NEXT-GENERATION INFORMATION SYSTEMS THEORIZING: A CALL TO ACTION[1]

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Why Theorize? Why Now? ▬▬▬▬

Theorizing is the intellectual engine of a scholarly community. With this special issue, we hope to inspire the IS community to reaffirm its commitment to developing foundational theories and offer bold new theoretical ideas and approaches to inspire and shape our field's future.

Such work is especially important now because of two trends.

In *practice*, the nature of information systems is changing faster and their impact is greater than ever before. So many of the grand challenges of our time, from health and well-being, to sustainability, education, and social inclusion, now depend deeply on information systems. We need bold new theories to help us understand these challenges and guide our contributions. While our field has always studied how information systems are developed and how individuals, groups, organizations, and markets interact with new technology (Sidorova et al. 2008, p. 475), these activities have changed dramatically and continue to do so. In contrast, theories tend to change slowly (Kuhn 1996) and as a result, many of our

theories are unlikely to be sufficient to address today's new challenges. We call upon the scholarly community to rethink our theories and create new theories to guide us.

In *research*, there is a noticeable counter-trend, namely a move toward doubting theory's value. While theory has had a hallowed status in many fields for decades (Mueller and Urbach 2017; Straub et al. 1994), two doubts are increasingly raised. Some question if researchers *need* theory in an age of big data and machine learning. According to this view, highly predictive algorithms may be enough; theory may not be needed (Anderson 2008; Kitchin 2014; Steadman 2013). Others ask why we *want* theory so much. From this perspective, too many researchers suffer from a theory fetish (Avison and Malaurent 2014), fixation (Hirschheim 2019), or obsession (Dennis 2019), and devalue other contributions (Ågerfalk 2014). Similar criticisms have been raised in other fields (Hambrick 2007), with some arguing that an obsession with theory risks their field's future (Tourish 2020).

Our response to the trend in practice is that *theorizing is now more critical than ever*. This is because what we are seeing

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[1]This special issue was accepted while Arun Rai was Editor-in-Chief.

in practice is a significant rise in complexity, and making sense of complexity is exactly what theory is for (Popper 1980, p. 59; Wilson 1998, p. 56). After all, the complexity of a domain rises with increases in the number of elements, interconnections, and dynamics (Wood 1986). Look at any context in our work or personal life and that's exactly what digitalization is doing: we see more sensors, data, and software, more interfaces and interactions, and more change. We need theories to help us make sense of this complex world and to act wisely.

Likewise, our response to the trend in research is that *better theorizing is now more critical than ever*. Rather than diminishing the value of theory, new forms of data and machine learning provide opportunities to improve theorizing, for example, by becoming new theorizing instruments (Einav and Levin 2014). Likewise, doubts over the value of theory should motivate us to theorize more effectively (Agarwal and Dhar 2014; Berente, Seidel, and Safadi 2019; Chang et al. 2014; Johnson et al. 2019). Many critiques of theorizing are actually just critiques of old-fashioned views of theorizing that we can move beyond. We need to adopt fresh approaches to theorizing for the road ahead (Jordan and Mitchell 2015).

Several of our sister disciplines are having similar discussions about their own theorizing (Haveman et al. 2019; Moorman et al. 2019; Zeithaml et al. 2020). And our colleagues in the data and machine learning communities are recognizing the need for theory to inform the development of algorithms and guide approaches for evidence-based decision making (Jordan and Mitchell 2015). The collective reflection in which we are engaged is an opportunity for all of us, across academic disciplines and between academia and industry, to reconsider old intellectual boundaries and lenses and bring fresh insights to our shared challenges.

We hope this special issue will fuel and sustain the intellectual engine of our scholarly community at this crucial point in history. The call for papers issued for this special issue resulted in the submission of far more papers than we could publish. Rather than being a problem, we saw this as a rare chance to trigger a broad intellectual movement that we hope will be reflected in the publication of exciting theoretical contributions across the field in the coming years. We are inspired by this movement, and hope you will be too.

What Do We Mean by Next-Generation Theorizing?

At first glance, next-generation theorizing might mean building theories of blockchain, Internet-of-Things, Industry 4.0, geotargeting, social analytics, big data, the dark web,

ephemeral data, machine learning, mashups, connected x, digital x, smart x, hyperautomation, quantum computing, and augmented reality. That is not what we mean.

As a field, Information Systems scholars know more than most how important it is to find a balance between focusing on fundamentals and fads in our theorizing. Accordingly, rather than referring to the latest "hot" topics, we use next-generation theorizing to refer to new ways of thinking that shift *significantly* from current patterns of theorizing and where this shift rewards scholars by revealing *significant* new lines of inquiry (adapted from Kitcher 1982, p. 48). The "generation" label, therefore, has a dual meaning: a new generation of ideas to inspire a new generation of scholars. In short, we are looking for fresh, bold, path-breaking ideas, ideas that can reshape prevailing paradigms or even spark new ones (Kuhn 1996).

Strategies for Next-Gen Theorizing

At this point, a reader might ask, "*MIS Quarterly* is always looking for new ways of thinking, so why do we need a special issue for it?" The reason is that scientific fields are often risk-averse (Wang et al. 2017). Authors can feel unsure how bold they can be, and journals may fail to receive or accept the novel papers they desire. While *MIS Quarterly* works hard to avoid those traps, we still face these risks. Accordingly, our goal in this special issue was to *explicitly call for* fresh, bold, path-breaking work, and to create a review process that would appreciate and celebrate it.

As noted above, next-generation theorizing is not an exercise in theorizing the latest hot topics. Rather, as Table 1 shows, we see four ways of engaging in it, defined by two axes:

- *Stance toward IS phenomena*: Researchers may be studying either existing or new phenomena. Both approaches have long traditions in our field, as shown, for example, by calls in *MIS Quarterly* editorials for researchers to reconsider the fundamental nature of IT artifacts (see Volume 27, Issue 1) as well as to study the latest IS phenomenon (see Volume 37, Issue 1). Either way, next-generation theorizing is needed when researchers realize that changes occurring in the contemporary world render existing theories insufficient. Changes in intellectual toolkits are needed to keep up with changes occurring in familiar phenomena and to understand new phenomena emerging.

- *Stance toward theorizing*: Researchers may be oriented toward using existing theories or inventing new ones. Both traditions have long histories in IS research (Keen

Table 1. Four Next-Gen Theorizing Strategies		Stance toward IS Phenomena	
		Studying existing phenomena in a changing world	**Studying new phenomena emerging in a changing world**
Stance toward Theorizing	*Inventing new IS theory*	**Replace** (Replacing existing theory with new IS theory to understand a phenomenon more effectively)	**Envision** (Developing a new theory that opens up a new world)
	Using existing (often reference-discipline) theory	**Reformulate** (Unpacking and altering a theory considerably so that it offers new and better insights)	**Extend** (Expanding a theory significantly so that it can explain/reveal a new world)

1980). Some researchers use existing theory (often from reference disciplines) (Dennis 2019) while others develop new theory (Grover and Lyytinen 2015; Sarker et al. 2019). Next-generation theorizing occurs when researchers show that well-accepted theories need to fundamentally change or that new theories must replace old theories in order to engage new realities.

To illustrate these notions, it is helpful to consider some prominent *MISQ* papers published with each strategy over the years.

