

# Theorizing Society and Technology in Information Systems Research

Anastasia Utesheva  
University of New South Wales

Sebastian K. Boell  
University of Sydney Business School

## Abstract

*The world around us is unpredictably changing at a dramatic pace and technology plays an increasingly important, yet ambiguous, role in these global social changes. Is should actively engage with the phenomena that society is changing with and through ICT. To date IS research is mostly interested in technological artifacts and behavioral aspects associated with ICT. We, as IS scholars, have to find theoretical approaches to help us to make sense of and better understand the broader societal and organizational changes related to ICT. We argue that Ou Yang outlines two relational approaches to sensemaking, extending our conceptual and analytical toolkits through the works of Martin Heidegger and Marshall McLuhan. This paper provides a discussion of her contribution in relation to the current debate on sociomateriality.*

**Keywords:** Sociomateriality, Information and Communication Technology, ICT, Media Theory, McLuhan, Heidegger, Social change

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## A Rejoinder to ‘Returning to the Philosophical Roots of Sociomateriality’

Shirley Ou Yang's paper *Returning to the Philosophical Roots of Sociomateriality* raises awareness of an important phenomenon: the world around us is unpredictably changing at a dramatic pace and technology plays an increasingly important, yet ambiguous, role in these changes. In line with sociomaterial theorizing more broadly, the paper argues that Information and Communication Technology (ICT) does not merely ‘sit’ in the background while news corporations (Utesheva et al. 2015), the hospitality industry, education (Boell and Cecez-Kecmanovic 2015) or staying in contact with friends and colleagues (Orsatti and Riemer 2015) are changing at an increasingly rapid rate. Although ICT is central to all these changes, these changes are not a logical consequence following from Charles Babbages (1791-1871) idea of a programmable computer or Alan Turings (1936) work on computability. Nor are they a consequence of the Californian counter culture of the 1960s and the rise of the Silicon Valley. Neither technology nor the social context it emerges within can be considered in isolation. Instead, sociomateriality argues that what is required is a holistic approach to unravel and make sense of these complex changes.

Ou Yang reminds us not only to pay attention to, but to actively engage with such emergent phenomena – our society is changing with and through ICT and we, as IS scholars, need to find theoretical approaches to help us to make sense of and better understand these changes. Arguing for such an approach, Ou Yang proposes the adoption of a sociomaterial perspective as theories that have historically dominated the Information Systems (IS) community (e.g. TTF (Task Technology Fit) or TAM (Technology Acceptance Model)) are unable to assist researchers in engaging with the tremendous social, political, economic, and ecological challenges that surround emergent ICT phenomena. The type of theorizing that is currently dominant in IS can only provide a narrow snapshot of the overall changes due to their reduction of ICT to a phenomenon associated with measurable constructs, often located at the epistemological level of an individual subject's behaviour. In other words, Ou Yang's paper alerts us that the roles ICT play in the phenomenon of global change remain undertheorized in IS research. But she does not stop there, as she suggests a sociomaterial perspective as providing an alternative approach for coming to terms with these changes and the associated challenges for IS

research. Much sociomaterial theorizing is following Orlikowski (2007), philosophically grounding sociomateriality in Karen Barad's (2003, 2007) Agential Realism as evident by the other contributions to the special issue by Mueller (2016), Niemimaa (2016) and Ramiller (2016). Ou Yang offers an alternative philosophical starting point: the seminal works of Martin Heidegger and Marshall McLuhan.

To address this challenge and provide potential avenues forward, Ou Yang first reminds us that the Internet Revolution has (once more) called into question the deterministic or reductionist understanding of technology. Neither technological determinism nor its opposite (i.e. social constructivism) are helpful for making sense of how the fabric of the social world is changing. Both approaches consider only one side of the coin, thereby bypassing the sought-after understanding of technology-related phenomena that has been called for to advance the IS field (Lee 2010). Ou Yang argues that, in contrast, a sociomaterial approach overcomes these difficulties by focusing on the spacio-temporal entanglement of actors in their phenomenological contexts, thereby providing a holistic view required for such research. Next, Ou Yang emphasises that recent technological developments have prompted the field of Information Systems to turn its attention away from narrowly bound local organisational contexts, to address the global phenomena of technology-related social change. We therefore would like to add that the context of our "field sites" expands and moves beyond the behaviour of subjects, local organisations, or even a particular analytically-bound locale. However, so far, theories and perspectives we employ in IS largely remain within the traditional contexts, following the established script of mid-range theories for IS research (Grover and Lyytinen 2015). This type of theorizing will need to be expanded by engaging in more "blue sky" theorizing that aims to provide narratives and attempts to make sense of the role of ICT as part of the larger changes happening around us.

