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*Reflection note*

# Enlightened Designers from the Dark

## A commentary to “The emergence of design science research from decision theory”

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As Design Science Research (DSR) is positively outlined in Baskerville's keynote reflections, it is important to consider the wider application and perspectives of DSR. DSR is rightfully presented as a cornerstone in our scholarly understanding of design as intrinsic to information systems (IS) studies, however, DSR is somewhat overlooked as a broader explanatory framework for design in other technological and social disciplines (Hatchuel et al. 2018). Having experienced DSR as highly helpful to studies and students in physical/mechanical/cyberphysical product development as well as development within industrial services, business process design, and engineering management, the explanatory power of DSR seems universal. The decision-making processes defined by DSR are thus very helpful as a foundation for general product development and engineering project governance in expressing the logics of the individual and the collective of design processes and design outcomes (Carstensen and Bernhard 2018). Seeing DSR used little outside IS challenge the universality of DSR. The academic field of Design Science is maybe even more inspired by Simon than the IS discipline of DSR, however the field of Design Science not logically sharing positions with DSR.

Our communication of DSR in academic teaching and learning must be critical. No explanatory effort can be absolute. However, few publications exist taking up a critical view on DSR with McKay et al. (2012) as an exception, although mild-mannered, this is arguing that DSR should not be interpreted too narrowly but must combine a construction-centered and a human-centered approach. The human-centered is focused somewhat on the post-design implications in the form of perception, interpretation, experience and value. This means that the considerations from Simon on the deep understanding of decision making as a foundation for design are insufficient, as the resultant design is just as - or more important - than the processes that lead to the design. There is a paradoxical line of discussions where DSR is ongoing augmented with features in the IS field, but little in non-IS. The DSR capture by IS might limit our understanding and solutions design in interdisciplinarity and increasing popularity cross-functionalism in development processes. Internet-of-things, industrial-internet-of-things, ubiquitous computing, and quantified-self is requiring that most solutions reach out to tangible disciplines of technology design and management. DSR must support this all the way.

From the academic teaching and learning, DSR is sufficient to the level of understanding of our processes and providing rigor to our lens of research. Never the less, DSR is limited when it comes to the actionability of design in the form of tools, techniques and given technologies, or bricolage as suggested by Ciborra (2002). DSR must always be supplemented with relevant skills and disciplines in the given field of IS or engineering more broadly. DSR is a meta-skill to help us in getting from the epic of the customer, or concept inventor, to the solution, but it must always invite and support actual skills of the designer. The success or failure of DSR is determined by its ability to guide application of and interact with the actual skill-set no matter, if this is related to software, business process or aspects of engineering in; e.g.; mechanics, architecture or electronics (Luo 2015). DSR must provide for *xenia*—hospitality—to actual skills in its Ciborra's sense of the term. Like the genius painter uses his paintbrushes. Like the sculpturist uses her clay. Like the architect uses her CAD-system. Like the developer uses his coding technologies. Aesthetics only is not enough. It requires artifacts. Just as theory requires practice. Decision making processes must be developed to encompass the fullest of the disciplines and tools needed for the solutions, and decision making must be judged from its ability to constantly challenge its cognitive limits. DSR is needed as the study of how far the designers went, and what supporting disciplines were identified, accepted, internalized, and applied. This might be related to the studies of the relationship between the artifact and the designer. This might also be related to the relationship between theory, the designer and the DSR in terms of curiosity to consider

adjacency and interrelatedness with other methodological schools; e.g.; critical realism, social constructivism or post-positivism.

Alongside DSR, Baskerville has introduced platforms as a conceptualization of the environments of the design activities (Baskerville 2018). Platforms are both the pragmatic and opportunistic scene for innovation and creativity alongside our daily operations. The platforms-based delimitation to problem-solving (bounded creativity) is mentioned from Simon as the artificial in the separation between the inner and outer environments. The DSR must care for our understanding of the delimitation of the platforms we are working on. Transcending the limits of platforms is often hailed as bravery of innovation and hyped as disruption, but the customer would face a lot of problems, if solutions doesn't fit the platform. As the great thoughts of limitless design is marvelous for the few, the skills of recognizing and defining boundaries is in most cases highly valued. Keeping design within defined boundaries makes the most customers satisfied no matter, if we are talking cost, technology stacks, organizational limits or infrastructure. The aesthetics is best achieved, when the DSR leads to the best design through meticulous decisions on, how to meet requirements and expectations within well-defined platform boundaries although bypassing boundaries in the very special cases very this is needed and appreciated.

