



OPINION PIECE

A response to the design-oriented information systems research memorandum

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Abstract

In response to Österle *et al.*'s 'Memorandum on Design Oriented Information Systems Research', this commentary disputes, and expands the context of, several premises used to justify the main argument in the memorandum. These include: (1) claims about the evolution and role of design science research in the broader IS community and its position in the so-called 'Anglo-Saxon community', (2) the journal reviewing standards applied to design science research and what is perceived to be a sole focus on behavioral 'descriptive' research in certain IS journals. This commentary also discusses how such journals operate and set up their missions, review principles, and standards.

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The memorandum by Österle, *et al.* entitled '*Memorandum on Design-oriented Information Systems Research*' has been written by an impressive set of well-known professors from the German-language Information Systems (IS) community. It is also signed by a sizeable proportion of the members of that community, thus conveying a significant concern and signaling from a large and influential sub-community of the global IS community. We welcome the intention behind the memorandum to emphasize relevancy in IS research and the quest to focus on the innovative and transformative role of information technology (IT) artifacts. We also hope that the memorandum will serve its main purpose, that is, to reinforce the place of design science research as an essential part of the German-language business school culture. In the past, this tradition has significantly contributed to the IS research community and we trust that it will continue to do so in the future.

The aim of this rejoinder is to dispute and place into a larger context some of the key points communicated in the memorandum, crucial in that many of these key points are critical premises to justify the main argument in the memorandum. These include: (1) claims about the evolution and role of design science research in the broader IS community and its position in the so-called 'Anglo-Saxon community', (2) the journal reviewing standards applied to design science research and what is perceived to be a sole focus on behavioral 'descriptive' research in the four journals we represent [*European Journal of Information Systems (EJIS)*, *Journal of the Association for Information Systems (JAIS)*, *Information Systems Research (ISR)*, and *MIS Quarterly (MISQ)*]. We will also comment on how these journals operate and set up their missions, review principles, and standards.

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To illustrate what the memorandum is arguing, let us look at an excerpt from the opening two paragraphs:

Is information systems research supposed to be beneficial for society and business? Until recently, this question was answered with a clear 'Yes' by the European information systems research community, particularly by the German speaking countries and Scandinavia, who were proud to graduate students with fundamental knowledge concerning the design and implementation of innovative business solutions that both business and public administration demanded ... Rooted in the business school culture, [Anglo-Saxon information systems research] is based on a behaviorist approach. Rather than aiming at the design of innovative information systems it focuses more on observing information system characteristics and user behavior.

It is also important to observe that, *de jure* and in fact, we agree on most of the points and principles laid out for design-oriented IS research and its quality criteria, as well as its vital role in the IS community. These viewpoints are not new and they are perfectly consistent with widely published criteria in use for design science research as has been reported in the journals we represent (see e.g., in *MISQ* Hevner *et al.*, 2004; and Gregor & Jones, 2007, in *J AIS*). Perhaps it goes without saying that we seek to recognize design science principles in our journal review principles and practices or otherwise we would not have published these seminal articles!

To reiterate, our main focus in this commentary is to contend two premises set up in the 'preamble' of the article namely: (1) that there is a specific 'Anglo-American' behavioral model of research, and (2) that only such research gets published in the journals we represent.

Issue 1: The bias toward an 'Anglo-Saxon' behavioral paradigm in North America (and other parts of the world)

The memorandum characterizes Anglo-Saxon notions of IS research as being 'based on a behaviorist approach'. This statement badly over-simplifies and stereotypes Anglo-American IS research. In reality, most of the IS research carried out not just in North America, but also in most other parts of the world encompasses at least: (i) design science research on the design of IT-based artifacts; (ii) behavioral research on understanding issues like user acceptance or other individual or team level impacts of IT; (iii) economic research on the value of IS; and (iv) strategic and organizational research on the management and impacts of IT in organizations. The memorandum's characterization of a whole community as being monolithically focused on behavioral research is worrisome.

Alas, the memorandum ignores the fact that a large portion of successful IS research in the Anglo-Saxon world does, indeed, follow the design-oriented research paradigm. For example, many of the significant recent contributions to characterize design research approach and its canons, widely referenced by the

German-language research community, originated in the Anglo-American world. To wit and as articulated above, two key references that have established meta-theoretical quality criteria for design-oriented approaches during the last decade were written by scholars working in this community and published by the journals we represent (Hevner *et al.*, *MISQ*, 2004; Gregor and Jones, *J AIS*, 2007). A large group of researchers in this community also continually contributes to design research as evidenced by successful design science workshops like The Workshop on Information Technologies and Systems (WITS) (which usually precedes the International Conference on Information Systems, or ICIS), and several tracks in The Hawaii International Conference on System Sciences (HICSS).

Nor is it true that design science is a new and emerging phenomenon in North America. For example, in the mid-1970s Jay Nunamaker and his colleagues at Michigan and later at the University of Arizona started a very successful research stream that focused first on CASE tools and later on Group Decision Systems. The stream successfully followed principles of design-oriented research and its principles were also condensed into a full-scale research methodology, where design-oriented research plays a key role (Nunamaker *et al.*, 1990/1991). But this is one limited example of the presence of a viable and vital design research sub-community within the North American community. Similar examples can be found in many of the leading North American IS departments including New York University, Minnesota, Massachusetts Institute of Technology, the University of Michigan, Purdue, and the University of Texas at Austin among others.

