thus, they think about the post-digital positively as enabling future economic growth (e.g., Daugherty, 2019) and convey a narrative of technology-driven optimism that IT consultants actively support (e.g., Carrel-Billiard, 2019). However, it remains unclear whether switching out one technology stack for another will mean we need to again require to update and reinterpret extant research (e.g., from corporate *digital* responsibility to corporate *post-digital* responsibility) or not.

At the same time, others view the post-digital more critically. Staring from the many data leaks and scandals (such as the Facebook and Cambridge Analytica case), they argue that the post-digital era will see more and more people withdraw from the digital realm. They argue that, bored from a medium full of advertising and spam, the post-digital generation will find renewed interest and value in personal interactions that technology does not mediate. This interpretation concurs with the return to seemingly

outdated, even purely mechanical devices often associated with the post-digital aesthetics common in the hipster culture (Cramer, 2014). One can easily extend this thinking by arguing that the ability to withdraw from the internet's "all-seeing eye" will increasingly become a luxury of the 21st century (Zuboff, 2019). This interpretation would see individuals with the necessary knowledge and means employ counterintelligence tools that obfuscate their digital footprint, which would ensure that growing tech conglomerates could not commercialize their personal data. Here, the post-digital describes a situation where people have outgrown the digital and it loses the prominence and meaning we currently ascribe to it. This reasoning posits that anything digital X would now have to dial back rhetoric focused on the digital context's specificity because that context would lose its relevance.

In a related interpretation, others suggest that, once we can move beyond the current hype around the digital and all its alleged transformative impacts, we would be able to move past the obsession with the label and begin to ask questions about the (then) digital world we have created and live in. Rather than discussing primarily technology-oriented issues, the focus would shift towards what it is that we can *do* with the technology and what living in a digital world *does* to people. This interpretation is also in line with propositions suggesting that, as we complete the generational shift from digital immigrants to digital natives, "the digital" is no longer a separate, artificial, or virtual layer of reality but an inherent part of it (Czerski, 2012). While some see this interpretation as extending the thinking surrounding sociomaterial practices, other issues relate to it too. For instance, we can see the agency often attributed to advanced digital technologies such as machine-learning based technologies that enable artificial intelligence as a call to acknowledge technological systems and actants as bearing ethical responsibility (Lobschat et al., 2019). Others argue that we need to shift focus to the policy level in a world that has completed the digitalization turn (Guellec & Paunov, 2018). While these approaches differ, they all share the hope that we can overcome any overly technology-oriented perspective and focus more on the implications that the digital has on different levels of our lives.

Looking at these different perspectives on the post-digital we elicited when putting together the theme for the OASIS 2019 workshop, we think that we can draw two main messages from this debate. First, the growing number of opinions and voices in the debate suggests that discussions on the post-digital have gained momentum. Second, we do not yet clearly understand what the post-digital is and what the label (let alone the concept) means. Accordingly, given no one has charted out and defined this brave new world yet, post-digital research in IS has a basic opportunity to develop a body of knowledge that begins to define what the post-digital really is.

We designed the workshop to address this gap in the literature by providing a platform to attract any related debate and share ideas. In particular, we invited experts with different perspectives as a provocative catalyst to sow new ideas to inspire more people to think about "what comes next" once the fascination with the digital dies away.

3 Panelists' Positions

We designed the panel that we report on here as an integral part of the reflection process that we need to undergo to kick-start this new research area. We invited panelists to provide thoughts, share experiences, and critically reflect on the post-digital's emergence. In particular, we invited them to brainstorm and freely associate with the term. We tried not to impose any—either explicit or implicit—conceptual blinders or shackles on them.