The platforms are not only infrastructures, toolsets and requirements specifications. Platforms are a holistic representation of social norms and collective mind. The avant-gardists might criticize the a priori delimitation. Conservationists might insist on stability to a level of repressiveness. Corporate management would pressure for digital transformation barely knowing the implications to the corporation as a platform. However, platforms are dynamic and changed by the design activities within the platforms. Platforms are thus a function of time. Like they are a function of technology and the social infrastructures surrounding technology. DSR, and the dynamics of platforms, can in this sense, well explain the rise and fall of corporations. The successful designers follow the legacy from Schumpeter (1942) in thinking innovation as creative destruction. The business model or work process in focus of designs and new platforms must offer elements for eradication. As invoice approval could be replaced with robotic process automation making invoice specialists obsolete. Or as fintechs (financial information systems innovators) relentlessly strive for extraction of lucrative business models from traditional financial institutions. The decision-making in DSR is thus a decision making on destruction and platforms might reshape unexpectedly from collateral damage of the imposed designs. Reproduce-ability of IS research is complex as circumstances always are different. Repetition of experiments can hardly be done as the destroyed elements might be gone forever. Research positions must consider the level of radicalism

to what the platforms will change. Just to consider the many trades that have already more or less vanished as a consequence of digital transformation from newspaper type-setters to ticket offices to mailmen to floor-level stock brokers.

In commenting Baskervilles thoughts, it is to notice that these span more academic contributions than done by anyone else over more than 10 years, where each adds to the DSR body of knowledge. In (Pries-Heje et al. 2008) an evaluation framework of DSR is suggested to heighten rigor and comprehensiveness. In (Lee et al. 2011) DSR is aligned with abduction as a founding theory of science suggesting DSR driven by imperative logics in line with Simon. In (Baskerville et al. 2017) the DSR Reliability Framework was analyzed and presented and provided a scientific methodology to prove DSR positions in research in IS. In (Baskerville et al. 2018) the balance between theory and artifact is high quality DSR research. In 1290 scientific publications on DSR found in Scopus, Baskerville is found as the most active researcher with 30+ credits, closely followed by Pries-Heje and Venable as a trio of strong importance to the DSR community. Hevner et al. and Peffers et al. are although the most quoted contributions.

There are several suggestions to formalize DSR. There are numerous papers contributing to set the boundaries of DSR in terms of reliability, maturity, risk management, formalization, structuration, framework-isation, etc. Each paper adds a bit to learning, knowledge creation and our potentials for interacting with practice. Important to DSR is however the incessant academic discussion. Discussions keep DSR alive. A formal framework, an ISO standard, or a significant drop in scientific publications would risk obscuring DSR. This is by far not the case as of today. With foundations laid during the early years of computer science, and with Simons seminal reflections upon the fundamentals of design as formation of alternatives, choice, matching and evaluation. DSR appears alive and well. In (Baskerville et al. 2018) it is concluded on DSR that “[t]his aligns with our call for greater relevance of IS research and emphasizes the important role of DSR in the overall vision of IS research.” DSR is thus one of more cornerstones in IS research, but with DSR as having one of the clearest explanatory frames of references in the meeting between research and practice.

Besides seeing vibrant discussions keeping DSR fresh and well, stronger critical positions are needed. The positivist philosophy of science has been criticized for ages as being ignoring social facts. Social-positions of research approaches are largely being criticized for naivety and lack of objective rigor. The most DSR publications are not questioning DSR but do rather aim at deepening and augmenting DSR. From the argumentation above, DSR mostly reflect upon the impact of the changes envisioned in the designs created. A typical chasm of IS/IT is development and design versus operations and governance. Newer IS frameworks such as ISO20000, IT4IT, Scaled Agile,

Large Scale Scrums, DevOps are aiming at integrating design with the application and organizational/business-wise implementation of the design. This draws up a contour of a research methodology for understanding the mutuality between artifact and practice that is however not overlooking that decision making is just as fundamental to operational practices as it is to designers. The platform-thinking is interesting as it embraces theory, artifact and practice, the methodological reflection about the lasting and ongoing reshaping of platforms will add interesting elements to DSR.

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