Issue 2: A bias toward the behavioral IS paradigm in top IS Journals

We do not share the concern raised in the memorandum that:

In the effort to have their work published in these journals, researchers, and young researchers in particular, have no other choice but to comply with the journals' evaluation criteria for paper submissions. Basically, these criteria say that publications providing statistical evidence of empirically identified characteristics of existing information systems are favored over publications presenting innovative solutions that are considered highly beneficial for business.

This is simply not the case in the actual review practices of the journals we represent, namely *EJIS*, *J AIS*, *ISR*, and *MISQ*

In Table 1 we adumbrate the mission statements of our journals, descriptive details for design science expertise on our editorial boards, and special issues on design science promoted by our journals. Nothing here could be construed to prove that we follow the exclusionary criteria stated in the memorandum, that is, that we seek to publish only articles that provide 'statistical evidence of empirically identified characteristics of existing

Table 1 Design science research indicators in *EJIS*, *J AIS*, *ISR*, and *MISQ*

Journal	Mission statement	Design science expertise on editorial boards	Design science special issues
<i>EJIS</i>	'... provide a distinctive European perspective on the theory and practice of information systems for a global audience. We encourage first rate research articles by academics, but also case studies and reflective articles by practitioners. <i>We provide a critical view on technology, development, implementation, strategy, management and policy</i> ' [italics added for emphasis].	20 Associate Editors (AEs), including the Editor in Chief (EIC) (37%)	Vol. 17, No. 5
<i>J AIS</i>	'... <i>inclusive in scope and covers all aspects of Information Systems and Information Technology</i> . The Journal publishes rigorously developed and forward looking conceptual and empirical contributions. The Journal encourages multidisciplinary and nontraditional approaches' [italics added for emphasis].	3 Senior Editors (SEs), including the EIC (25%); 17 AEs (25%)	Vol. 8, No. 2
<i>ISR</i>	'... advance knowledge about the effective and efficient utilization of information technology by individuals, groups, organizations, society, and nations for the improvement of economic and social welfare. The journal is <i>receptive to a wide variety of phenomena and topics related to the design, management, use, valuation, and impacts of information technologies at different levels of analysis (i.e., individuals, groups, firms, networks, societies, and nations)</i> ' [italics added for emphasis].	5 SEs (31%); 10 AEs (22%)	Vol. 17, No. 3
<i>MISQ</i>	'... the enhancement and communication of knowledge concerning <i>the development of IT-based services</i> , the management of IT resources, and the use, impact, and economics of IT with managerial, organizational, and societal implications' [italics added for emphasis].	3 SEs (23%); 8 AEs (20%)	Vol. 32, No. 4

information system'. There is no evidence either we 'favor' statistical empiricism alone. In fact, the record indicates to the contrary that design-oriented papers do find favorable treatment from editors and reviewers. This is also evident from the consistently high percentage of design science specialists on our boards, in no case representing less than 20% in the journals we represent (see Table 1). (We trust that these percentages can be reasonably characterized as 'high', given the proportion of design scientists in business schools internationally and the need to have sufficient specialists in the other research paradigms we enumerate in this rejoinder).

In recent years, we have also made dedicated efforts to strengthen the visibility of design science research in our journals. For example, we have dedicated numerous special issues to novel or timely topic areas or methodologies in design science (see Table 1). For example, *EJIS* (Vol. 17, No. 5), *J AIS* (Vol. 8 No. 2), *ISR* (20, No. 3), and *MISQ* (Vol. 32, No. 4) have all solicited articles and published special issues on design science research.

Some of our four journals also track international conferences in the area, soliciting submissions of best papers from WITS, The Conference on Design Science Research in Information Systems and Technology (DESRIST), and other design-oriented workshops and

conferences. *EJIS*, for example, 'fast tracked' the most positively reviewed design science papers from the 2008 DESRIST while *J AIS* 'fast tracked' the 2009 DESRIST, and 2008 WITS papers.

Many of the concerns raised in the preamble about difficulties in publishing are not confined to design-oriented research, but are shared globally across all IS research communities. Both publication expectations and standards of publishing have been rising for some time, no doubt reflecting the maturing of the discipline. Consequently, out of the many possible publication outlets (journals, conferences, books, etc.), journals listed in citation indexes such as Thomson Reuters' Institute for Scientific Information (ISI) have gained prominence and increasingly been given precedence. In addition, as the memorandum notes, institutional pressure has been placed on scholars to publish in journals with high impact factors. The pressure of rising expectations and standards also impacts journal behaviors. Journals compete for the quality rankings that bring high quality submissions. Review panels therefore are enjoined to apply 'best of class' expectations in each review. As a result, journals place less time pressure on review panels, authors, and editors, and instead place more pressure to contribute to theory and craft strong and rigorous scholarly contributions. This results in more carefully

crafted and validated research outcomes including careful organization and high quality writing. In many cases the underlying empirical analysis needs to be redone, and even new data collection is carried out to satisfy the applicable review standards.