A seminal example of the *replace* strategy is Dennis et al.'s (2008) award-winning paper urging researchers studying IT-mediated communication to shift from the theory of media richness to the theory of media synchronicity. A more recent (also award-winning) example is Lukyanenko et al.'s (2019) call for designers to shift from class-based data structures to instance-based data structures when designing systems for discovery-oriented data collection. In both cases, the papers tackled existing phenomena in the field (online communication and online data collection) and developed new theory to replace existing theory.

An influential example of the *reformulate* strategy is Nan's (2011) effort to improve the prevailing paradigm for studying system use, which relied on natural language formulations, with a more formal, agent-based formulation that afforded more rigorous analysis. A more recent example is Berente et al.'s (2019) use of institutional analysis to reformulate the resistance-to-change paradigm so that it can serve as a more suitable theoretical platform for research on enterprise systems.

Classic examples of the *envision* strategy include the development of a new design theory for emergent knowledge processes (Markus et al. 2002) and the formulation of a new paradigm for theorizing digital innovation in a ubiquitous

computing environment (Yoo 2010). In both cases, new theory was developed for new and important domains that were emerging at that time.

Finally, exemplars of the *extend* strategy include the extension of accepted theories of identity to study the emerging notion of "IT identity" (Carter and Grover 2015) and the extension of existing theories of the firm, and firm innovation, to study the changing structure of the firm in a platform-based economy (Parker et al. 2017). Once again, in these cases, the focus is on developing forward-looking theory to understand changes we are beginning to see in the world around us.

While none of these papers was explicitly framed as next-generation theorizing, each one exemplifies it. No matter their stance toward theorizing and toward IS phenomena, each one calls for and provides a significant shift in thinking, and opens significant new lines of inquiry.

The Role of the Past and the Future in Next-Gen Theorizing

As each of the four strategies in Table 1 emphasizes, next-gen theorizing aims to provide novel ways of thinking that are so sufficiently different they shift existing patterns of theorizing. A natural question to ask is: How do we generate next-gen theoretical innovation and what makes it different?

Broadly, we see two views of what *novelty* means, providing researchers with different ways to consider next-generation theorizing.

A linear view on novelty will make sense for researchers who see theory building in chronological terms, gaining a better understanding through successive efforts over time (Cook and Campbell 1979). From this perspective, a next-generation theory opens up a new line of work that builds on a prior line but extends it in a new direction.

A hermeneutic view on novelty will make sense for researchers who see theory building as ongoing attempts to reach a better understanding of a phenomenon by cycling between understanding the parts and the whole (Bernstein 1983). Repeated cycles of the hermeneutic circle create multiple interpretations which afford the possibility to reach original or unusual understandings that relate to the horizons of prior views (Peat et al. 2019). From this perspective, a next-generation theory will provide a significant and original interpretation of a part, a whole, or a fusion of horizons.

We stress this point about novelty for the simple reason that pushing for next-generation or new thinking does not mean forgetting the past. In both interpretations above, we cannot understand the future without appreciating the past. In the linear view, scholars must understand the past because the new lines of inquiry are still path-dependent. In the hermeneutic view, scholars must understand the past because current and past understandings are related through the hermeneutic circle. Both views also provide us with a way to think of what is new. New insights can help move the field forward (linear view) or deeper and outward (hermeneutic view).

It is important for scholars to understand this link between the old and the new because a key characteristic of the IS field is our constantly changing phenomena: novel technologies and uses continue to emerge (Wang 2010). And yet, we also have long-lived, persistent phenomena, such as the fundamentals of information, sociotechnical systems, legacy infrastructure, and the installed base (Boell 2017; Bostrom and Heinen 1977; Keen 1980; McKinney and Yoos 2010; Sarker et al. 2019; Star and Ruhleder 1996; Winter et al. 2014). Thus, those engaging in next-generation theorizing must keep an eye on the past while also looking to (or even creating) the future.

To see all these aspects of next-generation theorizing in action, consider the last special issue on theory in this journal. The current special issue is *MIS Quarterly's second* special issue devoted to theory papers. In March 1999, *MIS Quarterly* issued a Call for Submissions for a Special Issue on Redefining the Organizational Roles of Information Technology in the Information Age, with the papers ultimately published across two years (2002–2003). While not named as such, that special issue was an exercise in next-generation theorizing motivated by changes occurring during the 1990s. The papers in that special issue (Griffith et al. 2003; Lamb and Kling 2003; Markus et al. 2002; Sambamurthy et al. 2003) all became classics.

All four of those papers focused on contemporary phenomena (knowledge management, digital strategy, and virtual teams), illustrated new ways of thinking (design theorizing and options thinking), and broadened and challenged core concepts (attributing agency to IT not just to users, and critiquing the notion of "users" altogether). Inspired by the changing contexts of that time, these authors helped reshaped the field's thinking and ushered in multiple new lines of inquiry (achieving an average of 1700 citations each on Google Scholar).

Despite the continued relevance of these papers, the world has changed greatly since then. With the passage of time, several characteristics of these studies are quite noticeable. For example, they focused squarely on organizational contexts and implications, whereas now the line between organizational and non-organizational contexts often blurs, and many more social implications are recognized. They also viewed technological phenomena as relatively isolatable and stable whereas now there is increasing recognition of the interconnected and overflowing nature of the digital world. With such significant shifts taking place, it is unsurprising that other disciplines have joined us in studying "technology." This challenges us to strive toward having impact beyond the IS field, reinforcing a long-standing commitment to make digital and digitalization our primary focus, not a background interest, all of which suggests that we need next-generation theories and approaches to understand the new world we inhabit and see ahead.

Updating Views on Theory to Enable Next-Generation Theorizing

Publishing ground breaking theoretical work can be challenging if reviewers' views on theorizing are locked in the past. This special issue provides a good opportunity to engage in discussions about the practice of theorizing. After all, it is hard to engage in next-generation scholarship if our views on theorizing are out-of-date.

The IS field has a long tradition of reflecting on its theories and theorizing (Keen 1980). While many of these papers are well-known, we offer a summary in Table 2 as a reminder. This literature has been enormously helpful to us and many others, as has been the broader literature on theorizing in general (Dubin 1978; Jaccard and Jacoby 2010; Schutz 1962) and in our neighboring fields (Carroll and Kellogg 1989; Makadok et al. 2018; Tadajewski 2004; Wacker 1998; Weick 1995).

As we worked on this special issue, we reviewed and reflected on this literature, as well as on our own experiences as authors and editors. We identified ways of thinking that work against taking a next-generation view. In particular, we believe that some researchers are held back from engaging in next-generation theorizing, and some reviewers are held back from

Table 2. Insights from the IS Literature on Theory and Theorizing	
Categories of Insights	**Example References**
Calls for IS-specific vis-à-vis reference discipline theory	Benbasat and Weber 1996; Grover and Lyytinen 2015; Keen 1980; Lee 2001; Markus and Saunders 2007; Orlikowski and Iacono 2001; Truex et al. 2006; Weber 1987
The nature of theory and good theory	Gregor 2006; Hassan et al. 2019; Lee and Baskerville 2003; Rivard 2014; Weber 2003, 2012
Aspects of causal structure	Avgerou 2013, 2019; Burton-Jones et al. 2015; Davison and Martinsons 2016; Hong et al. 2014; Lee et al. 1997; Markus and Robey 1988; Markus and Rowe 2018; Paré et al. 2008; Zhang and Gable 2017
The roles of theory in interpretive, positivist, and critical research	Carroll and Swatman 2000; Klein and Myers 1999; Lee 1991; Longshore Smith 2006; Orlikowski and Baroudi 1991; Walsham 1993
The nature and opportunities of grounded theorizing	Berente, Seidel, and Safadi 2019; Birks et al. 2013; Urquhart and Fernandez 2013; Urquhart et al. 2010; Weische et al. 2017
The role of theory in design and action research	Baskerville et al. 2018; Davison et al. 2012; Gregor and Jones 2007; Gregory and Muntermann 2014; Rai 2017

appreciating next-generation theorizing, because one or both parties has an underdeveloped perspective on theorizing.