As a result, the panelists drew on their engagement with digitalization processes across various sectors of business and society to offer quite different and critical (yet thematically complementary) takes on the post-digital. The panelists all understood post-digitalization and its long-term consequences for everyday practices in an in-depth, ethnographically inspired empirical manner. Furthermore, they all shared a skeptical stance toward rhetorical calls for digitalization let alone post-digitalization: how to stay tuned to digital technology and problematize its material agency in public and private organizations? Moreover, some (geographic and socioeconomic) areas have not yet become digitalized. Will the post-digital turn out to be a city phenomenon, while rural areas will not become digitalized at all? Our panelists agreed that we do not yet fully understand what digitalization entails. Digitalization is ripe with social, ethical, technical, and, ultimately, methodological challenges that IS should address before its future encounters with the post-digital.

To allow readers to easily grasp the panelists' positions, we summarize their respective key messages in Table 1.

Table 1. Panelists' Key Messages

Panelist	Key message
Elizabeth A. Teracino	<i>As a prefix of digitalization, "post" disregards the reality of a growing digital divide. Efforts to rapidly bridge this divide could bring rise to many socio-technical implications for rural areas that may skip stages in this sequential conceptualization of digital maturity. This can provoke a more macro-inclusive agenda for IS research.</i>
Marleen Huysman	<i>The IFIP community is well equipped to open the AI black box and reveal how decisions are made, both in terms of what data is used to train the algorithm, but also what is needed in the algorithms to help augment work practices.</i>
Matthew Jones	<i>A vision of the post-digital rests on several assumptions such as a break with the past; the inexorable, technologically-driven march of time; and punctuated change. There is an opportunity for IS scholars to engage critically with such ideas.</i>

3.1 Elizabeth A. Teracino

In her presentation, Teracino asked whether we can already assume that anyone has already achieved a "post"-digital state or whether such an assumption would unduly narrow our ability to appreciate the nature of digital phenomena. "Post" as a prefix implies a sort of sequential conceptualization, one that the literature often overlooks since studies often use terms such as "digitize" and "digitalize" interchangeably. Thus, "post"-digitalization conjures the assumption that everything has first been digitized (most often objects, such as an e-book) and then digitalized (whereby sociotechnical processes reach broader social and intuitional contexts infrastructurally) (e.g., Amazon Kindle's platform) (Tilson, Lyytinen, & Sørensen, 2010). From this vantage point, post-digitalization implies pervasive and ubiquitous digitalization as a given, which the IS community has found some evidence for (e.g., see the rise of the digital X trend in IS research and the "old wine in new bottles" debate) (Baiyere, Grover, Gupta, Woerner, & Lyytinen, 2017). However, when we consider a more macro perspective, we can see that most people's reality is not quite so "post"-digital yet.

When one considers rural communities, Teracino noted that many people still live without Internet connectivity, which individuals require to obtain some of digitalization's most basic benefits (Strover, 2018). For example, in the United States (US), more than a third of people living in rural areas do not have access to basic broadband connectivity (OECD, 2019). Rural areas include a broader range of areas than most assume—from peri-urban areas with good access to cities to remote areas far from cities (OECD, 2019). Given that many people live in rural areas in the US, there is pressure to address this disparity in access as the worldwide demographic transitions to older populations (e.g., the World Health Organization (2015) expects nearly half of the people in the world to be elderly by 2050). Many have anticipated the impact that the disparity will have on rural communities, and, therefore, policy makers have pushed for rural innovation particularly in areas that lack hospitals or other traditional health infrastructure where digitalization's benefits such as e-health may serve as a potential solution. Without access to the Internet, which seemingly freezes some communities in a "pre-digitize" phase, going from no local hospital to full e-health benefits may bring about a scenario where communities skip one or more stages entirely on the digital maturity spectrum. The socio-technical implications could prove a huge opportunity for future IS research in this vein.

Teracino further noted that this access disparity, or digital divide, will only exacerbate as the standards for minimum data-transmission speeds for broadband service climbs to keep up with technological advancements (e.g., 5G). Additionally, we could see a skip from "pre" to "post"-digitalization in other contexts as well, such as among younger rural community inhabitants via electronic education, artificial intelligence appearing in the workforce (which Huysman discusses in Section 3.2), and so on. Therefore, researchers have an opportunity to illuminate and reframe this disparity as a research question and to conduct more macro-inclusive research.

