

12-31-2012

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Recommended Citation

Kautz, Karlheinz (Karl) and Blegind Jensen, Tina (2012) "Debating Sociomateriality: Entanglements, imbrications, disentangling, and agential cuts," *Scandinavian Journal of Information Systems*: Vol. 24 : Iss. 2 , Article 5.

Available at: <http://aisel.aisnet.org/sjis/vol24/iss2/5>

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Debating Sociomateriality

Entanglements, imbrications, disentangling, and agential cuts

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Sociomateriality is on everyone's lips these days. Since Orlikowski (2006; 2007; 2009), together with Scott (Orlikowski and Scott 2008; Scott and Orlikowski 2009) first introduced this term in organisation studies and in information systems (IS) research, we count an impressive number of contributions on this topic along with calls for papers in renowned journals and conferences. Without going so far as to propose sociomateriality as the defining identity of the IS field, as suggested by Hassan and Hovorka (2011), we acknowledge that this new lens offers a way of challenging and expanding the prevailing *modus operandi* of the theoretical foundations of the relationships between artefacts and agency, technology and practice. This is well expressed by Cecez-Kecmanovic et al. (2010) who argue that sociomateriality can help us question and rethink 'the supposed ontological separation among the social and the technological.'

Orlikowski's work, in particular, has been instrumental in establishing a sociomaterial agenda for a variety of research phenomena in the IS field. Since 2009, the sociomaterial view has led to new insights into important IS-related phenomena such as mobile IT usage (Leclerq et al. 2009), work collaboration in Second Life (Orlikowski 2009), digital innovation (Svahn et al. 2009), the impacts of social media (Scott and Orlikowski 2009), digital entrepreneurship (Davidson and Vaast 2010), enterprise system implementation (Wagner et al. 2010), software usability (Riemer and Vehring 2010), computer simulation technology for automotive design (Leonardi 2011), plagiarism detection systems (Introna and Hayes 2011), global software development (Johri 2011), sensor-driven information systems in petroleum production (Østerlie et al. 2012) and information systems development as sociomaterial practice (Doolin and McLeod

Comment to Bratteteig & Verne

2012). Another recent work is the article by Bratteteig and Verne in this volume of the *Scandinavian Journal on Information Systems* on IT-supported public service processes as sociomaterial entanglements, which is the subject of our commentary in this debate section.

Sociomateriality has contributed to a renewal of the debate about the theoretical foundations of the IS discipline. Such a debate is essential in a field where scholars struggle to reconcile the human/social and the technological dimensions of IS, and to investigate them in an inclusive and consistent way. Orlikowski's works are valuable, as they help to renew and redirect the interest of IS scholars in tackling the problem at the heart of the IS discipline, which she frames as 'the recursive intertwining of humans and technology in practice' (Orlikowski 2007) and which Leonardi, another prominent writer on the topic, conceptualizes as 'the entwining of the material and the social' (Leonardi and Barley 2008). Orlikowski provides a new vocabulary with concepts such as 'constitutive entanglement,' 'relationality,' 'performativity,' and 'sociomaterial assemblages.' Orlikowski and Scott (2008) also put forward that the social and the technical are inherently inseparable and can be separated only analytically, but they do not explain how this analytical separation can be carried out in practice.

Bratteteig and Verne offer a solution for this omission and challenge the idea of inseparability. Acknowledging the important contributions of sociomateriality to IS development, design and use, Bratteteig and Verne emphasise that they specifically take a design perspective and point out that the doctrine of inseparability holds the danger that sociomaterial assemblages or entanglements can only be accepted or rejected as a whole, leaving no space for negotiations and actions, no room for designing improvements through local changes.

On the path to their proposed solution, Bratteteig and Verne follow Orlikowski and others such as Leonardi and Barad, part of the way, but go astray. They start out by using the concept of sociomaterial assemblages. Orlikowski and Scott 2008 argue for inseparability, but talk about assemblages, entanglements, relations, and entities, all of which presuppose the existence of separate parts. An assemblage is assembled and thus *a priori* consists of separable components. The concept of the inseparability of sociomaterial assemblages seems inconsistent and a contradiction in terms.