Accordingly, in Table 3, we detail four shifts in the way theorizing is often understood that we believe are important for enabling next-generation theorizing:

- from theory as an intellectual product to theory as an intellectual conversation
- from theory as truth to theory as a lens
- from theory as purely desk work to theory as reflective engagement
- from theory as purely representational to performative

Each shift allows reviewers to provide more helpful and developmental reviews of theoretical work. Viewing theorizing as a conversation enables reviewers to appreciate how authors are trying to support or change a theoretical tradition. Viewing theory as a lens helps reviewers appreciate the value of different perspectives. Viewing theorizing as reflective engagement allows reviewers to appreciate the benefits of learning from abstract reflection on one hand and learning in engaged modes of design and/or action on the other. And by viewing theorizing as performative, reviewers can see how authors are being mindful of theoretical positions, the world with which they are entangled, and how theories can become generative in ways that are world-making.

In sum, when reviewers keep all four of these perspectives in mind, we believe they will be more able to identify and shape the potential of next-generation theories. And when both authors and reviewers appreciate these perspectives, we believe next-generation theories are more likely to emerge. Accordingly, we kept these in mind throughout this special issue process.

The IS Field's Capabilities and Responsibilities to Engage in Next-Generation Theorizing

At this point in human history, as digitalization shapes almost every aspect of work and life, IS phenomena are arguably some of the most salient phenomena of our time. Unsurprisingly, many fields are now trying to grapple with them. Yet it remains the case that the IS research community is uniquely capable of doing so, because we have been theorizing the design, nature, and effects of information technology in business and society for half a century (Emery 1973; Langefors and Samuelson 1975; Mason and Mitroff 1973).

Our theorizing over these decades has benefited from a culture that values theory both for its power of application and "for its own sake" (Keen 1980, p. 12). Such a culture has been incredibly important because it has enabled and encouraged scholars to explore the profound complexity of the phenomena that emerge at the intersection of IT and social settings (Lee 1999). It is hard not to overstate this complexity. Because information systems are open systems, there is an inexorable tension between studying the whole system in all its intricacy (where we risk saying nothing about a lot) and focusing on a small subset that is more feasible to study (where we risk saying a lot about nothing). Much of our field's history has involved finding a balance between these poles, and rebalancing over time as the phenomena we study evolve (Kling and Scacchi 1982; Mumford 2003; Orlikowski and Scott 2008; Robey et al. 2013; Sarker et al. 2019; Winter et al. 2014).

	Shifts in Views of		Implications of the Shift for	Implications of the Shift for
#	Theorizing	Description of Each View	Theorizing in General	Theorizing in IS
1	From: *Theory as intellectual product*	Theory is an explicit set of statements using constructs and relationships to explain a particular phenomenon.	Knowing the history of theoretical ideas helps researchers when selecting, building, or assessing theory. For instance, the choice of a theory in a study often makes more sense when you know the choices in prior studies. Likewise, the way a theory is used in a study (perhaps in a different way to the theory's original intent) may make sense when viewed in context.	Need to appreciate the history of ideas in IS because some parts of the field change (sometimes dramatically) while others stay stable. The goal is to improve and celebrate old ideas while building and refining new ideas. Ideas may also move in and out of relevance over time (e.g., the rise, fall, and rise of interest in ethics).
	To: *Theory as intellectual conversation*	Theory is an evolving set of ideas that emerge and change over time within and among scholarly communities. The theory in a specific paper is a version stabilized among an authorship and review team at one time.		
2	From: *Theory as truth*	A theory is an attempt to mirror a portion of reality. The goal is to select theories with greater fidelity and to improve the fidelity of existing theory.	Researchers will gain more from seeking requisite variety in lenses rather than holding a winner-takes-all view of theory, and by seeking tractable uncertainty and productive insight rather than seeking certainty. New methods of data-informed theorizing offer new opportunities for theorizing by providing and refining lenses.	Need to recognize that many IS phenomena are emergent, dynamic, and sociotechnically complex. Need to scope theories carefully, appreciate how theories are enabled and constrained by our methods, and recognize that scholarly communities evolve with different/changing starting assumptions.
	To: *Theory as lens*	A theory is a lens purposefully selected for its specific focus and relevance to key research questions. Need diversity in lenses because the world is complex and overflows a single perspective or priorities. Lenses may offer value by surfacing questions or sensibilities, not just answers.		
3	From: *Theory as purely desk work*	A theory is ultimately a product of the researcher's intellect (e.g., worked out in her/his armchair or desk), removed from the empirical world being studied.	Researchers seeking to build or advance theory may need to engage in the field through design, action, or interaction even *more* than those who wish merely to apply or test theory or who conduct atheoretical work. By corollary, lack of access to the field or constraints on design/action can constrain theory building.	Need to be aware how the world is changing, how we are being prevented or constrained from understanding certain parts of it, and how we can engage ourselves in action, design, and learning with and from practitioners to theorize important issues.
	To: *Theory as reflective engagement*	A theory can be a product of reflective engagement and action research scholarship. While theorizing can require desk work, it can also occur in and through practice in the field and during design.		
4	From: *Theory as purely representational*	A theory is a simplified representation of how a portion of the world works. The aim is to articulate the core logic in a simple, accurate, generalizable way.	Researchers need to be attentive to their entanglement with the world and the generativity of the models with which they work (whether developed in research or practice). Researchers can contribute by articulating, critiquing, or even improving these theories, mindful of the effects of doing so.	Need to appreciate how the sociomaterial phenomena we are studying is itself partly a product of theorizing, and how our theorizing, in turn, can potentially be enrolled (by us and others) into world-making activities that can make a difference.
	To: *Theory as performative*	A theory that is performative describes and produces the world simultaneously. Theories are thus 'models of' and 'models for' the world. They can make a difference to events and the enactment of reality (both positively and negatively).		

Not only has the IS field valued theorizing for many years, our focus on theorizing has increased in intensity over time (Dennis 2019; Hirschheim and Klein 2012).[2] As a result, the IS field has now generated rich theoretical traditions across its various domains, from understanding how systems are developed (e.g., Hirschheim et al. 1995; Orlikowski 1993; Sabherwal and Robey 1995), to understanding the many ways individuals, groups, organizations, and markets interact with IT (e.g., Choudhury et al. 1998; Dennis et al. 2001; Hitt and Brynjolfsson 1996; Majchrzak et al. 2000; Robey and Boudreau 1999; Venkatesh et al. 2003; Zuboff 1988). The IS field also has a rich history of questioning and improving the philosophical foundations upon which these theories are based (Hasan et al. 2018; Hirschheim et al. 1995; Mingers and Willcocks 2004). These improvements in our theories and theoretical foundations have further benefitted from interplay with our empirical traditions, such as our longstanding respect for new data and analysis techniques (Brynjolfsson and Kahin 2000; Maas et al. 2018), diverse research methods (Birks et al. 2013; Rai 2017; Robey 1996; Sein et al. 2011), and diverse contexts (Avgerou 2019; Hong et al. 2014; Ngwenyama and Lee 1997).