3.2 Marleen Huysman

In her presentation, Huysman first reflected on the term post-digital. For some, post-digital means paradise—a society in which we can escape digital technology's surveillance technology and our growing digital shame. For others, post-digital lacks such romance and implies that digital technologies have reached closure and, thus, created a black-boxed digital society in which algorithms passively nudge everyone, organizations have become inherently digital, and digital technology has pervaded and become

entangled with our lives to such a degree that we cannot separate ourselves from it (Gray & Suri, 2019). Another take on post-digital posits that researchers who study digital technology will lose their relevance. Due to the digital's increasing pervasiveness, we run the risk that others will consider our research community irrelevant just as what happened with the once flourishing research community studying electricity.

To avoid this scenario, the IFIP 8.2 community can emphasize more than ever before our contribution to the IS discipline, stay tuned to technology itself, stay open to its often unexpected and performative effects, and avoid being lured by either positive or critical discussions that accompany new technological introductions.

The growing interest in AI offers an interesting example for how to respond to this challenge. In particular, even though much research has studied AI and work/organizations, all these "stakeholders" often leave the technology itself aside. For example, labor economics and labor sociologists have studied whether AI will result in upskilling or deskilling, whether we will lose our jobs, and how we can prepare the future workforce without talking about the technology. Likewise, organization and work psychologists have studied the effect that algorithms have on individual work tasks, while business and strategic management scholars have questioned how AI can enhance business value. When researchers instead include the material agency and the design choices, we can better understand, for example, why a system cannot predict the right crime spot and why that fact triggers unexpected organizational changes (Waardenburg, Sergeeva, & Huysman, 2018). The IFIP community has a strong position to open the AI black box and reveal how technology makes decisions both in terms of what data one uses to train algorithms but also what algorithms need to help augment work practices.

The IFIP community has a tradition to conduct in-depth field studies in order to analyze new technology from a historical, contextual, and critical perspective. Due to that tradition and with the growing hype around AI, the digital technology and organization discipline desperately needs the IFIP researchers to be where the action is and study AI while it gets developed and implemented in organizations if only to avoid a second AI winter. Research questions then could concentrate on, for example, how AI developers construct knowledge rules based on training data, what knowledge and ethical values systems inscribe, what role managers and other decision makers play in introducing algorithms in organizations, and how we can bridge the gap between AI design and work contexts. Since we have the best position to provide rich answers to such questions, we can show that, in the era of post-digital society, society needs IFIP researchers more than ever.

3.3 Matthew Jones

In his presentation, Jones focused on questioning some assumptions that a notion that we are, could be, or should seek to be in a condition that one might describe as "post"-digital might convey. He identified three assumptions in post rhetoric that one might see as contributing to characterizing such a condition: 1) a break from the past, 2) the arrow of time's directionality, and 3) a punctuated rather than gradualist view of change.

The first assumption posits that we could achieve a new beginning and wipe away the problems and failures that have beset the digital era. We could also see such a turning point as meaning that old rules and constraints no longer apply and we have the freedom to conceptualize new possibilities without constraint from the technological, organizational, or psychological limits that we currently feel hold us back. The second assumption posits that we cannot return to the past; that we always proceed "forwards" and leave the past behind (and that we would best forget it). We should not dwell too much on the here and now because it too will inevitably pass. Better to keep our eyes on the sunlit uplands to which we will soon arrive. The third assumption connected to a notion of post-digital is of a punctuated, rather than gradualist view of change. History cleaves naturally into discrete and self-sufficient eras that are independent of our action and that we can dismiss continuities and processes.

