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Get Your Act Together – An Alternative Approach to Understanding the Impact of Technology on Individual and Organizational Behavior

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Abstract

Research in the larger management discipline is increasingly turning towards practice as an important unit of analysis to study organizational form and function. Reflecting this practice turn, information systems research is specifically interested in what people think they do when confronted with technology, what they actually do in the process of using technology, and what using technology does to them and the organizations they are a part of. In the wake of this development, sociomateriality has been proposed as a concept to study these organizational phenomena. The concept of sociomateriality, however, is not without its difficulties. Much debate has ensued on the ontological assumptions the practice turn and the concept of sociomateriality should be based on, and many scholars using the concept report how difficult it is to empirically investigate the intertwining or entanglement of the social and the material in practice. In this paper, we revisit Parsons' and Shils' (1951) general theory of action to address some of these difficulties and develop a framework for researching the social and the material in practice. Particularly, we propose that Parsons' and Shils' orientations of action help to better understand and conceptualize what individuals do before acting, what role technology plays, and how individuals and technology shape and are being shaped by each other in action across time. Through ten methodological principles, we demonstrate that such a framework can improve conceptualization and guide the selection and design of research methods in order to generate the data needed for sociomaterial theorizing.

Keywords: orientation of action, sociomateriality, general theory of action, social, technological

ACM Categories: C.5.m, H.1.0, J.4, K.6.1

Introduction

During the past decades, the disciplines of management and organizational research increasingly turned towards *practice* as the principal unit of analysis (Feldman and Orlikowski 2011; Orlikowski 2010a; Whittington 2006). This turn emphasizes that organizational phenomena should not be studied through monolithic and abstract concepts, but that it is connections and relationships, actions, and continuities at all possible organizational levels that matter when trying to analyze what organizations are and how they behave. Put differently, the practice turn emphasizes that theory about organizations and their behavior should focus on what organizations and the individuals being part

of them actually do, rather than investigating concepts in abstract and controlled terms only.

Inspired by a strong philosophical tradition – grounded in works by Pierre Bourdieu, Michel Foucault, Anthony Giddens, Andreas Reckwitz, and Theodor Schatzki – this reorientation in the way organizations are studied has also found its way into the information systems (IS) discipline, most prominently, perhaps, through the works of Wanda Orlikowski (esp. 1992; 2000; 2007). Given that research in the IS discipline operates at the intersection of the social and the technological (e.g., Lee 2004; Orlikowski and Iacono 2001; Sidorova et al. 2008; Weber 2003), scholars in this discipline felt compelled to look at what people think they do when confronted with technology, what they actually do in the process of using technology, and what using technology does to them and the organizations they are a part of (Schultze and Boland 2000). To do so, a number of different perspectives have emerged that reconsider the interplay between individuals, technology, and the larger social or organizational structures they are embedded in by looking at practices. Notable examples of these perspectives include the duality of technology (Orlikowski 1992), adaptive structuration theory (DeSanctis and Poole 1994), the practice lens (Orlikowski 2000), actor-network theory (e.g., Latour 1987; Latour 2005), the technological frames perspective (Davidson 2006), and, most recently, the concept of sociomateriality (e.g., Orlikowski 2007; Orlikowski 2010b). Regardless of the perspective, however, the resulting research is perhaps best described as a focus on the ensemble that emerges (Orlikowski and Iacono 2001) when IS are used in practice.

The recent turn towards sociomateriality and the reconceptualization of the interplay between individuals, technology, and the larger social or organizational structures has brought about an intense philosophical debate in the IS discipline (e.g., Kautz and Jensen 2013; Leonardi 2013; Mutch 2013; Scott and Orlikowski 2013). An important difficulty concerns the nature of the social and the material as the constituents of practices and the question of how separate the social and the material are in such practices. While many researchers agree on the potential of a concept that allows to equally account for the social, the material, and their reciprocal endogenous shaping through a focus on practices, almost equally many scholars point to operational challenges and empirical difficulties inherent in such a concept (e.g., Johri 2011; Wagner et al. 2010). Consequently, we propose a framework that can help researchers in the IS discipline as well as in the larger management discipline to empirically apply the concept of sociomateriality.

In this paper, we suggest revisiting Parsons' and Shils' (1951) *general theory of action* as a potential approach and conceptual framework that can help IS researchers to operationalize the concept of sociomateriality. The general theory of action can be used to explain sociomaterial practices and how these practices change by equally accounting for structural, technological, individual, and social aspects. The proposed conceptual framework is not to be misread as yet another contribution to the many philosophical traditions or theoretical foundations underlying the concept of sociomateriality. On the contrary, we propose it as a sensitizing device that helps scholars to focus attention on aspects relevant to individuals' actions while doing IS research in the field.

Developing the proposed framework, the remainder of this paper is structured as follows. First, we briefly review the IS discipline's recent turn towards the concept of sociomateriality along with some of the operational challenges identified when trying to put it to work. Then, we introduce Parsons' and Shils' (1951) general theory of action and provide an overview of its conceptual components. Having developed the proposed framework, we demonstrate its applicability by providing an example of an ERP system implementation. We conclude our paper by providing a brief summary and outlook along with future directions for research.

Conceptual background

Brief history of research on technology and organizational behavior

Since the 1960, researchers have been focusing on the role of technology and the relationship between the social and the material. Grounded in the work of Joan Woodward (1958), early organizational theorists were interested in the question how technology influenced production processes and organizational structures. Studies like, for example, Thompson's (1967) influential analysis of industrial organizations provided insights into the effects technology exercises on organizational structures.

The first approaches trying to study the social and the technological by looking at the reciprocal relationship between the two emerged with socio-technical systems theory. Rooted in the works of Fred Emery and Eric Trist (1960) as well as Robert Bostrom and Stephen Heinen (1977a; 1977b), these approaches regarded the social and the technological as equally important parts of organizational phenomena. This general notion of socio-technical systems theory resonated strongly with the then nascent research on information and communication technology in organizational settings (Mumford 2006; Williams and Edge 1996) and has since been reemphasized

repeatedly (e.g., Boynton and Zmud 1987). In fact, it can perhaps be seen as one of the key schools of thought that have shaped the IS discipline (Hirschheim and Klein 2012).