Valuing theory comes with costs and challenges. Building and writing theory can be time consuming and frustrating for authors. The seemingly never-ending dialogues and debates that come with building a body of theory can hinder the timely description and addressing of practical topics. The language of theory is also often seen by practitioners as esoteric and academic, exacerbating the research–practice divide. Our field has a long history of recognizing these challenges (Hovorka et al. 2019; Keen 1980).

Despite the costs and limitations that a focus on theory can impose, the theorizing capabilities developed in the IS field over the past 50 years are critically important, and must be nurtured, because the trends now facing the world are more complex and serious than ever. In the field's early days, some researchers critiqued what we theorized as "much ado about nothing" (Huber 1983). But that time has long gone. The contemporary world is overflowing in digital interactions, with increasingly serious consequences for individuals, groups, organizations, markets, and societies (Bharadwaj et al. 2013a; Majchrzak et al. 2016). The world of research is likewise overflowing with digitalization, with ever-more sensors, data, and techniques (Bailey and Barley 2020).

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[2]We verified this trend by examining *MISQ*'s editorial notes throughout the journal's history. We found that while editors have balanced their focus on theory and practice throughout *MISQ*'s history, editors focused more on practice in the early years and more on theory in later years, with the 1990s being the transition.

Because of the growing challenges and complexities wrought by digital evolution, researchers have a great responsibility to develop theories that can help society make sense of and act in the world we encounter and are involved in creating. Because of our strong capabilities in theorizing, the IS field is exceptionally well-suited to do so. The responsibility and opportunity is ours.

The Special Issue Process and Papers

Motivated by the need to demonstrate and further develop the IS field's theoretical capabilities, we released our call for papers in 2018. We were excited but unsure what we would receive. We were delighted by the response! In this section, we outline how we handled the papers we received and we introduce the papers we accepted.

The special issue process involved four rounds: submission of abstracts, submission of full papers, and two rounds of revisions. We conducted reviews at each stage to provide feedback and cultivate the best work. From around 170 abstracts and 60 full paper submissions, five full papers emerged. The submitted papers covered the full range of topics and approaches in the field. We hope all these papers go on to have substantial influence. The five papers we accepted, in particular, are outstanding examples of next-generation theorizing that we expect to have long-lasting influence.

In addition to these full papers, we also invited a number of short contributions on theorizing, under the theme of theoretical "provocations." As the name suggests, we hope these thought pieces will provoke readers to think anew about the work they currently do or might do going forward.

When we reviewed and developed the full papers and provocations, we followed our call-for-papers in searching for manuscripts that excelled in the following dimensions:

- *Motivate*: We sought papers that revealed salient problems with existing theory and provided a powerful case to support new theorizing. We asked reviewers to question whether the theorization would make a real difference to our understanding going forward.

- *Create*: We sought papers that advanced theory significantly or created entirely new theory. We asked our reviewers to support authors in advancing beyond familiar or established theories and help them develop ideas that could be used by others.

- *Mobilize*: We sought papers that could excite readers to pursue a new theory's implications. We asked reviewers to share our goal of finding inspiring ideas and approaches that enable the IS community to research differently and better address the challenges around us.

For the full papers, we encouraged papers that demonstrated excellence on all three of these dimensions. For the invited provocations, we asked authors to focus on motivating and mobilizing alone, to incite readers to tackle the creation aspect themselves in the future.

The Full Papers: Exemplars of Next-Generation Theorizing in Information Systems

We accepted five full papers, each one introducing a significant shift in thinking in the IS field. Collectively, the papers reflect all four strategies for engaging in next-generation theorizing shown earlier in Table 1. Like many strong papers, they make multiple contributions that can be interpreted in different ways. While our summaries below cannot do justice to their entire contribution, they provide a glimpse of what these papers offer.

- Dorothy Leidner and Olgerta Tona, in their paper "The CARE Theory of Dignity Amid Personal Data Digitalization," are motivated by the proliferation of personal data and its implications for human dignity. The authors outline the limitations of past theories and perspectives for addressing the totality of the issue and, therefore, the need for a new overarching theory. The new theory they create helps reveal the complex relationships between personal data digitalization and human dignity, including its positive and negative elements, its individual and collective elements, and its immediate and longitudinal trends. By serving as an overarching theory, complementing and extending a number of influential theories in the field, the new theory offers numerous opportunities for researchers to extend and test it. In terms of Table 1, this paper is an excellent example of the "extend" strategy, in that the authors extend theories of dignity to understand an important emerging phenomenon.

- Ping Wang's paper, "Connecting the Parts with the Whole: Toward an Information Ecology Theory of Digital Innovation Ecosystems," is an excellent example of the "replace" strategy in Table 1. Motivated by the growing importance of innovation ecosystems and the difficulty of sustaining them, Wang builds a theory to understand how efforts can be integrated in such systems. Whereas prior studies examined this issue from the per-

spective of an ecosystem's parts, Wang replaces this view with a focus on part-whole dynamics. He achieves this shift by introducing the concept of *holon* from ecology to theorize part–whole relations. He also links it to fundamental IS-specific concepts, such as information processing, and shows how it can help us understand the role played by digital technologies in serving to integrate the parts and whole of an innovation ecosystem. The new theory offers a fruitful lens for exploring how to orchestrate a sustainable innovation ecosystem.

- Reza Mousavi Baygi, Lucas Introna, and Lotta Hultin, in their paper "Everything Flows: Studying Continuous Socio-Technological Transformation in a Fluid and Dynamic Digital World," provides another example of the "replace" strategy. Their paper is motivated by the constant transformative change and flux wrought by new technologies that we see all around us. While they acknowledge the growing importance of this issue, their point is that this has always been the case, for transformative change is all there is. Their paper argues that while prior theories (which tend to be actor-centric) have their place, researchers can benefit from shifting to an alternative, flow-centered orientation to theorizing. The authors offer concepts from social anthropology to enable this shift toward flow and show how they can transform what we look at and theorize. Specifically, they show how such an orientation toward flow can help us make sense of rapidly shifting digital phenomena (such as the online emergence of political movements). The authors also outline the implications of their flow perspective for rethinking how we theorize in the field.

- Aaron Baird and Likoebe Maruping's paper, "The Next Generation of Research on IS Use: A Theoretical Framework of Delegation to and from Agentic IS Artifacts," is an exemplar of the "reformulate" strategy. Motivated by the increasing degrees of agency found in contemporary information systems, the authors call for a change to the traditional "IS use" paradigm—arguably the largest body of theory in our field. They argue that this traditional IS use paradigm needs an accompanying delegation paradigm if we are to understand the use of agentic IS artifacts. The reformulation requires a new way of thinking about use, users, systems, and how their interrelationships lead to outcomes in particular tasks and contexts. The authors offer a new framework of delegation to help guide research, illustrate several ways it can be applied, and outline how it can be extended by others in the future.

- Gerald Kane, Amber Young, Ann Majchrzak, and Sam Ransbotham's, "Avoiding an Oppressive Future of

Machine Learning: A Design Theory for Emancipatory Assistants," illustrates the "envision" strategy. Rather than explaining the current world, they look into the future—a future that could be just around the corner given the signs and trends that we see around us. Alarmed by the potential oppression that could occur in this future environment (a world they call "Informania"), they draw on the traditions of critical theorists and design theorists to offer a new theory for the design of personal agents to fight AI oppression. The aim of these agents is to help avoid a state of Informania and create a future marked by reconciliation between machines and humans rather than oppression. This thought-provoking paper offers new design principles for designers to use and for researchers to explore. It also exemplifies a form of theorizing that might be applied fruitfully in many domains of IS research in the future.