Furthermore, Ou Yang points out that ICT actively reshape our understanding of ourselves and of our world. As such, ICTs can no longer be assumed as mere devices, passive in their role in changing the nature of the human condition. This subtle, but vital, shift in perspective places the process of change at the centre of inquiry, allowing for an examination of individuals and their phenomenological experience, rather than reducing the phenomena under examination into atomistic isolated components or measurable outcomes. The co-evolution of humans and technology and the experience of the individual

as cyborg (Haraway 1991), can no longer be avoided in advancing our understanding of complex global technology-related social changes. The central argument of the paper is thus that technological determinism does not help us, as IS researchers, to understand the complex shifting dynamics of how and why technology dramatically reconfigures global social relations. In contrast, a sociomaterial approach has the potential to provide deeper engagement with the core issues in question. That is, what is needed are theories that are useful for making sense of a world where continuously changing ICT is inseparably entangled with continuously changing social practices such that all actors are considered simultaneously in theorising and theory development. To address this need, Ou Yang discusses two theorists whose conception of technology is aligned with sociomateriality and who, thereby, have the potential to provide a way forward for IS researchers accepting the challenge of tackling global emergent phenomena.

Ou Yang poses that Marshall McLuhan's (1964) and Martin Heidegger's (1962) relational conceptions are of relevance to the IS field for coming to terms with the role of ICT in our changing world. Both theorists embrace the idea that theorising necessitates an awareness of understanding as a process of continuously disclosing of the world, rather than engagement with a pre-existing reality. This alternative perspective affords a re-evaluation not only of the symbiotic change of humans and technology through constitutive relations, but also allows us to re-examine our role and reflect on our own sense making practices as researchers. Such self-reflexive examinations of our own practices in light of the phenomena we study have been long overdue in the IS field, as pointed out by proponents of the sociomateriality movement who argue for the re-examination of the ontological and epistemological assumptions of our research (cf. Cecez-Kecmanovic et al. 2014). Echoing this call, through a discussion of McLuhan and Heidegger as two approaches for sense-making, Ou Yang attempts to sensitise the IS community to the necessity to consider the "ontological fusion of technology and human/institutions" (Ou Yang 2016, p. 1) in research, and seeks to provide a conceptual and analytical toolkit to do so. In the following we would like to expand upon Ou Yang (2016) by offering a brief outline of our own reading of how Heidegger and McLuhan are relevant to sociomaterial theorizing for IS.

First, Heidegger's work reveals that human existence can be viewed as one of continuous disclosing of the world through our own existence within it. Our existence is within the world, and only

within this background can anything be understandable. Hence, we cannot remove ourselves from the picture when we seek to render the world intelligible as if we were looking from the outside. Our existence is in a continuous process of becoming and only through this becoming is it possible to shape categories for describing our own existence. Ordinary experience of the world is one where things are ready to hand (*zuhanden*). Only when we sit back and start to reflect become things present at hand (*vorhanden*) as they start to stand out and become recognizable as objects with properties that can be described and named. Heidegger's philosophy thus has bearings for the understanding of technology, as technology cannot be seen as devices that have properties, but as equipment that is part of the ongoing process of becoming. One way to make Heidegger's philosophy fruitful for IS is to use it for shifting the understanding of ICT from one seeing ICT as artifact with properties to one conceptualizing ICT as equipment in a Heideggerian sense (Riemer and Johnston 2011, 2013).

Similarly, Ou Yang discusses the relevance of McLuhan's social critique and Media Theory, suggesting that we can make sense of how ICTs become intrinsic to how we engage in and view the world, as they form an extension of our "nervous system". In the opening of his seminal work *Understanding Media: The Extensions of Man* (1964) McLuhan posited that "we live mythically and integrally ... but continue to think in the old, fragmented space and time patterns of the pre-electric age" (*ibid*, p. 4). The suggested fragmentation of the space and time patterns that concerned McLuhan can be equated with the lingering notions of atomistic separateness that characterise the dominant approaches to theorising technology within IS. The observed rift between what we do and how we understand or think about what we do seems as prevalent as ever – the conceptual systems applicable to phenomena of the pre-electric age continue to dominate the way that we make sense of the technological changes that can be best termed as globally integral. Arguably, the rift can be bridged with a change in our perspectives and sense-making tools. McLuhan proposes how to unravel the complex relations of ICT and human beings. For instance, the notions of "hot" and "cold" media can be used to theorise the processes of engagement of users with technologies. The notion of media as "extending" and as "extension of" can also be used to classify types of technologies and provide a useful analytical tool for the emerging ecological perspectives on technology in IS (e.g. Jung & Lyytinen 2014; Bergman et al. 2007). Most importantly, McLuhan's work provides the

conceptual seeds for examining how the experience of the individual is profoundly shaped and altered by the addition of technology to their everyday practices, which shapes their and, by extension, societies' self-conception and realisation. In essence, McLuhan illuminates that the process of global self-awareness is fundamental to the phenomenon of human/technology co-evolution, paving the way for, as Ou Yang points out, further exploration of the fascinating and undertheorized topic of an emerging through ICT global simulated consciousness.