Against such ideas, Jones invited the workshop to consider whether we are, or have ever been, digital. Reflecting on Teracino's discussion about digitality's economic and spatial differentiation, one might question who one could even consider to be digital let alone who could be in a position to soon go beyond such a condition. Similarly, taking inspiration from Huysman's observations on the messiness of AI in practice, he noted the disparity between optimistic, technocratic rhetoric and the reality of contemporary technology use in most organizations. Therefore, might it be better to consider the post-digital in terms of fads and fashions rather than as a contemporary empirical phenomenon? Even if there is, or will be, such

a thing as the post-digital, should we view it as a technological, social, or organizational disjuncture, as a revolution, or as evolving from our present situation? And, should it come to pass, will the post-digital ubiquitously affect the whole world (i.e., every organization and individual), will the pre-digital, digital, and post-digital co-exist but separately, or will a thin veneer of post-digital overlie a messily conglomerated digital and pre-digital?

Considering the specific claims that characterize the post-digital in terms of DARQ technologies, Jones noted that we may see the four technologies that the acronym invokes as representing the full set of the poster-children of contemporary technocratic discourse. As the interest in these particular technologies wanes as it often does when the initial promise proves hard to realize, people will no doubt slot other letters into the acronym with little or no reflection on what they say about the post-digital. Moreover, he noted that defining the post-digital in these terms implies a logic of technological determinism (i.e., given technologies D, A, R, and Q, then organization). He proposed that, for IS scholars and for the IFIP community in particular, such an argument would seem highly problematic. Rather, we might want to think along the lines of: “given entanglement of organizations and technology and situated enactment of practices, then contingent outcomes” Understanding which outcomes (and when and where) would seem likely requires one to investigate heterogeneous digitalization normalization processes (such that they fall out of awareness and are considered to be transcended). These processes’ contingent and heterogeneous nature means that we do not deal not with a unitary phenomenon but an evolving landscape whose variation we would seemingly need to map to understand the post-digital. The IFIP community also has an opportunity to engage critically with the post-digital imaginary and to explore what post-digital discourse omits or overemphasizes. Despite, or perhaps precisely because, researchers have characterized the post-digital in specifically technological terms, it offers a potentially rich topic for researchers concerned with the development and use of information technologies in organizational contexts.

4 Discussion

Three major themes emerged from the panelists’ presentations. These themes guided the panel chair’s questions that focused on stirring joint reflection on digitalization’s fundamental facets and potential “post” state.

4.1 First Theme

The first theme concerns the ways in which digitalization processes surface invisibilities, which resonates with a sociological sensibility for how invisibilities and invisible work operate (Star & Strauss, 1999). All panelists pointed to (in a sense, fractal) digitalization processes: the more we look into them, the more we discover complex connections and mediations that practitioners tend to overlook in designing and implementing digitalization projects just as much as scholars in their work. Such invisibilities take many forms in the “post-digital” (e.g., spatial (Teracino), techno-economic (Huysman), and temporal (Jones)).

Teracino’s observation that digitization remains a vision and not a reality in many rural areas initially inspired this theme. Indeed, digital infrastructure’s absence rather than presence often defines these areas. In such areas that often even lack 4G connectivity, digitalization often depends on creative, ad hoc articulation work to find out-of-the-box solutions. This stream of thinking also seems to motivate more fundamental conceptual research such as revisiting the “digital divide” concept (e.g., Lameijer, Mueller, & Hage, 2017). Future research in this domain would be able to better explain the conditions under which digital technologies can cause socially desirable and sustainable outcomes to emerge—an aspect of the discussion that mirrors Jones’ comments on digitalization outcomes’ contingent and heterogeneous nature.

As Huysman commented, invisibility also characterizes apparently “fancy” technologies such as AI. As work that has critically analyzed Silicon Valley corporations vividly has illustrated, AI implementations, adoptions, and innovations have their foundation in a vast, invisible, and often unacknowledged and unrewarded human labor force (Gray & Suri, 2019).

As an additional dimension of digitalization’s invisible work, digitalization not only operates at the level of the workers who actually perform the activities that sustain digital infrastructures but also characterizes decision makers’ work. Huysman reflected during the panel discussion on her studies on AI implementations in businesses where managers were “absent presents”. Managers who do not sufficiently

understand or have experience working with such technologies often make crucial decisions about adopting technologies such as AI.