The Provocations: Ideas and Challenges for Next-Generation Theorizing in Information Systems

We invited eight short provocations, each undergoing several rounds of editorial review. We selected author teams based on the abstracts we received from our first call for papers together with a desire to represent the diversity of voices and approaches in the field. We sought contributions that could help the field avoid the perils of risk-aversion that can impede theorizing (Wang et al. 2017) and the tendency to follow existing scripts (Grover and Lyytinen 2015). Much like the "Visions and Voices" contribution in the Digital Business Strategy special issue (Bharadwaj et al. 2013b), we hoped to encourage researchers to think differently, spark debate, and unsettle researchers who have fallen into a rut with existing scripts.

Each of the provocations provokes researchers in different ways:

- Monica Tremblay, Rajiv Kohli, and Nicole Forsgren provoke the field to rethink what theorizing should be with practitioner–academic engagement, in their provocation, "Theories in Flux: Reimagining Theory Building in the Age of Machine Learning."

- Dirk Hovorka and Sandra Peter provoke the field to revisit its responsibility to help society understand and shape our shared futures, in their provocation, "Speculatively Engaging Future(s): Four Theses."

- Michael Barrett and Wanda Orlikowski provoke the field to rethink the limits of practice theories in the face of the growing scale of digital phenomena, and the limits to our understanding of scale as revealed by practice theories, in their provocation, "Scale Matters: Doing Practice-Based Studies of Contemporary Digital Phenomena."

- Erik Brynjolfsson, Chong (Alex) Wang, and Xiaoquan (Michael) Zhang provoke the field to migrate to new questions, and new ways of answering questions, on the economics of IT, in their provocation, "The Economics of IT and Digitization: Eight Questions for Research."

- Sudha Ram and Paulo Goes provoke the field to question the place of theory in the pursuit of high-impact research, in their provocation, "Focusing on Programmatic High Impact Information Systems Research, Not Theory, to Address Grand Challenges."

- Bernd Stahl and M. Lynne Markus provoke the field to reflect on how it can take a leadership position in the ethics of smart systems, in their provocation, "Let's Claim the Authority to Speak Out on the Ethics of Smart Information Systems."

- Natalia Levina provokes the field to reflect on the need to be more transparent and systematic in the way it conceptualizes, uses, and describes theorizing, in her provocation, "All Information Systems Theory Is Grounded Theory."

- Finally, John Leslie King provokes scholars to get back to their roots in understanding what theorizing is and why it matters, in his provocation, "Who Needs Theory?"

Conclusion

Working on this special issue has been an immense privilege for us. We saw our roles as helping the IS field, in at least a small way, to reimagine its theoretical foundations and futures. It has been an exciting and challenging journey! We received many more submissions than we could publish, and we hope all these papers go on to be published in the future. Together with the excellent papers in this special issue, we hope this new body of theoretical work creates a new wave of interest in theory and theorizing, and a new wave of energy for advancing IS research of all genres.

As we wrap-up this special issue, we are even more excited about the potential for theorizing in our field than we were at its start. The special issue process afforded us a two-year's long conversation with scholars from all corners of our field interested in reflecting on and debating theory. The process

has reinforced our belief that it has never been a more important time in our field to theorize creatively and boldly. It is through theorizing that we create new ideas and insights. Theorizing is an expression of our curiosity—our need to wonder, invent, imagine. And nothing is surer than the need for this to continue. To paraphrase Duke Ellington's description of a great musician, it is through theorizing that we keep the intellectual foundations of our field "perpetually contemporary" (Williams 2007).

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References

Agarwal, R., and Dhar, V. 2014. "Big Data, Data Science, and Analytics: The Opportunity and Challenge for IS Research," *Information Systems Research* (25:3), pp. 443-448.

Ågerfalk, P. 2014. "Insufficient Theoretical Contribution: A Conclusive Rationale for Rejection?," *European Journal of Information Systems* (23:6), pp. 593-599.

Anderson, C. 2008. "The End of Theory," *Wired* (16:7), p. 71.

Avgerou, C. 2013. "Social Mechanisms for Causal Explanation in Social Theory Based IS Research," *Journal of the Association for Information Systems* (14:8), pp. 399-419.

Avgerou, C. 2019. "Contextual Explanation: Alternative Approaches and Persistent Challenges," *MIS Quarterly* (43:3), pp. 977-1006.

Avison, D., and Malaurent, J. 2014. "Is Theory King? Questioning the Theory Fetish in Information Systems," *Journal of Information Technology* (29), pp. 327-336.

Bailey, D. E., and Barley, S. R. 2020. "Beyond Design and Use: How Scholars Should Study Intelligent Technologies," *Information and Organization* (30:2), pp. 1-12.

Baird, A., and Maruping, L. M. 2021. "Theorizing IS Delegation: Supporting the Next Generation of IS Use Research," *MIS Quarterly* (45:1), pp. 315-341.

Barrett, M., and Orlikowski, W. 2021. "Scale Matters: Doing Practice-Based Studies of Contemporary Digital Phenomena," *MIS Quarterly* (45:1), pp. 467-472.

Baskerville, R. L., Baiyere, A., Gregor, S., Hevner, A. R., and Rossi, M. 2018. "Design Science Reesarch Contributions: Finding a Balance between Artifact and Theory," *Journal of the Association for Information Systems* (19:5), pp. 358-376.

Benbasat, I., and Weber, R. 1996. "Rethinking 'Diversity' in Information Systems Research," *Information Systems Research* (7:4), pp. 389-399.

Berente, N., Lyytinen, K., Yoo, Y., and Maurer, C. 2019. "Institutional Logics and Pluralistic Responses to Enterprise Systems Implementation: A Qualitative Meta-Analysis," *MIS Quarterly* (43:3), pp. 873-902.

Berente, N., Seidel, S., and Safadi, H. 2019. "Research Commentary—Data-Driven Computationally-Intensive Theory Development," *Information Systems Research* (30:1), pp. 50-64.

Bernstein, R. J. 1983. *Beyond Objectivism and Relativism: Science, Hermeneutics, and Praxis*, Philadelphia: University of Pennsylvania Press.

Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., and Venkatraman, N. 2013a. "Digital Business Strategy: Toward a Next Generation of Insights," *MIS Quarterly* (37:2), pp. 471-482.

Bharadwaj, A., El Sawy, O. A., Pavlou, P., and Venkatraman, N. 2013b. "Visions and Voices on Emerging Challenges in Digital Business Strategy," *MIS Quarterly* (37:2), pp. 633-661.

Birks, D. F., Fernandez, W., Levina, N., and Nasirin, S. 2013. "Grounded Theory Method in Information Systems Research: Its Nature, Diversity, and Opportunities," *European Journal of Information Systems* (22:1), pp. 1-8.

Boell, S. K. 2017. "Information: Fundamental Positions and Their Implications for Information Systems Research, Education, and Practice," *Information and Organization* (27), pp. 1-16.

Bostrom, R. P., and Heinen, J. S. 1977. "MIS Problems and Failures: A Socio-Technical Perspective. Part 1: The Causes," *MIS Quarterly* (1:3), pp. 17-32.

Brynjolfsson, E., and Kahin, B. (eds.). 2000. *Understanding the Digital Economy: Data, Tools, and Research*, Cambridge, MA: MIT Press.

