What kind of world do we want to help make with our theories?

Ulrike Schultze

Southern Methodist University, Dallas, TX, USA

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ABSTRACT

In response to Demetis and Lee's proposal that Information Systems needs to adopt system science in order to live up to the identity implied by its name and in order to develop better theory, this commentary seeks to answer two questions: *What kind of reality does systems science produce? And, given that technological advances have moved the IS research agenda beyond the organizational realm, how likely is it that systems science will help generate better IS theory?* Drawing on a relational ontology, reflections on these two questions are offered.

"*If methods help to make the realities they describe, then we are faced with the question: which realities might we try to enact? Neo-classical ones? Amerliorist agendas? Revolutionary realities? Anti-patriarchal or post-colonial worlds? Realities composed of post-structuralist partialities and shifting identities? Cyborg-like and materially heterogeneous worlds?*"

[Law & Urry (2004: 396)]

I&O has a tradition of engaging scholars in debates on philosophical and methodological issues in Information Systems. I find this a valuable endeavor that can help our field sharpen its theoretical and methodological tools. I am therefore pleased to be able to contribute to this particular debate on the value of systems theory in IS, which has been prompted by Demetis and Lee's paper.

In my reading, the argument that Demetis and Lee make in their contribution goes something like this:

1. The IS discipline has been remiss in taking the concept of system – which is part of its name and therefore identity – sufficiently seriously in its research. In order to develop better theories, systems science should be adopted by the IS community.
2. To ensure that systems theory is applied correctly in IS research, methodological requirements to guide this research are needed.
3. Based on General Systems Theory and Luhman's theorizing on social systems, six requirements that need to be satisfied for an IS study to qualify as systems science, are developed and empirically demonstrated.

Even though I was disappointed that the authors did not use this article to demonstrate how systems science helps us develop better IS theory by means of the Drosia Bank case they present, I nevertheless found the paper deeply thought-provoking and highly generative. In particular, it raised the following key questions for me:

• What kind of reality does systems science produce?
• Given that technological advances have moved the IS research agenda beyond the organizational realm, how likely is it that systems science will help generate better IS theory?

E-mail address: uschultz@mail.cox.smu.edu.

In my commentary, I draw on a diffractive reading (Barad, 2007) of Demetis and Lee's piece *through* a relational ontology (Emirbayer, 1997; Ingold, 2000; Scott & Orlikowski, 2014). In order to contextualize my reflections on these two questions, I will begin by outlining my theoretical position.

1. Relational theorizing

A *relational* ontology regards reality in "dynamic, continuous and processual terms" rather than in *substantialist* (or *essentialist*) ones (Emirbayer, 1997: 281). A substantialist ontology advances a view of the world as a collection of substances, i.e., essential, static things, that are more or less able to act under their own power. Specifically, humans are accorded rationality and free will, thus giving them an agency that is independent of other things. Even though the substances are seen as interdependent and relationships among them are examined, such inter-entity engagements are assumed to leave interacting objects largely fixed and unchanged.

A relational ontology breaks with the separation of entities (e.g., people, technology) from relationships by making the primary unit of analysis the transaction rather than its constituent elements. With entities secondary, their identities, meaning and significance are derived from their role in the dynamically unfolding process of practice. People and things are thus brought into being through everyday activity. They do not pre-exist action, but are enacted.

The enactment nature of phenomena implies that they are entangled and emergent. Importantly, entanglement is not about adding relationships to connect ontologically separate entities; rather it is about a "lack [of] independent, self-contained existence" (Barad, 2007: ix) or ontological indeterminacy. The concept of entanglement signifies that the 'things' that make up reality were never separate before they were brought into interaction; instead, they were always constitutively intertwined.

However, the ontological indeterminacy that fluid entanglements create, is resolved – albeit temporarily and in-situ – by means of agential cuts (Barad, 2003). Nyberg (2009) offers the following example of agential cutting: call center customer experience the components that constitute service delivery (i.e., the telephone system, the computer systems, the customer service representative, etc.) as an entangled whole until customer service representatives distance themselves from the (failing) technology with such utterances as 'the computer has a mind of its own'. Enacting such cuts between technological and human actors, the elements in the sociomaterial assemblage are given identity, properties and agency.

Barad highlights that agential "cuts are enacted not by willful individuals but by the larger material arrangements of which 'we' are a 'part'" (Barad, 2007: 178). In other words, agential cutting is not merely a discursive act performed by an agential individual, but the performance of everyday material-discursive practices that draw on the sociomaterial infrastructure in which an individual is entangled. Furthermore, "cuts cut 'things' together and apart. Cuts are not enacted from the outside, nor are they ever enacted once and for all" (Barad, 2007: 179). Agential cuts thus provide a situated and relational way of understanding the categorization and thingification that occurs in everyday practice while avoiding such dualisms as human/non-human, nature/culture and male/female, which are generally taken to be ontologically real.

By replacing taken-for-granted, fixed boundaries between entities with a notion of people and things being enacted in practice, a relational view also challenges the possibility of representations that reflect a given reality (Barad, 2003). Instead it proposes that representations (e.g., concepts, frameworks, models) are performatitve, meaning that they do not only mirror reality but enact it (Austin, 1962; Butler, 1997). For example, an analytical model (e.g., of the US housing market) reflects the phenomenon by representing its essence. However, such virtual representations are used to make decisions that affect – in real life – the phenomena (e.g., US housing market) they model (MacKenzie, Muniesa, & Siu, 2007).

This assertion that representation are performative is particularly significant in scientific endeavors, which are frequently held up as pure reflections of an external reality. Even though there are some acknowledgements of these representations being partial or even subjective – e.g., "What we observe is not nature itself, but nature exposed to our methods of questioning" (Heisenberg, 1958) – performativity makes an even more forceful claim, namely that our instrument-dependent practices that present reality in a certain way, actually produce the world.

The conclusion that Law and Urry (2004) draw from the performative nature of (social science) research, is that we as researchers can influence the reality we study through our choice of theories and methods. Our work is not just epistemological (i.e., the way we know things), but also ontological (i.e., what things are). This creates tremendous ethical responsibilities for researchers (Barad, 2007) in that the theoretical-methodological approaches we adopt, create worlds. This makes the decision to adopt a given theoretical lens – such as systems theory – a high-stakes game.

The two questions that I ponder in this commentary emerged out of my reading of Demetis and Lee's advocacy for systems theorizing through concepts such as enactment, practice, entanglement, performativity and agential cuts. Since these concepts are increasingly being applied IS research – under the conceptual umbrella of sociomaterial theorizing (e.g., Introna & Hayes, 2011; Jones, 2014; Mazmanian, Cohn, & Dourish, 2014; Scott & Orlikowski, 2014) – my commentary can be seen as somewhat of a continuation of recent debates on sociomateriality in IS (e.g., Bratteteig & Verne, 2012; Cecez-Kecmanovic, Galliers, Henfridsson, Newell, & Vidgen, 2014; Hassan, 2016; Kautz & Jensen, 2012). Indeed, one of these debates took place in this journal (Kautz & Jensen, 2013; Mutch, 2013; Scott & Orlikowski, 2013).