Furthermore, managers, technology designers, and developers embed—more or less implicitly—values and ethics in their AI solutions. Therefore, IS scholars in the IFIP 8.2 community should open the black-boxed data-driven AI solutions they encounter to inspect these embedded values and their implications. This recommendation resonates strongly with broader calls for interpretability, explainability, and accountability in the algorithmic decision-making context (Floridi et al., 2018). Beyond AI, other technologies pose similar challenges, and the IFIP 8.2 community should try and connect to the (often long-standing) discourses that go on in our reference disciplines and beyond (Floridi, 1999; Lin, Abney, & Bekey, 2011; Moor, 2006) and to develop the capabilities to morally contextualize a broad array of emerging technologies and devise proper organizational responses (Lobschat et al., 2019; Stahl, Timmermans, & Flick, 2017).

4.2 Second Theme

The second theme concerns post-digital's socio-ethical nature and its consequences for work in particular. In contrast to the invisible nature of the human labor that sustains advanced digital technologies, the post-digital reshuffles traditional labor structures and labor laws. To understand how, we as IS researchers must develop sensitivity toward the new forms of work that emerge, such as data work. The panel agreed that such efforts would revitalize the traditional research agenda of the computer-supported cooperative work (CSCW) discipline. At the same time, our increased sensitivity will also allow us to focus on the ethical and political interest in work that are key drivers of technological arrangements. The resultant work will, in turn, allow us to shed light on the research question: "What is the work that makes work work?" (Bowers, 1994; Schmidt & Bannon, 1992). Therefore, more interdisciplinary research that cuts across the IS discipline's neighboring disciplines—not only CSCW but also science and technology studies (STS), for instance—might allow researchers to unpack digitalization's meaning, consequences, and possible "post".

Jones elaborated on his presentation and noted that sensitivity for work reverses the underlying assumption in many digitalization initiatives that "given a technology, then organization". IS researchers should focus on understanding the social and intellectual context in which various actors adopt new technologies, such as AI. One never applies digital technologies applied in a vacuum, and each context comes with epistemological and ontological assumptions about them that shape (and sometimes hinder) their adoption.

4.3 Third Theme

The third theme relates to digitalization's consequences for the methodological apparatus that IS scholars adopt. Following from the above point, all panelists agreed that we need to include digitalization's socio-technical aspects in our research more consciously.

Huysman discussed how scholars in disciplines such as labor sociology, human resources, behavior, the humanities (AI and work), and business management study AI's effects. However, few researchers from such disciplines focus on how organizations have and continue to change, which leaves ample room for IS studies.

In particular, she referred to examples about work she has conducted with other researchers to illustrate how traditional ethnography constitutes an important tool to unpack the actual practices associated with digitalization. She remarked that a crucial part of ethnographic accounts of digitalization efforts also requires that researchers critically reflect on their first encounters in the field.

In studying (post-)digital technologies ethnographically, researchers need to ensure that they *problematize* data. IS research tends to assume data as unproblematic givens—often as liquid or liquefied (Lusch & Nambisan, 2015)—that form part of closed-loop systems. But data are far from liquid as Jones observed: they are sludgy, muddy, and never work according to plans. Data are constructed through articulation work. Following from the points we discuss above, data are constructed through everyday work. Methodologically speaking, data with this performative nature implies that we should focus on the qualitative encounters with data and on how existing epistemologies scaffold data (Jones, 2019).

Jones further elaborated on this observation and pointed to an ongoing qualitative change in our research. For IS researchers to approach, understand, and eventually critique complex technologies such as AI, they require support from experts who actually know the technologies.