Importantly, the discussion opens the door to interesting areas for inquiry for the IS community, suggesting the importance of tackling the bigger questions concerning ICTs reconfiguring our being as humans and engaging in a discourse examining the role of technology in changes to the nature of human existence from a sociomaterial perspective. We agree that these are not trivial or merely philosophical questions. ICTs play a central role in the changing nature of practices - the things we do and how we do them beyond the corporate organizational settings from which IS originated. ICTs provide platforms for social dynamics to transcend the traditional narrowly bound research context of IS. The desire for IS to venture out and beyond the realms of organizations is clear in research engaging with hedonistic IS or social media, among other recent research streams. We suggest that expanding upon and using the conceptual and analytical tools developed by McLuhan has the potential to significantly advance our understanding of how technology constitutively reshapes our collective simulated consciousness in light of these changes, thereby increasing the relevance of our findings within and beyond the field (cf. Porra et al. 2006). However, while Ou Yang touches upon these questions, she does not delve deeper into the question how McLuhan's conception of media can be applied to the broader change of our society through ICT. We suggest that exactly this area can provide a fruitful area for future research, especially in studies adopting the perspectives outlined above.

We thus implore the IS community to engage with a sociomaterial perspective in order to expand the IS domains of inquiry beyond those that have characterised the field in the past (Hassan 2011). As technology becomes more pervasive, paradoxically it simultaneously becomes more invisible in global everyday practices and has the potential to be overlooked in research. Ou Yang alters us to the dangers of the complex ICT saturated world, such as path dependencies, network externalities, and organisational lock-in through large investments in ICT resulting in potential inflexibility to adjust business processes. To this list we easily could add

ICT as boundary objects or infrastructure (Bergmann et al. 2007; Boell and Hoof 2015). Research concerning these phenomena could benefit from adopting a sociomaterial approach due to its focus on understanding the whole system, rather than separate components and artificially delineated units of analysis. Ou Yang points out that the ontological foundation of sociomateriality, although not entirely new, reveals that the human condition in relation to technology is one where no clear boundaries can be drawn. Hence, to encourage different forms of theorizing we believe that IS would benefit from broadening its repertoire of communication styles to include additional narrative forms that can help us in conveying our thinking and theoretical engagement with the bigger changes taking place around us. Furthermore, potential avenues for future sociomaterial research surround means of data collection and research sites that transcend the increasingly irrelevant local/global, individual/society, dichotomies in sense-making, theorising, and theory-building, as evidenced by the recent conference trend to engage with the phenomena of a networked society (c.f. the conference theme of the European Conference on Information Systems 2015). We also believe that essay style and narrative presentation of research can foster an open and exciting debate for engaging in a global conversation around these issues.

## Conclusion

We would like to add to Ou Yang by pointing out the importance of recent call in IS to expand the scope of our examinations (e.g. Grover & Lyytinen 2015), such as a move towards experiential computing, philosophical implications of IT on societal changes, role of technology in education and the arts, or the performative nature of relations that drive human/technological co-evolution (Yoo 2010). Future research following a sociomaterial approach could engage with question of how disparate material arrangements reconstruct technology-enabled experiences; how materiality shapes the emergence of a global simulated consciousness; or how ICT mediates rather than moderates understanding of complex global issues. To sum, Shirley Ou Yang's paper raises awareness to the bigger issues of the role of ICT and the dramatic social change happening around us. We agree and would like to emphasise that Heidegger and McLuhan can provide relevant conceptual and philosophical tools for a sociomaterial approach to theorising and adoption of analytical toolkits for pursuing avenues for future research by IS scholars accepting the challenge of engaging with global technology-related changes.

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## About the Authors

**Anastasia Utesheva** is digital designer, working to deliver public value through design thinking. She specialised in user experience, focusing on designing digital solutions that enable positive social change. She has experience in design and digital media firms and has research interests in digital artefacts, media and communications, design

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thinking, innovation, identity, inertia, relationality, and technological evolution.

**Sebastian K Boell** is Lecturer at the University of Sydney Business School. Sebastian's research is interested in how information technology shifts and changes the ability to see and understand the world for organizations and individuals. Furthermore, Sebastian has published in the areas of telework, bibliometrics and on conducting literature reviews and literature searches. Sebastian's research was awarded the ASIST ProQuest Doctoral Dissertation Award 2013, Best conference theme paper at ICIS 2015, and best theoretical paper at ACIS 2011. His research is published in top-tier journals, such as the *Journal of Information Technology (JIT)*; *New Technology, Work and Employment (NTWE)*; *Communications of the Association of Information Systems (CAIS)*; the *Journal of the Association for Information Science and Technology (JASIST)*, or *Scientometrics*.