In the 1980s, management and organizational research further developed these approaches. While scholars using contingency theory mostly focused on the design of organizations and researchers applying socio-technical systems theory largely focused on the design of technology or technology-based solutions in general, scholars started looking at how organizations as social systems react to technology. Inspired by the work of Anthony Giddens (1984), research turned towards practices as an important unit of analysis to study organizational form and function. Studies like, for example, Barley's (1986) seminal analysis of the introduction of CT scanners in hospitals allowed for insights into the effects technology can have on social structures and how the latter shapes the former in return. While not uncontroversial in its application in IS research (Jones and Karsten 2008), Giddens's structuration theory has long shaped the understanding of the interplay between individuals, technology, and the larger social or organizational structures they are embedded in (Leonardi 2013).

Many of the past approaches to theorizing the social and the material or the technological in organizations focus on one of the two. These approaches either assume that technology or the material influences the social, or that individuals enact technology or the material (Orlikowski 2010b; Volkoff et al. 2007). Consequently, these approaches to studying technology in organizations do not regard the social and the material as being inextricably linked or entangled. On the one hand, technology is considered as an exogenous force that autonomously influences humans and organizations by inducing change. On the other hand, technology is regarded as enacted in an emergent process of continuous human actions, decisions, and social history that partially depends on institutional contexts (Markus and Robey 1988; Orlikowski 2010b). While Orlikowski describes this "exogenous force" and "emergent processes" as the lenses through which technology in organizations has been analyzed in the past, Leonardi and Barley (2008) describe the opposites as "determinism" and "idealism." Regardless of the terms, these opposite perspectives – being artificially separated – hinder an integrated understanding of organizational phenomena. Leonardi and Barley (2008) argue that "[...] researchers have had difficulty incorporating the role of materiality into their studies because they have wittingly or unwittingly conflated determinism with the material and voluntarism with the social" (p. 171). The early approaches to studying technology and organizations, most notably contingency theory,

became increasingly criticized for the quasi-deterministic effects of technology they proposed and the unidirectional flow of causality they embodied. Moreover, these perspectives were criticized as they often conceptualized technology itself as either a static object or simply a determinant of larger, social processes (Orlikowski 2010b). More recent approaches on the other hand, most notably structuration theory, the duality of technology, adaptive structuration theory, and the practice lens, have been criticized for overemphasizing the role of the human while disregarding the effects of technology. Recently, the principal dualism between the social and the technological is being replaced by perspectives that see the two as a true duality, an intertwining or entanglement of the social and the material (e.g., Barad 2003; Bijker 1993; Latour 1987; Pickering 1993). Research in the IS discipline seems to follow this shift and specifically turns to the concept of sociomateriality (Leonardi 2013; Orlikowski and Scott 2008). In fact, we believe that the concept of sociomateriality is perhaps one of the most important ontological trends of the past years.

The concept of sociomateriality

While a full appreciation of the concept of sociomateriality and its theoretical foundations is beyond the scope of what we are trying to accomplish here – we direct the interested reader to papers such as Orlikowski and Scott (2008), Leonardi (2012); Leonardi (2013), or Cecez-Kecmanovic et al. (2014) for that – the basic idea of this concept is that in order to fully understand practices, we need to account for the social (generally understood as human objects and social structure), the material (generally understood as non-human objects and material structure¹), and their mutual and emergent shaping. Scholars using the concept of sociomateriality in IS research feel compelled to look at what people think they do when confronted with technology, what they actually do in the process of using technology, and what using technology does to them and the organizations they are a part of (Schultze and Boland 2000). Put differently, the concept of sociomateriality suggests that we need to account for both social and material agency, performing a kind of double dance (Jones 1998; Raeth and Mueller 2012) in shaping organizational phenomena.

In order to help us study this double dance, sociomateriality requires perspectives on the meaning of technologies in organizations (Orlikowski 2007). For example, Leonardi and Barley (2008) call for an

¹ We do acknowledge that the use of the word "object" in this context is not without controversy, especially for sociomaterialists that ground their works in agential realism or another non-dualistic view of the world.

improved understanding of the ways “people deal with an information technology’s materiality” (p. 172). Acknowledging that every “material” is the result of human decisions but can at the same time build up own relationships to individuals and influence those interactions, they argue that by “bringing materiality more centrally into theories of change we should be able to speak more precisely about why people do the things they do with technology and why organizations and practices acquire the forms they acquire” (p. 172).

Attempting to realize the promising potential of the concept of sociomateriality, however, is not without difficulties. One of the key issues gravitates around ontological separability and concerns the question of how separate the social and the material are (Jones 2014; Leonardi 2013). On the one side, researchers arguing for inseparability propose that there is no social without the material and that there is no material without the social (Orlikowski and Scott 2008). This position is largely grounded in Barad’s (2003) agential realism and suggests that any attempt to study the one without the other or as separate from the other runs the risk of misrepresenting not only these aspects of a practice, but also of misunderstanding the very nature of a practice. On the other side, scholars promoting an ontology based on separability between the social and the material grant both a separate ontological existence (Leonardi 2011; Leonardi 2013; Mutch 2013). The social and the material here only meet in practice and their interplay determines how the practice plays out. In this position, largely based on Bhaskar’s (1979) critical realism, the social and material exist independently of each other and of the practice.

Across the differences that can be found within these two positions, however, there is one aspect that both agree upon: the relevance of practice. While for the position of inseparability, practice is the very thing that is sociomaterial that we need to study to better understand technology in organizations, the position of separability indicates practices’ relevance as the very stage on which the material and the social perform the double dance forming organizational behavior.

Another aspect that seems to bridge the divide between the two positions is that both agree upon the operational challenges in applying the concept of sociomateriality. Scholars from both sides seem to acknowledge that the concept of sociomateriality is still fairly philosophical in nature and that the IS discipline lacks empirical guidance as how to operationalize the concept (Leonardi 2013; Scott and Orlikowski 2013). Despite some notable exceptions (e.g., Hultin and Mähring 2014; Introna and Hayes 2011; Wagner et al. 2010), there still seems to be a

considerable level of insecurity among researchers on how to capture the social and the technological empirically and “*in action*.”

