Design and design research as contextual practice

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Development and design have always been on the agenda of the information systems (IS) discipline. Besides researching the impact of new information technologies (IT) in organisations, most IS academics feel that IS should contribute to the design and production of better IS in practice (Hevner et al. 2004; March and Smith 1995). As a consequence, the design science research paradigm has gained much popularity, as it seeks to promote knowledge of how IT artefacts can be designed and how this design can be evaluated (e.g., Gregor 2006; Hevner et al. 2004; Peffers et al. 2007).

Since design science research aims at creating innovative IT artefacts (Hevner et al. 2004), it has naturally taken the IT artefact as its focal unit of interest. As such, the IT artefact is commonly understood as a bundle of features—in other words, as a self-sufficient entity that is defined by its properties where the function of an artefact is designed into its properties, and where the artefact is expected to do what it was intended to do (Ahn 1998; Benbasat and Zmud 2003; Orlikowski and Iacono 2001). This implies that, in this view, technology is deterministic in nature as its use and effect will follow from its design and function. At the same time, with the traditional focus on the IT artefact has come a need to abstract and de-contextualise in the development of design theories. Consequently, the underlying view is that the IT artefact can be usefully designed and studied separated from its context of use (Orlikowski 2010).

However, such a de-contextual and deterministic view of technology has recently been contested in the literature on action design research (e.g., Sein et al. 2011) as

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well as by proponents of the so-called sociomateriality stream in IS. In the literature on action design research, for instance, it has been argued that “IT artifacts are ensembles shaped by the organisational context during development and use” (Sein et al. 2011, p 37). Sociomateriality stresses that artefacts (i.e., ‘the material’) and social activity (i.e., ‘the social’) co-constitute each other and cannot suitably be separated (Orlikowski 2007, 2010). The aim of this ontological position is to show that our world is inherently sociomaterial in that the ‘things’ that we use in private and business life are co-defined by the social activity in which they are used.

To illustrate this inseparability of ‘the social’ and ‘the material,’ let us first look at an example from the field of archaeology. Archaeologists routinely come across human artefacts that are clearly designed, with their material properties preserved and inspectable, but whose function is lost (e.g., Preston 1998). Since the world in which these artefacts had a place is lost, we do not know what they were for—and hence what they are. Only through trying to reconstruct the world at the time, and what a possible place of such an artefact in human practice might have been, can we try to deduce what the artefact *is* (or better *was*). Such examples bring to the fore firstly that what an artefact *is* is not exhausted by any number of its properties and secondly that its function does not reside in the artefact, but in the human practice in which the artefact has its place.

Let us now look at the phenomena that we study in the IS discipline—for instance, a software product. Typical features of a software product might be “stores a file”, “displays a table”, “prints a report”, or “sends a message”. It becomes clear that even what we commonly take as features (and hence properties) cannot be usefully defined or conceived without reference to human practice. In fact, the above features are all co-constituted (co-defined) by user context and practices. For example, the feature “prints a report” is only meaningful if one is already familiar with what a report is and with human practices in which reports are used.

Artefacts are further co-defined in relation to a myriad of other artefacts already in use within a given practice. A jug, for instance, is only a jug in a world where there are glasses or cups and where people sit at tables with flat surfaces in social gatherings that require holding and sharing large amounts of liquids by pouring them into smaller containers. Consequently, what a jug is derives from this sociomaterial context of use. Given this function, the jug is then required to have certain designed properties to function properly as a jug. Designers will design containers that function best as jugs within a certain contextual drinking practice, and the social drinking practice and the jug are mutually co-constituted (compare Gregor et al. 2013). That is, a technical object (e.g., a jug) provides certain possibilities for goal-oriented action (e.g., pouring water) dependent on its context of use (e.g., a world where there are glasses and where people know how to use jugs).

The argument thus needs to be turned on its head. Any artefact (what it is for, i.e., its function) is first and foremost defined by its place in human practice (Riemer and Johnston 2013). Material features then enable the artefact to be suitable to carry out this function. That is, the artefact provides possibilities for goal-oriented action depending on its context of use (Markus and Silver 2008). At the same time, the artefact co-constitutes the very practice it is implicated in (Riemer and Johnston

2013). An ontology able to capture this understanding is necessarily non-dualistic in that entities, social and material, co-constitute each other relationally (Orlikowski 2010), or, put differently, are defined by their place in the holism of social practice (Riemer and Johnston 2013).

We can now begin to see the implications of such an understanding of artefacts for design and design research (see also Riemer and Johnston 2012). If artefacts are defined by their place in the holism of social practice (their context of use), any design activity starts from something concrete and contextual. Design “is never a process that begins from scratch: to design is always to redesign. There is always something that exists first as a given, as an issue, as a problem” (Latour 2008, p 5). Any design hence aims to ultimately change (improve) the social world by creating new and better artefacts.

Design cannot just be the thinking up of new artefacts, but always has our current world as its point of departure. Even if it was possible to create something that has no reference to our existing world, arguably such a thing would essentially be unintelligible (Riemer and Johnston 2013). And while it is possible to imagine future worlds that present major leaps from our current world, arguably it must be the role of the designer to also envision a trajectory that allows the current world to evolve into the one that is envisioned (i.e., where the new artefact has a place) in order for change to actually happen and not to remain a utopian idea.

As a consequence, good design is not just suitable for a decontextual task, but also needs to tie in with the existing ecology of artefacts already in the practice, and needs to be acceptable for people against the background of existing customs and norms in the social practice. We thus conclude that any design activity is always designing for a social practice, and that design is essentially contextual and social in nature. Not only is the artefact sociomaterial, but also the process of its design—and this has some important implications for design research, which is based on design as a research activity (Hevner et al. 2004; Sein et al. 2011).

Specifically, we, as a discipline, need to thoroughly understand the activity of design and the emergence of new artefacts in context. This view is not entirely new, as can be seen, for instance, in works on action design research that highlight the contextual nature of developing and deploying IT artefacts (Sein et al. 2011; Lindgren et al. 2004). However, we contend that our discipline not only needs to derive and further develop research methods for studying design in and for social contexts, but also institutional environments and vehicles that allow researchers to be immersed in practice environments for engaging in design as a form of research and for studying the nature, impact, and salience of design practice.

Against this backdrop, this special section presents an article by Stefan Cronholm, Hannes Göbel, Mikael Lind, and Daniel Rudmark, where the authors discuss the findings from five years of experience building and using a unit called InnovationLab, an entity that makes an important step towards achieving such a vision for design. Specifically, InnovationLab provides access to systems development capabilities for supporting researchers. The findings indicate that such an entity is valuable for research in general terms and design research in particular. Moreover, the authors show that such an entity must serve different stakeholders, including administrative units, teachers, and students. While the authors do not

focus on the interaction between researchers and users, they do highlight the importance of this relationship. Altogether, the authors thus point to the contextual nature of research in the IS discipline and highlight the role of design research as a contextual activity.

We hope that this special section will provide some stimulating thoughts about the contextual nature of design research and its products, the important role of creativity and innovation in design science research, and how we can design and implement environments that create an actionable space to conduct research that is true to the contextual character of design. It will be interesting to see how design science research will further develop as a paradigm within the IS discipline and how it can contribute to furthering IS theory.

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