For design science researchers, this means top journals will publish only the best design science results. The 'Memorandum' delineates many principles and criteria that will characterize good results. However, for top journals a key criterion will be scholarly contribution and this important criterion is missing from the memorandum. The strongest design science papers will likely to gain publication in top journals because they make significant contributions to theory as well as practice. Such contributions may include the discovery of novel theory related to IS phenomena through design science procedures or the significant extension of existing theory through its exercise in a design-and-build research cycle. Theory is not only the product of 'descriptive' explanatory or predictive research. In design research, design theories can provide teleological, or functional explanations that may constitute an important scholarly product of such research (Nagel, 1961; Simon, 1996).

An expectation to a significant theoretical contribution, over and above a significant practical contribution, is reasonable and normal for the most prestigious research outlets. The review panels in such journals expect published articles to provide these contributions at the highest intellectual level. If there is an intention to publish the results of design-oriented research in highly regarded and high impact international journals, the 'Memorandum' underemphasizes the importance of theory and scholarly contribution as key criteria for acceptance. We hasten to add that behavioral-, strategic-, and economics-based IS research is certainly not immune to the application of such standards. But it must be made absolutely clear that design science work is not being singled out (and selected out) as the result of a bias against the paradigm itself.

Scholarly contribution is critical because design science articles compete with each other, as well as an ocean of other excellent research products. Overall, 10% acceptance rates are commonplace in top journals, which means that the vast majority of submissions are rejected. (Though, as all of us have been at pains to stress numerous times, we are not primarily in the business of rejecting papers but in the business of publishing *good* papers). Therefore, publishing in top level journals is *always* difficult no matter what research approach or paradigm one follows. This is the very reason these journals are called 'top' journals! Not surprisingly, several studies indicate that publications in top level journals are hard to attain for *anyone* and there is only a small percentage of scholars globally who systematically and continuously reach these outlets (see e.g., Dennis *et al.*, 2006). The reason that *some* behavioral IS researchers publish regularly in top journals does not mean that they are behavioral researchers (and therefore their work is

rejected less often), but because these scholars are innovative and, pointedly, resilient. Finally, they are productive and submit often to the best venues.

In addition, the fact that the institutional context is still defined at the national level (Rowe, 2010a) and world region level is very important (1) to explain the sudden appearance of the memorandum (cf. the Editorial in this issue) and (2) to understand why, as two of the authors of this commentary have argued elsewhere (Lyytinen *et al.*, 2007), the North American research culture appears to be better equipped to promote scholarship at the level of quality required for publication in the top journals. This institutional factor is very important because top journal publications are not only the outcome of the ability of researchers, but also of a production and incentive system that stimulates certain types of research. While the views expressed by (Lyytinen *et al.*, 2007) have been contested (Paul, 2007) or nuanced (Rowe, 2010b), all of these authors agree with the *EJIS* co-editors that researcher behaviors are different across the Atlantic (and in other parts of the world) because the incentive systems are different. With them we also recognize that, whatever the institutional and geographic differences, it simply takes a lot of hard work and willingness to invest in research practices and processes that endorse reviewing.

Because of such rising expectations, new standards of performance evaluation are spreading both geographically and across sub-disciplines. As a result top journals receive an increasing number of submissions, and more to the point, a rising proportion from more diverse research paradigms and cultures. Top journals should, therefore, respond strategically (but carefully) to avoid disadvantaging any particular geographic area or research methodology, a strategic stance that we have promoted. Our journals are far more diverse today in terms of research paradigms and geography than they have ever been.

Top journals are designed to serve the needs of the whole community in that they are some of the most valuable intellectual property that we have as a global intellectual community. Therefore, top journals are willing to follow the shifting interests of IS research by adjusting their mission, scope and research genres. For example, the journals we represent continually review their mission statements and discuss salient review principles, criteria and processes so that the overall review processes being engendered will serve the community to the fullest while at the same time meeting standards for rigor, high quality, and fairness. We believe that such strategies are vital for enabling the discipline to advance by embracing novel research methods, topics, and findings. Our main responsibility in the end is to serve the needs of the global community, though, admittedly, such principles vary from one journal to the other due to the differences in the publishing institution, its location, geographic scope, and intellectual history.

In this respect design science research is no exception. Its scholars will have to adapt to the changing and higher standards that are, at the same time, transforming the top journals. We regard design science as a research approach of growing importance for the IS discipline. As indicated above, we have fervently tried to respond to the needs of this valued research community, and will continue to do so. In this regard, we strongly encourage a continuing discourse about how to improve the visibility of high quality design research in the outlets

we represent. At the same time, we emphasize that such dialogues cannot be carried with a view of excluding out of hand other research paradigms for contributing to theory and practice.

Resulting from this discourse we are hopeful, in particular, that we will see more input from the German-language design research community and that we can work together to seek out ways in which the best research from this community can be successfully published in our outlets.

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