Operational challenges of sociomateriality

Researchers have identified several operational challenges in using the concept of sociomateriality. One of the key challenges in putting a sociomaterial stance to work is unraveling complex ensembles, assemblages, or imbrications methodologically. For example, Mueller and Raeth (2012) observe that introducing a sociomaterial stance allows them to focus on certain aspects of technology in organizations but simultaneously forces other aspects out of focus. Similarly, Wagner et al. (2010) point out that they “[...] found it quite challenging to keep the material in the storyline without falling from one side to another – either leaving the material realm unexamined, or emphasizing the agency of the material to the detriment of understanding the entangled practice” (pp. 292-293). Finally, Johri (2011) reports that in order to build theory on organizations as inseparable sociomaterial entities, he found it necessary to revert to separating the material and the social at least in his empirical work so that theory is built as a kind of post-hoc re-assemblage. We believe that these observations indicate three principal challenges in working with the concept of sociomateriality: (1) conceptualizing practices and their principal constituents, (2) capturing individuals’ actions as empirical instances of these practices, and (3) abstracting resultant observations into theories that equally account for the social and the technological in organizational form and the process of organizing.

We suggest that these three challenges are at least partially caused by the difficulty leveraging an ontological position that conceptualizes the social and technological aspects of organizing and organizations as a true intertwining or entanglement. In this paper, we attempt to address these challenges by specifically focusing on the conceptual entity of practice. Focusing on practices compels us to look at what is actually done by individuals using technologies within organizations. This, however, makes it necessary to recognize what actions are, what they are made of, where they come from, and what they do to the actor (or actors) involved.

Introducing orientations of action

We propose that one way of overcoming the often dualistic view of organization and technology is the application of a more general conceptual level that allows the separated spheres to interact and influence each other. To improve our understanding, technology, organization, and individuals’ work have

to be conceptualized in a framework that allows for equality between them. Focusing on human actions as the unit of analysis for understanding the interaction of the social and the technological allows for this equality. It is in and through these actions that larger practices are instantiated and thus become observable. Put differently, practices are the abstracted conceptual entities we can generalize (at least analytically), while actions are performative manifestations of these practices.

A theory that acknowledges both the social and technological parts of human action is Parsons' and Shils' (1951) *general theory of action*. Before demonstrating how this theory can be used to put the sociomaterial stance to work and illustrate the applicability of the framework for IS research, we briefly introduce the theory and describe its conceptual components as a framework for developing methodological implications.

A general theory of action

Talcott Parsons and Edward Shils published their framework for a general theory of action in 1951. Their work combines different sociological schools and aims at developing a general framework to understand action and its constitutive components. The *frame of reference of the theory of action* allows for an analytic understanding of the constituents of action. Social and non-social objects influence the orientation of acting subjects. By understanding social and non-social (or technological) objects as two equal elements of action, this theory supports the analysis of the relationships between organizations and technology.

Drawing on the work of Parsons and Shils, we use their focus on human actions and transfer their frame of reference to the IS discipline. Specifically, we focus on the meaning of technology in individuals' actions in order to explain sociomaterial practices and their role in IS-related organizational transformations.

Constituents of action

The question if and how technology impacts individuals' actions can be seen as to relate to the sociological concept of contingency. The concept of contingency here refers to a dependency of (human) actions on the anticipated reactions of others to those actions. More precisely, whether or not the action a principal actor chooses leads to the intended result is contingent on the reactions of others (Parsons and Shils 1951). Parsons' and Shils' framework acknowledges this contingency, indicating that any action depends on individuals, objects, the relations between them, as well as the relevant environmental or situational characteristics.

Drawing on Parsons' and Shils' (1951) framework allows us to derive principal constituents of action: *actors* (either individual or collective, the latter including organizations), the *situation of action* (the external environment or context the action is located in), and the *orientation* of the actor with regard to that situation (including, for example, prior knowledge or experience, attitudes, needs, goals, and dispositions).

Parsons and Shils refer to the actors involved in a situation as *ego* and *alter*, the former being the principal actor while the latter are others involved in the action. They regard ego as an actor that can distinguish itself from the environment (subject-object difference) and conceive of alter(s) as the counter-acting object(s) in the situation. While Parsons and Shils primarily associate the ability to counter-act with what they call *social* objects (individual or collective actors), it is important to note here that a situation of action includes *non-social* objects (material objects) as well.

Fundamental to Parsons' and Shils' theory is the assumption that ego is able to cognitively determine and discriminate all relevant objects (both social and non-social) involved in a given situation. Once identified, ego assesses the situation and the objects involved with regard to the potential of satisfying her/his needs or causing damage – a process that leads to cathectic orientations towards the objects. Following this assessment, ego evaluates different action alternatives and organizes behavior in different modes, including acceptance, rejection, or avoidance of particular objects. This leads to a specific action to be chosen from the available alternatives. Prior experience, based on former actions and decisions, defines expectations towards the gratifications or deprivations that could be received from other objects. Both social and non-social objects are evaluated this way to determine their cathectic potential. Experience, in combination with cathectic orientation, then leads to an evaluation that supports the choice between action alternatives.

Contingency, as introduced above, can be extended to double contingency. It implies that alters' reactions are contingent on ego's action (Parsons and Shils 1951). In developing her/his orientation towards a situation, ego thus has to account for the fact that the intended outcome is not only dependent on alters' reactions, but that these in turn are dependent on ego's initial action, too. Similar to the basic form of contingency, this introduces uncertainty that ego tries to minimize in order to make sure that gratification is realized or punishment avoided.

The concept of double contingency opens up opportunities to interpret Parsons' and Shils' theoretical tenets more broadly in order to help

advance the methodological debate on sociomateriality. In Parsons' and Shils' original perspective, *ego* knows that social objects (*alters*) have expectations towards his/her behavior. Non-social objects are not considered to have expectations towards an actor and are thus accounted for differently when evaluating them. However, non-social objects do have an impact on the orientation *ego* develops towards a given situation. Especially in situations in which *ego* needs to develop an orientation towards a new or changed non-social object, both forms of contingency are present: First, *ego* is aware that her/his ability to realize gratification or avoid punishment is contingent on whether or not the non-social object reacts as anticipated. Second, the non-social object's behavior is contingent on *ego's* initial act towards that object. As a result, *ego's* orientation of action will equally account for both social and non-social objects in order to minimize the uncertainty of that situation's outcome.

Summarizing, Parsons and Shils describe five elements of individual action: (1) fundamental categories of orientation and their derivatives (actor, situation, and orientation), (2) *ego's* cognition and needs, (3) *ego's* evaluative orientation, (4) *ego's* discrimination and choice, and (5) the ability to learn and generalize from prior experience. It is these five elements that help *ego* to orient him/herself in a particular situation and build a general orientation towards the action s/he chooses.