Brynjolfsson, E., Wang, C., and Zhang, X. 2021."The Economics of IT and Digitization: Eight Questions for Research," *MIS Quarterly* (45:1), pp. 473-477.

Burton-Jones, A., McLean, E., and Monod, E. 2015. "Theoretical Perspectives in IS Research: From Variance and Process to Conceptual Latitude and Conceptual Fit," *European Journal of Information Systems* (24:6), pp. 664-679.

Carroll, J. M., and Kellogg, W. A. 1989. "Artifact as Theory-Nexus: Hermeneutics Meets Theory-Based Design," *ACM SIG CHI Bulletin* (20:SI), 1989, pp. 7-14.

Carroll, J. M., and Swatman, P. A. 2000. "Structured-Case: A Methodological Framework for Building Theory in Information Systems Research," *European Journal of Information Systems* (9:4), pp. 235-242.

Carter, M., and Grover, V. 2015. "Me, My Self, and I(T): Conceptualizing Information Technology Identity and its Implications," *MIS Quarterly* (39:4), pp. 931-957.

Chang, R. M., Kauffman, R. J., and Kwon, Y. O. 2014. "Understanding the Paradigm Shift to Computational Social Science in the Presence of Big Data," *Decision Support Systems* (63), pp. 67-80.

Choudhury, V., Hartzel, K., and Konsynski, B. 1998. "Uses and Consequences of Electronic Markets: An Empirical Investigation in the Aircraft Parts Industry," *MIS Quarterly* (22:4), pp. 471-507.

Cook, T. D., and Campbell, D. T. 1979. *Quasi-Experimentation: Design & Analysis Issues for Field Settings*, Boston: Houghton Mifflin.

Davison, R. M., and Martinsons, M. G. 2016. "Context Is King! Considering Particularism in Research Design and Reporting," *Journal of Information Technology* (31:3), pp. 241-249.

Davison, R. M., Martinsons, M. G., and Ou, C. X. J. 2012. "The Roles of Theory in Canonical Action Research," *MIS Quarterly* (36:3), pp. 763-786.

Dennis, A. R. 2019. "An Unhealthy Obsession with Theory," *Journal of the Association for Information Systems* (20:9), pp. 1406-1411.

Dennis, A. R., Fuller, R. M., and Valacich, J. S. 2008. "Media, Tasks, and Communication Processes: A Theory of Media Synchronicity," *MIS Quarterly* (32:3), pp. 575-600.

Dennis, A. R., Wixom, B. H., and Vandenberg, R. J. 2001. "Understanding Fit and Appropriation Effects in Group Support Systems via Meta-Analysis," *MIS Quarterly* (25:2), pp. 167-193.

Dubin, R. 1978. *Theory Building* (rev. ed.), New York: The Free Press.

Einav, L., and Levin, J. 2014. "Economics in the Age of Big Data," *Science* (346:6210), 1243089.

Emery, J. C. 1973. "An Overview of Management Information Systems," *The DATA BASE for Advances in Information Systems* (5), pp. 1-15.

Goes, P. 2013. "Editor's Comments," *MIS Quarterly* (37:1), pp. iii-vii.

Gregor, S. 2006. "The Nature of Theory in Information Systems," *MIS Quarterly* (30:3), pp. 611-642.

Gregor, S., and Jones, D. 2007. "The Anatomy of a Design Theory," *Journal of the Association for Information Systems* (8:5), pp. 312-335.

Gregory, R. W., and Muntermann, J. 2014. "Heuristic Theorizing: Proactively Generating Design Theories," *Information Systems Research* (25:3), pp. 639-653.

Griffith, T. L., Sawyer, J. E., and Neale, M. A. 2003. "Virtualness and Knowledge in Teams: Managing the Love Triangle of Organizations, Individuals, and Information Technology," *MIS Quarterly* (27:2), pp. 265-287.

Grover, V., and Lyytinen, K. 2015. "New State of Play in Information Systems Research: The Push to the Edges," *MIS Quarterly* (39:2), pp. 271-296.

Hambrick, D. C. 2007. "The Field of Management's Devotion to Theory: Too Much of a Good Thing?," *Academy of Management Journal* (50:6), pp. 1346-1352.

Hasan, N. R., Mingers, J., and Stahl, B. 2018. "Philosophy and Information Systems: Where are We and Where Should We Go?," *European Journal of Information Systems* (27:3), pp. 263-277.

Hassan, N. R., Mathiassen, L., and Lowry, P. B. 2019. "The Process of Information Systems Theorizing as a Discursive Practice," *Journal of Information Technology* (34:3), pp. 198-220.

Haveman, H. A., Mahoney, J. T., and Mannix, E. 2019. "Call for Papers: AMR Special Topic Forum: The Role of Theory in Management Research," *Academy of Management Review*, pp. 1-3.

Hirschheim, R. 2019. "Against Theory: With Apologies to Feyerabend," *Journal of the Association for Information Systems* (20:9), pp. 1340-1357.

Hirschheim, R., and Klein, H. K. 2012. "A Glorious and Not-So-Short History of the Information Systems Field," *Journal of the Association for Information Systems* (13:4), pp. 188-235.

Hirschheim, R., Klein, H., and Lyytinen, K. 1995. *Information Systems Development and Data Modeling: Conceptual and Philosophical Foundations*, Cambridge, UK: Cambridge University Press.

Hitt, L. M., and Brynjolfsson, E. 1996. "Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Technology Value," *MIS Quarterly* (20:2), pp. 121-142.

Hong, W., Chan, K. Y., Thong, J. Y. L., Chasalow, L., and Dhillon, G. 2014. "The Role of Context in Theory Development: A Framework and Guidelines for Context-Specific Theorizing in Information Systems Research," *Information Systems Research* (25:1), pp. 111-136.

Hovorka, D., Rowe, F., Markus, M. L., Jarvenpaa, S., Swanson, E. B., Lacity, M., Burton-Jones, A., Venkatesh, V., and Hirschheim, R. 2019. "Scholarly Commentaries on Hirschheim's 'Against Theory,'" *Journal of the Association for Information Systems* (20:9), pp. 1358-1389.

Hovorka, D. S., and Peter, S. 2021. "Speculatively Engaging Future(s): Four Theses," *MIS Quarterly* (45:1), pp. 461-466.

Huber, G. P. 1983. "Cognitive Style as a Basis for MIS and DSS Design: Much Ado About Nothing?," *Management Science* (29:5), pp. 567-579.

Jaccard, J., and Jacoby, J. 2010. *Theory Construction and Model-Building Skills*, New York: Guilford Press.

Johnson, S. L., Gray, P., and Sarker, S. 2918, "Revisiting IS Research Practice in the Era of Big Data," *Information and Organization* (29), pp. 41-56.

Jordan, M. I., and Mitchell, T. M. 2015. "Machine Learning: Trends, Perspectives, and Prospects," *Science* (349:6245), pp. 255-260.

Kane, G. C., Young, A. G., Majchrzak, A., and Ransbotham, S. 2021. "Avoiding an Oppressive Future of Machine Learning: A Design Theory for Emancipatory Assistants," *MIS Quarterly* (45:1), pp. 371-396.

Keen, P. G. W. 1980. "MIS Research: Reference Disciplines and a Cumulative Tradition," in *Proceedings of the First Conference on Information Systems*, Philadelphia, PA, pp. 9-18.