4.4 Follow-up Discussion

The engaging panel discussion triggered various interesting follow-up comments from the audience. Following the panel discussion, participants posed some open questions that concerned DARQ technologies' fluid nature. We share these questions as we believe that they represent core, open-ended concerns for the IS community:

- As the panelists noted, the IS community needs to keep up with the constantly evolving technologies that organizations adopt. For instance, with AI, organizations no longer use traditional relational databases but rather distributed frameworks such as Hadoop. What consequences will these novel forms of organizing and retrieving knowledge have?
- Following from the previous question, how can the IS community generate interactional expertise. In particular, how can the IS community educate present and future scholars to study and inform not only digital and post-digital scenarios' highly cross-disciplinary nature but also the research project settings in which researchers study such scenarios?
- In societal terms, what basic services should a post-digital society provide? Should a post-digital society provide Internet broadband and other standard services such as electricity, water, and telecommunication?
- Governments and other organizations, such as the police, are currently—and have been for a while—implementing AI-based approaches (e.g., using facial recognition or predictive analytics) to identify and target potential criminal activities (e.g., Koepke, 2016; Simonite, 2020). How can we address such developments' far-reaching ethical consequences?

5 Conclusion and Outlook

Whether one interprets the post-digital as overtaking the digital technologically, outgrowing the digital socially, or overcoming any digitally oriented obsessions, the discussion around the post-digital continues to gain momentum. While all panelists agreed that such momentum opens up new opportunities for IS research—both in terms of establishing an elusive post-digital state and describing what a corresponding future may look like—the discussion also highlights that we require reflexive caution. It seems that future IS research related to this theme should leverage our appreciation of technology's contextuality and related outcomes' contingent nature—both desired and undesired. At the same time, we advise researchers to seek the cross-disciplinary expertise that we need to truly open the black box that many futuristic technologies constitute.

While we did not focus on extracting any tentative conceptual definition of the post-digital from our panelists, the variety of perspectives they employed and the various challenges their statements identify show the importance of such conceptual work in the context of the post-digital's emergence. In this context, Jones' statements illustrate the importance of asking ourselves why we invoke certain labels (such as the digital or post) and what expectations we harbor when using them. Future research will find this perspective especially useful when questioning assumptions as a source for future research opportunities in this area (Alvesson & Sandberg, 2011). Similarly, Teracino's perspective cautions against any overly enthusiastic departure into the post-digital era when we have not even managed to make the plain digital a reality yet for many people across the world. Otherwise we risk that any conceptual fascination with the post-digital contributes to exacerbating a digital divide, such as between digitally developed metropolises and rural areas trying to catch up. Avoiding such a risk, Huysman warns, goes hand in hand with a renewed sensitivity for the material agency of novel technological arrangements such as artificial intelligence and predictive algorithms. As such, IS scholars need to renew their commitment to keep on closely examining the co-constitutive relation between technology and work and organizing.

To summarize, we do not know whether the post-digital world will afford IS scholars the ability to continue with our current research efforts and topics or whether a truly digitalized world will require fundamentally different approaches and will allow researchers to look at truly novel topics. However, much of the current literature on the digital X seems intent on arguing that a shift from a non-digital world to one in the digitalizing process requires new topics and approaches. Thus, a key question concerns whether the fact that we had to update some key concepts in IS research due to the digital's emergence (e.g., from innovation to digital innovation) will mean that moving beyond digitalization will require a similar shift (e.g., from digital innovation to post-digital innovation)? Phenomena in a digitalized world will likely require

researchers to update and rethink their work yet again, and we hope that some of the debates our panel has produced will contribute to these changes yet to come.

We also note that we received relatively few responses to the workshop's call for papers. Few papers took up the post-digital theme, and many such papers did so in a more nominal fashion. However, the discussions around the panel also highlight that the tensions surrounding the interpretation and shaping of the post-digital can provide the energy for exciting future research in IS and beyond. With OASIS 2019, we aimed to promote reflection on these opportunities and the connected challenges that the post-digital era might present to organizations and society. Hopefully, our debates will inspire future work to take up these opportunities and challenges such that IS as a discipline will continue to provide a balanced and valuable contribution to shaping organizations and society in the future.

Acknowledgments

We acknowledge the International Federation for Information Processing's support for the organization of the workshop that hosted this panel. We are also grateful to all attendees of OASIS 2019 who contributed to the lively discussion.

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