Orientations of action

Orientation of action is the most central element of *ego's* action. In any given situation, *ego* considers the situational frame and forms an orientation of action towards other social and non-social objects. *Ego's* decision on how to act depends on the expectations associated with the possible outcomes of the behavior which also includes *alters'* reactions. Because it refers to the mutual dependence of actions, the concept of orientation of action relates back to double contingency (Parsons and Shils 1951).

To reduce uncertainty about possible counteracts of *alters*, *ego* relies on previous observation of actions and the reward or punishment s/he then experienced. These experiences lead to learning processes and possible generalizations that help individual and collective actors decrease uncertainty, transfer knowledge to new situations, evaluate specific situations, and assess their elements of orientation. Parsons and Shils assert that "if punishment or reward by *alter* is repeatedly manifested under certain conditions, this reaction acquires for *ego* the meaning of an appropriate consequence of *ego's* conformity with or deviation from the norms of a shared symbolic

system" (Parsons and Shils 1951, p. 16). They describe this stimulus-response-system as the most elementary form of culture (value-orientation), which is valid in any form of social relationship up to large-scale social systems. The processing of observed punishment and reward leads to learning, which helps *ego* develop new orientation patterns. As Parsons and Shils state, "learning is not merely the acquisition of 'information' [...] about the properties of the object world; it is also the acquisition of new 'patterns of orientation'" (Parsons and Shils 1951, p. 12).

Technology and organizations

This basic conceptual structure of an individual's (i.e., *ego's*) action can be transferred to the interweaving of technology and organizations. When individuals in an organization are confronted with a new technology, they encounter a situation in which a new, non-social object (technology) may not only change existing behavioral patterns, but may also affect existing social patterns (orientation towards social objects). The individual can draw on prior experience and evaluate potential behavior's outcome by comparing it with previous behavior. If the new technological object does not fit the individual's needs, it will be avoided and the individual will not use the technology. *Ego's* decision not to use the technology might or might not lead to a reaction of a superior or colleague (*alter* / counter-acting social object). If non-usage of the technology is not punished, then actors might observe this, generalize the observation, transfer this information to others, and spread this information of a non-required usage within the organization. This illustrates the dynamic character of actions in which an unprecedented incident stimulates new evaluations of situations and orientations and stirs the interactions between individuals - members of a social system (e.g., employees) are, in an otherwise stable environment, confronted with a new non-social object. At the same time, *ego's* decisions may induce actions of others which are influenced by the reactions towards *ego's* behavior. The aggregated punishments or rewards towards these actions will emerge as patterns in the organization and will influence the future behavior of other members of the social system.

Similarly, if usage of the technology (non-social object) does not produce the expected outcome, *ego* will try to change the non-social objects him/herself or engage *alters* through alternate modes of communications in order to have the non-social object adapted to better fit expectations. *Ego* thus engages in a sort of "trialectic" tuning in which, over time, her/himself, the technology, and the relevant social context (situation in which *alters* are encountered such as *ego's* task or role) are adapted to one

another until interactive stability allows for the formation of a new, stable orientation of action that now accounts for the new or changed technological aspects. Over time, repeated orientation – for as long as its results remain relatively stable – may be abstracted into patterns of orientation that reflect ego's experience with previous orientations towards social and non-social objects and their ability to satisfy her/his needs.

Applying orientations of action to technology and organizations

Following Parsons and Shils (1951), we suggest that focusing on orientations of action as a unit of analysis provides a framework for studying how technology influences an individual's actions and shapes other aspects relevant to the individual's situation. To illustrate how a framework of action can not only improve conceptualization in IS research, but can also guide the selection and design of research methods, we propose ten methodological principles that can be used to generate and analyze the data needed for sociomaterial theorizing.

Methodological implications

For the general development of these methodological principles, we start by considering an actor (our ego) who is confronted with a particular situation that requires him/her to choose a course of action. An exemplary situation involves the introduction of a new technology that needs to be made sense of in order to be applied. For clarity, we divide this situation into four stages from which we develop a set of methodological principles.

Stage 1 – Identifying constituents of action: At the outset of the situation, ego is confronted with an array of social and non-social objects that seem relevant to her/him in terms of the situation s/he is confronted with. In the exemplary situation, this involves a new non-social object (the technology) that ego is supposed to employ for doing her/his work. The first thing that ego does is create an overview of all the social and non-social objects that matter in the situation s/he is confronted with. Ego is likely to make the distinction between relevant and non-relevant objects based on any object's potential for counter-action in response to her/his action, that is, become an alter in the specific situation of action. Parsons and Shils describe this stage as the cognitive determination and discrimination of objects. While, as mentioned earlier, counter-action is primarily a characteristic of social objects, the uncertainty added through non-social objects (e.g., new or changed technology) will likely result in their inclusion in this as well. Methodologically, we propose that:

(P1): Studies of ego's action have to capture all relevant social and non-social objects of a particular situation of action along with ego's rationale for assessing their relevance.

P1 requires researchers to establish an object inventory and an insight into the process by which ego builds up an initial understanding of a situation of action and the potential actions available to her/him. Such an approach goes beyond just identifying relevant objects, but suggests that researchers should develop an understanding of ego's motives for including certain objects while excluding others. This provides important context to better understand why ego builds a particular orientation.

An appropriate method for developing an object inventory involves interviews as described by Schultze and Avital (2011), because they allow to "generate deeply contextual, nuanced and authentic accounts of participants' outer and inner worlds [...] their experiences and how they interpret them" (p. 1). Especially romantic interviews (Schultze and Avital 2011) seem well suited to study orientations of action. They resonate well with semi-structured interviews (Myers and Newman 2007) that focus ego's attention on the initial selection of relevant objects but leave room to engage with ego's genuine reasoning and cognitive processes.

Importantly, researchers must acknowledge that there will likely be a difference between ego's subjective perception – both in terms of the objects regarded as relevant as well as in terms of the objects initially perceived – and a full capture of all the objects involved in a situation. Consequently, P1 calls for going beyond what people think they do and look at what they are actually doing through, for example, conducting participant observations (Gold 1958) in addition to the semi-structured interviews. Doing this helps to compensate for ego's inability to tell apart or identify all the relevant aspects of a stable orientation of action, a problem Zammuto et al. (2007, p. 751) illustrate by drawing on the "automated plumbing" metaphor.