For most of their argument Bratteteig and Verne use the concept of entanglement or sociomaterial entanglement. To resolve the problem inherent in the concept of inseparability of entanglements, Bratteteig and Verne introduce the concept of 'disentanglement'. They make the case, however, that entanglements cannot just be disentangled and bring in a special type of entanglements, namely 'entanglements that are possible to disentangle' in contrast to those which, due to inseparable interdependencies, are impossible to disentangle. For the former type of entanglement, they put forward the concept of 'imbrications' and argue that 'disentangling will imply changing the understanding of an entanglement into that of an imbrication', entailing that disentangling an entanglement into an imbrication is possible and necessary as it 'makes visible the scope of possible actions for changing an unfavorable situation.' Bratteteig and Verne posit that 'imbrication refers to an entanglement that can be disentangled by a stepwise sequence of choices and actions.' They go even so far as to state that some entanglements are imbrications and that imbrications are presented as entanglements.

Bratteteig and Verne treat the concepts of entanglement and imbrication as ontological equals. Entanglement and imbrication, however, belong to two different ontological schools and conceptualizations: one school is that of the 'constitutive entanglement,' which subscribes

to a relational ontology and the inseparability of the social and the material; or as Orlikowski puts it, the inseparability between humans and technology; while the other school is that of 'imbrication', which subscribes to a representational ontology and which accepts the separability of the social and the material, to which Leonardi (2011), who has re-introduced the concept of 'imbrication' with his writings on sociomateriality into the IS field, subscribes.

Imbrications are not entanglements. They are not entangled. They are interlocked or interwoven, as Leonardi (2011) puts it. This recognises that they are assembled and that from the outset they consist of separate parts. They are distinct elements of overlapping patterns which Bratteteig and Verne also acknowledge when, based on Leonardi's work, they argue that the overlapping patterns of human and material agencies indicate that a stepwise procedure will be able to disentangle them. In their interpretation of the empirical data, they conclude that the disentangling is carried out by reducing the complexity of an entanglement to an imbrication of social and technical issues. We disagree and do not think that is what is happening when people deal with entanglements. As tempting as it may be to think that entanglements can be disentangled into imbrications, this is misleading. Imbrications do not need to be 'disentangled', they do not need 'disentanglement' because imbrications are not 'tangled'. They are interlocked and, as such, they need careful unlocking, disconnecting, and separation.

In order to address the different technological capabilities within a sociomaterial perspective, Bratteteig and Verne argue that designers need to be able to talk about the analytically separable constituents of the entanglement. A discussion of the constituents will enable the identification of the constituents to be designed differently so that the sociomaterial assemblage as a whole can be changed in the desired direction. We agree that it is paramount to be able see parts and details, but the analytical separation is not achieved by turning entanglements into imbrications through the act of disentangling. We argue that something inseparable cannot be turned into something separable, not even with a lot of work, as Bratteteig and Verne claim.

In their attempt to reconcile 'constitutive entanglement', which presumes inseparability, and 'imbrication', which implies separability, disentanglement, like the concept of assemblage, becomes part of the problematic and obscure language of sociomateriality, which Orlikowski herself laments, but to which she unfortunately also contributes. This language finds another confusing expression in Introna's and Hayes' (2011) concept of 'sociomaterial imbrication' – the inseparability of separability.

In the context of inseparability, two different aspects of sociomateriality are important; namely, that the social always entails the material and that materiality is performed. Barad (2003) offers a clarification of these issues based on her concept of the phenomenon as the primary ontological unit which leads towards resolving the challenge of analytical separation. In her understanding of performativity, the distinction between humans and nonhumans, between subjects and objects and per se identifiable entities, does not exist. Barad does not distinguish between human and material agencies, or take agency as an attribute of an entity the way Leonardi (2011), who on this point seems to have influenced Bratteteig and Verne, does. For Barad, instead, 'agency is not an attribute, but the ongoing reconfigurings of the world' (Barad, 2003, p. 818); it is a process. Furthermore, in contrast to the understanding of material as a property of technology or as a product of the relationship between artefacts and people (Leonardi 2010, 2011), Barad (2003) sees matter as a substance in its becoming, where matter refers to the materiality of phenomena as the primary ontological units, not to a fixed property of abstract in-