King, J. L. 2021. "Who Needs Theory," *MIS Quarterly* (45:1), pp. 495-498.

Kitcher, P. 1982. *Abusing Science: The Case Against Creationism*, Cambridge, MA: The MIT Press.

Kitchin, R. 2014. "Big Data, New Epistemologies and Paradigm Shifts," *Big Data and Society* (1:1), pp. 1-12.

Klein, H. K., and Myers, M. D. 1999. "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems," *MIS Quarterly* (23:1), pp. 67-93.

Kling, R., and Scacchi, W. 1982. "The Web of Computing: Computer Technology as Social Organization," *Advances in Computers* (21), pp. 1-90.

Kuhn, T. S. 1996. *The Structure of Scientific Revolutions* (3rd ed.), Chicago: University of Chicago Press.

Lamb, R., and Kling, R. 2003. "Reconceptualizing Users as Social Actors in Information Systems Research," *MIS Quarterly* (27:2), pp. 197-235.

Langefors, B., and Samuelson, K. 1975. *Information and Data in Systems*, New York: Petrocelly/Charter.

Lee, A. S. 1991. "Integrating Positivist and Interpretive Approaches to Organizational Research," *Organization Science* (2:4), pp. 342-365.

Lee, A. S. 1999. "Inaugural Editor's Comments: The MIS Field, the Publication Process, and the Future Course of *MIS Quarterly*," *MIS Quarterly* (23:1), pp. v-xi.

Lee, A. S. 2001. "Editor's Comments: Research in Information Systems: What We Haven't Learned," *MIS Quarterly* (25:4), pp. v-xv.

Lee, A. S., and Baskerville, R. 2003. "Generalizing Generalizability in Information Systems Research," *Information Systems Research* (14:3), pp. 221-243.

Lee, B., Barua, A., and Whinston, A. B. 1997. "Representation of Causal Relationships in MIS Research: A Methodological Framework," *MIS Quarterly* (21:1), pp. 109-136.

Leidner, D., and Tona, O. 2021. "The CARE Theory of Dignity Amid Personal Data Digitalization," *MIS Quarterly* (45:1), pp. 343-370.

Levina, N. 2021. "All Information Systems Theory Is Grounded Theory," *MIS Quarterly* (45:1), pp. 489-494.

Longshore Smith, M. 2006. "Overcoming Theory–Practice Inconsistencies: Critical Realism and Information Systems Research," *Information and Organization* (16), 2006, pp. 191-211.

Lukyanenko, R., Parsons, J., Wiersma, Y., and Maddah, M. 2019. "Expecting the Unexpected: Effects of Data Collection Design Choices on the Quality of Crowdsourced User-Generated Content," *MIS Quarterly* (43:2), pp. 623-647.

Maas, W., Parsons, J., Purao, S., Storey, V. C., and Woo, C. 2018. "Data-Driven Meets Theory-Driven Research in the Era of Big Data: Opportunities and Challenges for Information Systems Research," *Journal of the Association for Information Systems* (19:12), pp. 1253-1273.

Majchrzak, A., Markus, M. L., and Wareham, J. 2016. "Designing for Digital Transformation: Lessons for Information Systems Research from the Study of ICT and Societal Challenges," *MIS Quarterly* (40:2), pp. 267-277.

Majchrzak, A., Rice, R. E., Malhorta, A., King, N., and Ba, S. 2000. "Technology Adaptation: The Case of a Computer-Supported Inter-Organizational Virtual Team," *MIS Quarterly* (24:4), pp. 569-600.

Makadok, R., Burton, R., and Barney, J. 2018. "A Practical Guide for Making Theory Contributions in Strategic Management," *Strategic Management Journal* (39:6), pp. 1530-1545.

Markus, M. L., Majchrzak, A., and Gasser, L. 2002. "A Design Theory for Systems that Support Emergent Knowledge Processes," *MIS Quarterly* (26:3), pp. 179-212.

Markus, M. L., and Robey, D. 1988. "Information Technology and Organizational Change: Causal Structure in Theory and Research," *Management Science* (34:5), pp. 583-598.

Markus, M. L., and Rowe, F. 2018. "Is IT Changing the World? Conceptions of Causality for Information Systems Theorizing," *MIS Quarterly* (42:4), pp. 1255-1280.

Markus, M. L., and Saunders, C. 2007. "Looking for a Few Good Concepts…and Theories…for the Information Systems Field," *MIS Quarterly* (31:1), pp. iii-vi.

Mason, R. O., and Mitroff, I. I. 1973. "A Program of Research on Management Information Systems," *Management Science* (19:5), pp. 475-487.

McKinney, E. H., and Yoos, C. J. 2010. "Information about Information: A Taxonomy of Views," *MIS Quarterly* (34:2), pp. 329-344.

Mingers, J., and Willcocks, L. (eds.). 2004. *Social Theory and Philosophy for Information Systems*, Chichester, UK: John Wiley & Sons.

Moorman, C., van Heerde, H. J., Moreau, C. P., and Palmatier, R. W. 2019. "Challenging the Boundaries of Marketing," *Journal of Marketing* (83:5), pp. 1-4.

Mousavi Baygi, R., Introna, L., and Hultin, L. 2021. "Everything Flows: Studying Continuous Socio-Technological Transformation in a Fluid and Dynamic Digital World," *MIS Quarterly* (45:1), pp. 423-452.

Mueller, B., and Urbach, N. 2017. "Understanding the Why, What, and How of Theories in IS Research," *Communications of the Association for Information Systems* (41:17), pp. 349-388.

Mumford, E. 2003. "Information Systems Research and the Quest for Certainty," *Journal of the Association for Information Systems* (4:4), pp. 197-205.

Nan, N. 2011. "Capturing Bottom-Up IT Use Processes: A Complex Adaptive Systems Model," *MIS Quarterly* 2011, pp. 505-532.

Ngwenyama, O. K., and Lee, A. S. 1997. "Communication Richness in Electronic Mail: Critical Social Theory and the Contextuality of Meaning," *MIS Quarterly* (21:2), pp. 145-167.

Orlikowski, W. J. 1993. "CASE Tools as Organizational Change: Investigating Incremental and Radical Changes in Systems Development," *MIS Quarterly* (17:3), pp. 309-340.

Orlikowski, W. J., and Baroudi, J. J. 1991. "Studying Information Technology in Organizations: Research Approaches and Assumptions," *Information Systems Research* (2:1), pp. 1-28.

Orlikowski, W. J., and Iacono, C. S. 2001. "Desperately Seeking the 'IT' in IT Research—A Call to Theorizing the IT Artifact," *Information Systems Research* (12:2), pp. 121-134.

Orlikowski, W. J., and Scott, S. V. 2008. "Sociomateriality: Challenging the Separation of Technology, Work and Organization," *The Academy of Management Annals* (2:1), pp. 433-474.

Paré, G., Bourdeau, S., Marsan, J., Nach, H., and Shuraida, S. 2008. "Re-examining the Causal Structure of Information Technology Impact Research," *European Journal of Information Systems* (17:4), pp. 403-416.

Parker, G., Van Alstyne, M., and Jiang, X. 2916, "Platform Ecosystems: How Developers Invert the Firm," *MIS Quarterly* (41:1), pp. 255-266.

Peat, G., Rodriguez, A., and Smith, J. 2019. "Interpretive Phenomenological Analysis Applied to Healthcare Research," *BMJ: Evidence Based Nursing* (22:1), pp. 7-9.