Once ego has created an overview of all relevant social and non-social objects, s/he also reflects on the needs the action to be chosen is supposed to satisfy. This reflection is generally associated with the goals of a particular action (i.e., deliverables, output, results, etc.) or avoiding any negative outcomes (e.g., punishment, sanction, etc.). This implies that:

(P2): Studies of ego's action have to capture ego's situative goals in order to understand ego's cathectic evaluations of relevant objects.

P2 concerns the cathectic aspects of ego's orientation of action and requires researchers to understand a

wide variety of aspects surrounding ego and the situation of action. For example, ego's tasks and formal performance criteria could be understood based on process documentation or training materials that ego uses. They capture the initial, ostensive understanding that ego's motivations and goals are based upon. Qualitative content analyses (Bauer 2000) or document analysis (Bowen 2009) can serve as appropriate instruments here.

Additionally, understanding ego's evaluative processes makes it necessary to understand the often complex network of stakeholders ego is involved in (e.g., superiors or customers). Given the nature of social objects, ego's perception of social objects' expectations towards ego is of particular importance to understand evaluative processes. This leads to another methodological principle:

(P3): Studies of ego's action have to capture ego's relations to relevant social objects.

This significance of social objects is warranted because ego is aware of their expectations towards her/his action. Accordingly, relevant social objects have to be involved in the study and we suggest that the same instruments introduced to help generate data on ego for P1 can also be used here.

Stage 2 – Building orientations of action: Once ego has identified the constituents of action and established the needs and goals in the specific situation of action, s/he develops an orientation of action. Here, ego draws on the needs and goals to determine the cathectic potential of all the relevant (social and non-social) objects captured in the first stage, that is, to what extent can they contribute to satisfying ego's needs. Ego anticipates potential counter-actions of all relevant objects and reflects on how s/he can act following these reactions, that is, tries to find a pattern of behavior that will minimize uncertainty in relation to goal achievement or punishment avoidance. This equally involves the behavior of non-social (e.g., system behavior) as well as social (e.g., colleagues or superiors) objects. Methodologically, this implies that:

(P4): Studies of ego's action have to capture ego's cathectic evaluation of each relevant object as well as the objects' collective cathectic potential for the situation of action.

P4 requires researchers to extend the inventory developed in Stage 1 with these evaluations. It is important to note here that any object's evaluation is not just a function of ego's bilateral relationship with that alter alone. Researchers here have to assess the systemic network of relations among all relevant alters in ego's orientation. For example, simultaneous presence of two objects may result in a cathectic

potential that is higher than just the sum of its parts due to complementarities. It is this evaluation of object's individual and collective cathectic potential that leads ego to develop an orientation towards these objects in the specific situation of action ego is facing.

A methodological approach that lends itself to this is retrodution (Mueller and Urbach 2013; Ochara 2013) in order to derive ego's evaluations based on the behavior observed. Another approach is using an explicit form of assessment (e.g., based on analytical hierarchy processing, criteria-based assessment, or comparative judgment). This latter approach, however, needs to be designed with caution because any direct prompting of ego's rationales or cognitive processes may influence these evaluations and change their outcome. Operationally, interviews continue to be a primary source of data. Moreover, we suggest that extending participant observations with "think aloud" elements helps researchers understand the sensemaking processes ego goes through to evaluate all relevant objects.

In this stage, ego's expectations and past experiences play an important role. These allow ego to determine what kind of orientation s/he has towards particular objects. As discussed previously, prior experience helps ego to determine which objects to include, accept, reject, interact with, or avoid in the action about to be taken. Accordingly, we propose that:

(P5): Studies of ego's action have to capture ego's experiences and expectations based on previous situations of action in order to understand ego's cathectic evaluation of relevant objects.

P5 requires researchers to acknowledge existing behavioral patterns and routines, that is, patterns of orientation. In terms of study design, this emphasizes the need to engage with ego's actions and orientations towards these before a change occurs. Such an engagement enables researchers to understand how ego experiences the status quo ex ante. This allows for an identification of relevant objects, their evaluations, as well as the expected, normal outcome that ego associates with her/his action. This serves as a baseline to compare the changed situation to.

As an overall outcome of this stage, ego gradually builds an orientation of action s/he uses as a foundation for acting. In this orientation, ego's relations to all the relevant objects and among these objects are covered. In simplistic terms, the orientation of action serves as a map in which ego has captured relations to and meaning of the relevant objects of a particular situation. It is important to

highlight that ego's orientation is situational. That is, it is an emergent orientation that is specifically put together for this particular situation. For a study of ego's actions, this leads us to propose that:

(P6): Studies of ego's action have to capture ego's orientation of action and the reciprocal relations among cathectically evaluated objects.

Especially in a situation involving change, investigating how ego prepares for action is a key step in understanding the role and meaning of objects. At the same time, building and understanding ego's orientation of action as a unit of analysis allows researchers to gain a better understanding of how social and non-social objects influence each other, that is, shape and are being shaped by other objects. That way, an orientation of action becomes the key conceptual entity to understand where, how, and why technological change impacts other aspects of organizational form and function.

Stage 3 – Performing the action: Once this orientation of action has taken place (i.e., ego has built up an orientation towards all relevant objects in that specific situation to determine a course of action that seems best suited to satisfy her/his needs) ego acts according to the orientation. Methodologically, this implies that:

(P7): Studies of ego's action have to capture ego's orientation of action and the action taken.

Methodologically, P7 reemphasizes the need to go beyond capturing what people think they are doing, but capture what people are actually doing. Participant observation enables researchers to study ego's actual behavior based on ego's orientations of action and allows a study to assess whether the action led to the outcome ego had anticipated.

In this stage, and in response to ego's action, the social and non-social objects implicated in that action (i.e., the alters) react. Such reactions occur not only in direct response to ego's actions, but may result indirectly as ripple effects. This network of effects is complex and constitutes across multiple levels, for example, through the reactions of collective social objects (e.g., teams, departments, or the company). We thus propose that:

(P8): Studies of the effects and consequences of ego's action have to account for the network of effects across multiple alters and levels.