dependently existing objects. In her terms, phenomena are ontologically primitive relations, i.e. relations without pre-existing relata. The relata exist only within phenomena; "... phenomena are the ontological inseparability of agentially intra-acting 'components'" (Barad 2003, p. 815, quotation marks in the original). The notion of intra-action constitutes a reworking of the traditional notion of causality. In Barad's (2003) relational ontology, which she calls an agential realist ontology, performativity is understood as the iterative intra-activity within a phenomenon. Intra-actions within a phenomenon enact agential separability, a local condition for exteriority within a phenomenon, and they enact agential cuts which effect and allow for local separation within a phenomenon. Hence, within inseparable phenomena agential separation is possible.

Bratteig and Verne also use the concept of agential cuts, and suggest that "the notion of disentangling refers to the process of analyzing and describing a sociomaterial entanglement in its constituents. Disentangling will imply making an 'agential cut' (cf., Barad 1999), to separate the agencies that contribute to the problematic situation." But an agential cut is not about separating constitutive elements by tearing them apart and forcefully disentangling them; it is about magnifying details through a lens. This has consequences for the design of IT-supported work processes as it allows to focus while, at the same time, keeping the surrounding context in sight. Disentangling, separating, in contrast, risks losing sight of the context which, in turn, may have consequences for the design of the whole process or of the phenomenon to be supported.

Bratteteig and Verne claim that human actors "translate' the problem from an entanglement to an imbrication, where steps can be taken to address or even solve the issue. Seen as an imbrication, as something that can be analytically separated into human actions and legal/formal/technical issues, a space for action is opened.' They 'find it important to be able to disentangle an entanglement into its constituents in a difficult situation: only then will we open a space for negotiation, choice, action and change'. While we agree with the importance of opening up a space for negotiation, choice, action, and change, we disagree that human actors translate problems from an entanglement into an imbrication. Rather, we argue that they make – consciously or unconsciously – agential cuts, and explore and analyse what they see through a magnifying glass. Bratteteig and Verne's article is an interesting attempt to solve the challenge of opening up, but while pragmatically and practically tempting, it is ontologically inconsistent and might, as we have argued above, have serious consequences for the resulting designs.

Barad's (2003) vocabulary, in contrast, if consistently explained and applied, provides a solid ground to identify and better understand IS-related phenomena by investigating them in their inseparability as well as in their local separability, their intra-action and agency through agential cuts, both in the context of utilization and the development and design of IS and IT. Barad (2003) offers an ontology of inseparability and a language which presents a possible way to investigate the sociomateriality of IS-related issues. A relational holistic ontology which acknowledges relations and transcends Cartesian dualism and representationalism, while recognizing that components in phenomena can be identified as local parts of a whole, provides a solution to the problem of 'the recursive intertwining of humans and technology in practice' and 'the entwining of the material and the social.' It will also make a difference in practice, such as in the design of IT-supported work processes, whether an ontology of inseparability with local agential separability or whether an ontology of separability prevails.

With such a background, sociomateriality – without mixing up entanglements and imbrications and without introducing additional concepts such as disentanglement – can be considered

as an extension of the system sciences which have prevailed in the IS field (van Gigh and Le Moigne 1989), among others, in the form of system thinking (Checkland 1981; Checkland and Scholes 1990) and in the concept of sociotechnical systems (Mumford 1987) as well as in that of actor-network theory (see e.g., Callon 1986; Latour 1991; 2004; 2005; Law 1988), which has been used in the IS field for some time now, and in the writings on the software tool and material approach (Budde and Züllighoven 1992; Ehn 1988), which is based on Heidegger's phenomenological analysis of tools and materials (1927; 2006). None of these is as clear about a relational ontology and an ontology of inseparability or about the phenomenon and not an object, thing, or entity as the primary ontological unit of analysis as suggested in the notion of sociomateriality as discussed and reflected upon here.

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