Popper, K. 1980. *The Logic of Scientific Discovery*, London: Unwin Hyman.

Rai, A. 2017. "Editor's Comments: Diversity of Design Science Research," *MIS Quarterly* (41:1), pp. iii-xviii.

Ram, S., and Goes, P. 2021. "Focusing on Programmatic High Impact Information Systems Research, Not Theory, to Address Grand Challenges," *MIS Quarterly* (45:1), pp. 479-483.

Rivard, S. 2014. "The Ions of Theory Construction," *MIS Quarterly* (38:2), pp. iii-xiii.

Robey, D. 1996. "Diversity in Information Systems Research: Threat, Promise, and Responsibility," *Information Systems Research* (7:4), pp. 400-408.

Robey, D., Anderson, C., and Raymond, B. 2013. "Information Technology, Materiality, and Organizational Change: A Professional Odyssey," *Journal of the Association for Information Systems* (14:7), pp. 379-398.

Robey, D., and Boudreau, M.-C. 1999. "Accounting for the Contradictory Organizational Consequences of Information Technology: Theoretical Directions and Methodological Implications," *Information Systems Research* (10:2), pp. 167-185.

Sabherwal, R., and Robey, D. 1995. "Reconciling Variance and Process Strategies for Studying Information Systems Development," *Information Systems Research* (6:4), pp. 303-327.

Sambamurthy, V., Bharadwaj, A., and Grover, V. 2003. "Shaping Agility through Digitial Options: Reconceptualizing the Role of Information Technology in Contemporary Firms," *MIS Quarterly* (27:2), pp. 237-263.

Sarker, S., Chatterjee, S., Xiao, X., and Elbanna, A. 2019. "The Sociotechnical. "Axis of Cohesion" for the IS Discipline: Its Historical Legacy and its Continued Relevance," *MIS Quarterly* (43:3), pp. 695-719.

Schutz, A. 1962. "Concept and Theory Formation in the Social Sciences," in *Collected Papers,* M. Natanson (ed.), The Hague: Martinus Nijhoff, 1962, pp. 48-66.

Sein, M. K., Henfridsson, O., Purao, S., Rossi, M., and Lindgren, R. 2011. "Action Design Research," *MIS Quarterly* (35:1), pp. 35-56.

Sidorova, A., Evangelopoulos, N., Valacich, J. S., and Rama-krishnan, T. 2008. "Uncovering the Intellectual Core of the Information Systems Discipline," *MIS Quarterly* (32:3), pp. 467-482.

Stahl, B. C., and Markus, M. L. 2021. "Let's Claim the Authority to Speak Out on the Ethics of Smart Information Systems," *MIS Quarterly* (45:1), pp. 485-488.

Star, S. L., and Ruhleder, K. 19996. "Steps Towards an Ecology of Infrastructure: Design and Access for Large Information Spaces," *Information Systems Research* (7:1), pp. 111-134.

Steadman, I. 2013. "Big Data and the Death of the Theorist," *Wired*, January 25 (https://www.wired.co.uk/article/big-data-end-of-theory).

Straub, D. W., Ang, S., and Evaristo, R. 1994. "Normative Standards for IS Research," *DataBase for Advances in Information Systems* (25:1), pp. 21-34.

Tadajewski, M. 2004. "The Philosophy of Marketing Theory: Historical and Future Directions," *The Marketing Review* (4:3), pp. 307-340.

Tourish, D. 2020. "The Triumph of Nonsense in Management Studies," *Academy of Management Learning & Education* (19:1), pp. 99-109.

Tremblay, M. C., Kohli, R., and Forsgren, N. 2021. "Theories in Flux: Reimagining Theory Building in the Age of Machine Learning," *MIS Quarterly* (45:1), pp. 455-459.

Truex, D., Holmström, J., and Keil, M. 2006. "Theorizing in Information Systems Research: A Reflexive Analysis of the Adaptation of Theory in Information Systems Research," *Journal of the Association for Information Systems* (7:12), pp. 797-821.

Urquhart, C., and Fernandez, W. 2013. "Using Grounded Theory Method in Information Systems: The Researcher as Blank Slate and Other Myths," *Journal of Information Technology* (28), pp. 224-236.

Urquhart, C., Lehmann, H., and Myers, M. D. 2010. "Putting the 'Theory' Back into Grounded Theory: Guidelines for Grounded Theory Studies in Information Systems," *Information Systems Journal* (20), pp. 357-381.

Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. 2003. "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly* (27:3), pp. 425-478.

Wacker, J. G. 1998. "A Definition of Theory: Research Guidelines for Different Theory-Building Research Methods in Operations Management," *Journal of Operations Management* (16:4), pp. 361-385.

Walsham, G. 1993. *Interpreting Information Systems in Organizations*, Chichester, UK: Wiley.

Wang, J., Veugelers, R., and Stephan, P. 2017. "Bias Against Novelty in Science: A Cautionary Tale for Users of Bibliometric Indicators," *Research Policy* (46), pp. 1416-1436.

Wang, P. 2010. "Chasing the Hottest IT: Effects of Information Technology Fashion on Organizations," *MIS Quarterly* (34:1), pp. 63-85.

Wang, P. 2021. "Connecting the Parts with the Whole: Toward an Information Ecology Theory of Digital Innovation Ecosystems," *MIS Quarterly* (45:1), pp. 397-422.

Weber, R. 1987. "Toward a Theory of Artifacts: A Paradigmatic Basis for Information Systems Research," *Journal of Information Systems* (1:2), pp. 3-19.

Weber, R. 2003. "Editor's Comments: Theoretically Speaking," *MIS Quarterly* (27:3), pp. iii-xii.

Weber, R. 2012. "Evaluating and Developing Theories in the Information Systems Discipline," *Journal of the Association for Information Systems* (13:1), pp. 1-30.

Weick, K. E. 1995. "What Theory is Not, Theorizing Is," *Administrative Science Quarterly* (40:3), pp. 385-390.

Weische, M., Jurisch, M., Yetton, P., and Krcmar, H. 2017. "Grounded Theory Methodology in Information Systems Research," *MIS Quarterly* (41:3), pp. 685-701.

Williams, M. L. 2007. "Perpetually Contemporary," *NPR News*, July 25 (https://www.npr.org/2007/07/25/11904062/ mary-lou-williams-perpetually-contemporary).

Wilson, E. O. 1998. *Consilience: The Unity of Knowledge*, New York: Vintage Books.

Winter, S., Berente, N., Howison, J., and Butler, B. 2014. "Beyond the Organizational 'Container': Conceptualizing 21st Century Sociotechnical Work," *Information and Organization* (24:4), pp. 250-269.

Wood, R. E. 1986. "Task Complexity: Definition of the Construct," *Organizational Behavior and Human Decision Processes* (37:1), pp. 60-82.

Yoo, Y. 2010. "Computing in Everyday Life: A Call for Research on Experiential Computing," *MIS Quarterly* (34:2), pp. 213-231.

Zeithaml, V. A., Jaworski, B. J., Kohli, A. K., Tuli, K. R., Ulaga, W., and Zaltman, G. 2020. "A Theories-in-Use Approach to Building Marketing Theory," *Journal of Marketing* (84:1), pp. 32-51.

Zhang, M., and Gable, G. G. 2017. "A Systematic Framework for Multilevel Theorizing in Information Systems Research," *Information Systems Research* (28:2), pp. 203-224.

Zuboff, S. 1988. *In the Age of the Smart Machine: The Future of Work and Power*, New York: Basic Books.