Methodologically, P8 requires researchers to stay in the field after the action is taken. At the same time, the scope of attention needs to widen in order to account for the variety of possible reactions and results. This is particularly true for the indirect effects mentioned above. Researchers thus have to

decouple from ego to a certain degree to broadly observe what happens in the field. Participant observations continue to be an important foundation for this phase of the research.

Importantly, researchers should be sensitive towards the temporal boundaries of a situation of action. One way of approaching this problem is to think of any one action (and ego's corresponding orientation of action) as concluded when ego begins to form a new orientation of action towards the next instance of action. Accordingly, we propose that:

(P9): Studies of ego's action have to recognize the temporal boundaries of any one action and ego's corresponding orientation of action.

P9 requires researchers to capture the interactions between ego and alters as a response to ego's action, especially in changed situations. This is an important prerequisite for understanding how the various constituents of action shape each other.

Stage 4 – Evaluating the action: Once this sequence of action and reactions has played out, ego reflects on how well her/his needs have been satisfied and how accurate her/his orientations towards the alters (i.e., relevant social and non-social objects) have been. The latter may reveal the need to change orientations towards alters as well as to include additional alters into the orientation. A special case here is the extension of the technology involved in a situation of action. For example, ego might bring in additional social objects (e.g., consultants, technical experts) to help deal with a new situation. In case of positive assessment, alters initially included in the orientation may also be removed if ego determines that they did not or do no longer play an instrumental part in achieving the outcome (e.g., training material consulted during initial usage). Based on this reflection, ego realizes learning and experience that will help evaluate alters in similar situations of action in the future. This facilitates building future orientations of actions, that is, develop patterns of orientation. These patterns are a kind of blueprint for building situational orientations of action. As such, patterns help ego to cognitively identify relevant objects, cathectically evaluate them, and develop a specific orientation of action towards them. Ultimately, the development of patterns of orientation enables ego to evaluate different actions faster. This implies that:

(P10): Studies of ego's action have to capture ego's post hoc reflection on that action in order to capture the process of building and evaluating orientations of action across time.

A reflective account of ego's action allows researchers to capture adaptations in orientations of

action and compare ego's adapted orientation to the initial one. Correspondingly, ego's learning as a basis for subsequent actions can be made accessible. This helps studies of ego's actions to transcend simplistic accounts of just changes in what ego does and to truly understand that these changes are consequences of ego's changed orientations. Technological change, or more importantly how and why technology is used in a particular way, thus becomes a function of ego's orientation towards that technology.

While P8 suggests decoupling the research from ego, P10 brings the research's focus back to ego. The key concern now becomes which of the reactions and results are perceived by and seem relevant to ego and how s/he is evaluating them. This requires a more direct engagement with ego and interviews regain their methodological relevance in this stage because they are well suited to tap into ego's reflective processes.

A longitudinal approach enables researchers to assess situations before (as suggested by P5) and after ego's actions, and thereby to analyze temporal transformations of ego's orientations. Again, interviews seem a paramount source of data on ego's discursive engagement with an action's outcome because they help researchers to understand what ego takes away from an action's results and why.

Taken together, Table 1 summarizes the ten principles we propose. They provide researchers a framework to design studies that capture the concept of sociomaterial practices.

Exemplary illustration

To illustrate these methodological principles and demonstrate their applicability, we provide an exemplary illustration of an ERP-based transformation project.² For our illustration, we focus on a saleswoman in a company's branch office. As a result of the release of a new ERP system, she is faced with the need to make sense of a new situation including a changed, non-social object (the new ERP system). Consequently, this requires her to build a new orientation of action.

² Details for this example are taken from one of the authors' research projects (see Lauterbach et al. (2014) for details). While the research design suggested around the ten principles has not yet been applied there fully, experiences with that research project are an important foundation for the recommendations made here.

Table 1. Methodological principles for studying orientations of action	
P1	<i>Studies of ego's action have to capture all relevant social and non-social objects of a particular situation of action along with ego's rationale for assessing their relevance.</i>
P2	<i>Studies of ego's action have to capture ego's situative goals in order to understand ego's cathectic evaluations of relevant objects.</i>
P3	<i>Studies of ego's action have to capture ego's relations to relevant social objects.</i>
P4	<i>Studies of ego's action have to capture ego's cathectic evaluation of each relevant object as well as the objects' collective cathectic potential for the situation of action.</i>
P5	<i>Studies of ego's action have to capture ego's experiences and expectations based on previous situations of action in order to understand ego's cathectic evaluation of relevant objects.</i>
P6	<i>Studies of ego's action have to capture ego's orientation of action and the reciprocal relations among cathectically evaluated objects.</i>
P7	<i>Studies of ego's action have to capture ego's orientation of action and the action taken.</i>
P8	<i>Studies of the effects and consequences of ego's action have to account for the network of effects across multiple alters and levels.</i>
P9	<i>Studies of ego's action have to recognize the temporal boundaries of any one action and ego's corresponding orientation of action.</i>
P10	<i>Studies of ego's action have to capture ego's post hoc reflection on that action in order to capture the process of building and evaluating orientations of action across time.</i>

At first, she notices the social and non-social objects that seem relevant to her in the specific situation she faces. In terms of social objects, this includes her customers, colleagues, and superiors as well as more abstract collective actors such as her sales team, her branch, and the company as a whole.

The list of non-social objects includes the new ERP system as well as other application systems she uses such as, for example, her CRM tool and a workflow system that helps her coordinate with others. While both these inventories can be extended (e.g., banking regulators as another collective actor or her very PC as another non-social object), these will likely not exhibit any relevant counter actions once she tries to use the new ERP system. Then, to satisfy her needs (complete tasks, work as effortlessly as possible), she

assesses the cathectic potential of the objects. As the new technology means a change in the established routine (i.e., habitualized way of doing her task and an associated pattern of orientation), she might especially focus on the new software. While evaluating the individual and collective cathectic potential of all relevant objects, she builds an orientation of action, an orientation of how to work on her tasks while using the new ERP system. In that, she also tries to anticipate alters' reactions to her action before making a decision how to act. She also incorporates the expectations she thinks social alters have towards her and her action. Her resultant orientation leads to a specific action, after which she evaluates the decision in terms of the realized need satisfaction. This initiates a learning process, which helps her learn from this experience as a basis for developing an orientation of action for the next time working on her tasks while using the new system. Over time, with experience from more and more specific actions chosen in comparable situations, patterns of orientation towards the relevant social and non-social objects emerge that support her future orientations of action as a kind of prototypical, ex-ante orientation. Figure 1 summarizes this basic framework.

Figure 1. Orientations of action

In order to gain empirical access to this often unconscious orientation process, a study of this situation has to follow our methodological principle P1. Interviews with the saleswoman help generate

insights into which specific objects become relevant to her in the situation she faces and why she deems these objects relevant. This method can be extended by employing "thinking aloud" techniques asking her to explain how and why she does what she does while researchers are observing her.

At the same time, our saleswoman builds an understanding of what she could do and how the alternatives contribute to her overall goals or need satisfaction. To this end, performance indicators like process time or number of sales per week will play a role. Beyond such objective measures to be learned from process documentations or goal agreements, understanding how her colleagues and superiors influence our saleswoman in her job logically extends this step of the analysis (P2). Researchers can look at process documentation or a workflow system to see who else is involved in our saleswoman's tasks. Interviews with people she is in touch with while doing her job extend this perspective (P3).

In stage 2, our saleswoman forms her orientation of action. For the researchers this stage has multiple implications. The most important ones here, P4 and P6, put the emergent orientation of action center stage and look at our saleswoman's cathectic evaluation of all the relevant alters. In this process, meaning is assigned to each relevant object in light of the situation of action and all of them are put in meaningful relations to each other. Gaining access to these orientations, however, can be tricky because they might not be a conscious element our saleswoman develops when preparing for action. Consequently, researchers need to bear the implications we discussed around P4 and P6 in mind. While studying cathectic evaluations (P4) to understand emergent orientations of action (P6), the study also has to take previous experiences of our saleswoman into account (P5). For our exemplary illustration, this means that capturing the status quo ex ante is an important addition. Seeing how orientations of actions, and actions themselves, are formed before the new system is introduced gives researchers a better idea about which objects matter to our saleswoman and how so. This sheds light on difficulties she experiences once the new ERP system is released, especially when interpreting the new system as an irritation of her well-established orientations.

In stage 3, P7 requires researchers to look at what the saleswoman is doing. This shows how her orientation is instantiated and allows observations in terms of any constraints she experiences. Logically, the methods for participant observation we introduced above lend themselves for investigations of the saleswoman's action. At the same time, they also facilitate P8, that is, studying how alters react directly

and indirectly to the action taken until the situation of action is concluded (P9).

Finally, in stage 4, the saleswoman reflects on her action and alters' reactions to see how well her orientation has helped her to satisfy her needs. In case of any discrepancies between what she expected and what she actually experienced, she will reflect on which of the cathectic evaluations forming her orientation of action was off. This reflection process (P10) leads to an updated orientation in which the saleswoman's orientation to some objects is changed. The next time she has to employ the new ERP system, she will draw upon this new orientation.

Unfortunately, an exemplary illustration as short as this one cannot fully grasp our conceptual framework's potential. However, the example illustrates how technology (as a non-social object) is interpreted, forces ego to adapt her orientation in order to integrate the new or changed object (or at least affords her with an opportunity to do so), and what the resultant consequences of this are in terms of the reciprocal shaping among ego and the alters. Identifying the various constituent elements of how and why people act in a certain way (or react to technological change) and highlighting the dynamic relationships among these constituents helps to conceptualize not only what people do and how it impacts the underlying practice we study, but also how it interrelates with the more dynamic aspects of organizational change. Specifically, understanding how the interplay between social and non-social objects leads to mutual shaping among them is an important advance to help researchers apply the concept of sociomateriality to a detailed study of technologically-induced organizational change.

Discussion

The conceptual framework of orientations of action (Parsons and Shils 1951) helps to conceptualize and empirically decipher the processes through which individuals and technologies interact in organizations. A key strength of the methodological framework we propose is the ability to specify what it is that we are looking for in our empirical work, what kind of instruments are necessary to study it, and where and how the material (or technological) and the social actually meet in practice.

When reflecting on the proposed framework and its implications for IS research, it seems important to acknowledge the limitations of our work. First, we would like to sensitize the reader towards principal concerns against introducing a social theory to operationalize the concept of sociomateriality. Parsons' and Shils' (1951) work comes with a predominant focus on the "social" within the

sociomaterial. Their orientations and expectations resonate strongly with the reflexivity and intentionality often primarily attributed to human actors. Thus, when theorizing based on data collected with the help of the sensitizing device we proposed, looking beyond the social and understanding the interactions with, and roles of, non-social objects needs to be ensured. Only then can both the social and the material equally be accounted for. While we look at non-social objects as a potential source of uncertainty, and thus include them in our conceptualization through the idea of contingency, Parsons' and Shils' (1951) perspective remains primarily focused on the social. This is perhaps best evidenced by the fact that ego is always social, not material. As far as alters are concerned, however, we believe that future research has to adopt a broader view. Especially advanced technologies that communicate amongst each other (e.g., as part of the internet of things) or non-social objects embodying any notable amount of artificial intelligence will emancipate non-social objects in terms of their ability to truly counter-act, thus further increasing the uncertainty which underlies our reasoning (double contingency).

Nevertheless, Parsons' and Shils' (1951) basic focus on the social introduces tensions between what we suggest and those interpretations of sociomateriality that postulate absolute symmetry of human and material agency. Researchers following these stronger strands of sociomateriality will thus find it difficult to fully leverage the potential we see in Parsons' and Shils' work when it comes to conceptualizing individuals' actions and their constituents.

Second, we would like to highlight that a full exploration of the methodological implications of the work by Parsons and Shils (1951) is likely a much more complex endeavor than we can accomplish in the scope of this paper. As an example, consider the fact that ego's orientation of action accounts for possible moves of social alters – that is, ego will not act alone in any larger social system. Consequently, our ego described thus far may be another ego's alter and her/his actions can also be seen as a reaction to someone else's action. As an extension to our stages 1 through 4, which are focused on ego as a principal actor only, future extensions of our work need to acknowledge the interactive process of mutual shaping in which multiple egos and all relevant alters either need to find an action (or a sequence thereof) that works for everyone or are blocked by not being able to properly derive a viable, mutually shared way to act. This negotiation of shared practices manifests in a collective communicative process in which the egos involved communicate through their actions and their orientations expressed through those actions.

Such extension will result in additional methodological principles on conceptualizing change as a process towards interactive stability in a network of multiple egos and their interdependent orientations of action. This may lead future researchers to suggest that more than one ego should be studied at a time in order to observe the network of tasks along which multiple egos and their orientations of action are connected (e.g., business processes). Beyond our appreciation of Parsons' and Shils' work, however, such extensions have to more fully leverage the larger frame of reference that Parsons and Shils (1951) suggest. While the orientation of action we introduce above mainly covers what Parsons and Shils call ego's motivational orientation, they also suggest that the cognitive, cathectic, and evaluative aspects of ego's motivational orientation need counterparts in ego's value orientation. This value orientation captures norms, patterns, and standards ego is exposed to on the macro stage of larger social systems. According to Parsons and Shils (1951), actions are embedded in cultural patterns that allow the actor to form an orientation towards the objects in a given situation and, eventually, act. The stable development of interaction patterns in larger social systems leads to roles and expectations, which help the individual to fulfill obligations in the larger action system (social system) to which s/he belongs. Shared common value patterns create a feeling of solidarity among members of the same social system, leading to the perception of being a collectivity (Parsons 1951). Within this collectivity, expectations are first aligned and then shared, resulting in a set of cultural values that are valid among this group.

Extending Parsons' and Shils' (1951) work this way will also bring Niklas Luhmann (1984) and his work on systems theory for social systems to the stage. Luhmann insists that a shared value system is not necessarily a precondition of action but rather a partly existing and partly emerging system. A prerequisite for the emergence of systems is the alignment of actions between individuals and social systems whose capacity to act depends on the counter-actors' actions. Thus, he assumes that systems emerge autopoetically, that is, without external influence. Along this line, Luhmann understands relationships as a means to reduce complexity.

In light of this limitation, we urge the reader to keep in mind that our advocacy here cannot fully develop a comprehensive methodology. The methodological principles we propose are rather intended to encourage further exploration and development of *orientations of action* as a unit of analysis relevant to sociomaterial research and corresponding research designs that study these orientations in the field.

Third, and connecting to the different approaches we mentioned initially, we feel that it is important to emphasize that we do not intend to advocate Parsons' and Shils' (1951) general theory of action as the silver bullet for sociomaterial research. Leonardi's (2013) review of critical and agential realism as well as Jones' (2014) view on hard and soft sociomateriality provide excellent entry points into this discussion while others continue to add contestant positions (e.g., Hultin and Mähring 2014; Ramiller 2012; Riemer and Johnston 2014; Stigliani and Ravasi 2012). The resultant plurality of perspectives (also advocated by Scott and Orlikowski 2013) will likely be able to produce complementary insights into sociomaterial practices and how they shape organizations and the process of organizing. Because after all, and regardless of their ontological positions, all of these approaches are interested in studying people who use tools to do tasks (Doctor Decade and Tripp 2012).

It is this focus on the *how* of sociomaterial research that we focus our work on. Thus, and while acknowledging the underlying philosophical debate, we propose to direct attention to the empirical applicability of the proposed framework. We draw on Parsons' and Shils' (1951) work not to add another ontological dimension, but to provide methodological guidance. In that, we propose that their work helps us identify the constituents of individual's orientations of action as well as the expectations these individuals have formed based upon these orientations. This provides an important foundation for understanding what individuals expect to get out of a specific behavior (i.e., a specific action chosen) and why and how they feel compelled to reconfigure their orientations once they experience unfavorable feedback. More specifically, engaging with peoples' actions (i.e., the performative) allows us insights into their underlying orientations that inspire these actions (i.e., the ostensive) and in which the social and non-social are made sense of and are put in relation to one another.

Summary and conclusion

In this paper we introduced Parsons' and Shils' (1951) general theory of action as a possible conceptual framework for helping IS researchers to better understand how and why technology matters in the behavior of both individuals as well as organizations as a whole. We propose that this is an important advance in order to actually study sociomaterial practices – the principal unit of analysis proposed by the now dominant schools of thought in sociomaterial research. We argue that only by deciphering why people act the way they actually do will we be able to study what doing it does, thus understanding how

technology and technological change shape practices. To this end, Parsons and Shils (1951) describe actions as the nucleus of emergent social systems. With this lens they allow for meta-analyses of the emerging behavioral patterns in organizations by accounting for relationships between the social and the non-social. Although the theory had been very popular shortly after its publication, it has been left unnoticed for a while now. Nevertheless, the inclusion of material or technological aspects into orientations of action allows for a broad applicability in IS research and warrants its renewed consideration to guide our studies' design.

Of course, the approach we propose has to stand trial in the arena of empirical research, too. Whether and how the potential we see in drawing on orientations of actions to inform and design meaningful sociomaterial research in the field is also shared by others after they attempt to travel down that road is perhaps the hardest test for our work. We thus emphasize that researchers intending to leverage our methodological principles still have to actually instantiate a corresponding research design, that is, a concrete selection of methods and instruments for data collection. We hope that the conceptual discussion and methodological principles we have provided above help to put the framework into action and invite others to join us in scrutinizing the potential it seems to hold.

As mentioned earlier, Parsons' and Shils' (1951) work is no silver bullet. The ontological discussion triggered by the IS field's turn towards sociomateriality is still ongoing and a multiplicity of concepts exists. All of them are uniquely suited for a variety of different purposes and whether any one of them is superior to another seems to depend strongly on researchers' intention and focus (Mueller and Raeth 2012). Adding yet another approach, as we have done, could easily be seen as adding to the pertinent confusion. However, we propose that especially Parsons' and Shils' (1951) work is a powerful tool to address the three challenges we identified initially: (1) conceptualizing practices and their principal constituents, (2) capturing them empirically, and (3) abstracting the resultant observations into theories that equally account for the social and the technological (i.e., non-social) in understanding organizational form and the process of organizing. We propose that Parsons' and Shils' (1951) work and its implications deserve equal consideration as we, as a discipline, engage in a critical but constructive discourse on how to synthesize the conceptual multiplicity surrounding sociomaterial practices. Especially the question about what this implies methodologically in the field has great potential for actual guidance of sociomaterialists' empirical work

by helping them understand orientations of action and their constituents – or, put differently, by helping them to “get their act together.”

A strength of such research is that drawing on the general theory of action might help to make results from IS research more accessible to researchers in the larger social sciences. This, in turn, can help our results to become more relevant to answering questions transcending our immediate disciplinary boundaries and be recognized by research in sociology as one of our key reference disciplines.

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