



EDITORIAL

The inflation of academic intellectual capital: the case for design science research in Europe

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In this issue, *EJIS* is publishing ‘Memorandum on Design Oriented Information Systems Research’, an opinion that has engendered much debate in the German-speaking Information Systems (IS) community. Already published in German, we present an English translation. Following the Memorandum is ‘A Response to the Design-oriented Information Systems Research Memorandum’ by Richard Baskerville, Kalle Lyytinen, V. Sambamurthy, and Detmar Straub. To a certain degree, these opinion papers are part of a wider and continuing discourse about the evolving mores in the assessment of academic research. This discourse has materialized in a number of *EJIS* articles, for example, relating to Britain (Paul, 2008), Finland (Iivari, 2008), and Europe in general (Lyytinen *et al.*, 2007).

There are many issues; but a central theme in this discourse has been the value and scientific quality associated with the various artifacts that represent IS research outcomes. Such artifacts not only include reports such as books, journal articles, and conference presentations, but because of the underlying technology they may also include operational computer programs, machinery, and practices (Committee on Academic Careers for Experimental Computer Scientists, 1994). The precedence in the value attached to these artifacts is evolving and is relative to different institutions, academic traditions and cultures. In some cases, journal articles are particularly privileged, and this privilege may even exclusively value only ‘top’ journal articles. In this editorial, our central concern from a perspective of editors of *EJIS* is this focus on the high value often attached to our journal review and acceptance decisions. The basis of such valuations is not only ours, but also the precedence attached by others. These valuations are often situated within specific institutions or scholarly cultures. For example, in the scholarship of discovery (Boyer, 1996), articles in the scientific literature are often rightfully favored. In the scholarship of teaching, textbooks are rightfully valued (which does not lessen the value of scientific papers).

A part of these issues therefore lies with various institutional or cultural valuations of scholarly artifacts. Such valuations may err by leveling expectations for research journal publications from scholars whose duties do not actually involve scientific research. Research journal quality management has worked quite well to advance the community’s research-oriented knowledge via competitive peer reviews. These processes are not to blame for the rejection of artifacts that lack a serious research contribution.

Further, a part of these issues is the evolution within some evaluation bodies toward the assignment of a singular importance of top journal placements, and associated risks of a too rigid system in terms of researchers’ learning and personal development, complementarities of publications and diversity of outputs for overall richer knowledge and tools creation (Loos *et al.*, 2010). Such evaluations will leave other artifacts

comparatively devalued. Scholarly books may become undervalued; conference papers (even top conference papers) may become undervalued. In other words, the amount of academic prestige that an author receives from a conference paper becomes far less than it was in the 'old days'. It is a form of intellectual property inflation that concentrates the value of all scholarly knowledge within a scarce and sometimes inappropriate commodity, top research journal page space (De Marco in Loos *et al.*, 2010).

The evolution has also necessarily set two races in motion. One race is among journals seeking status among those at the top, whereas some may see more need for complementarity than competition (Rowe in Loos *et al.*, 2010). The second race, running nested within the first, is a growing global competition for the page space in whichever journals are acceptable as 'top'. Since academic careers are at stake, debates quickly become mired in arguments over what criteria should determine which journals are top (e.g., the RAE, Paul, 2008); how big to make the top (Dennis *et al.*, 2006); or even whether bibliometrics should matter at all (Iivari, 2008). If the ensuing discord is not threatening enough, lurking in the background are the foundations for impact indexing for individual scholars, such as the h-index family of metrics (Harzing & van der Wal, 2007). Such indexes enable a comparative digest of the citation records of individual scholars.

Do not imagine that this issue is part of the IS 'identity crisis'. The evolution is broadly spanning across many other disciplines (e.g., management in general, Macdonald & Kam, 2007). In addition, this discourse also takes on national and cultural flavors. The focus in parts of the world is on research assessment exercises (such as the British RAE) that rank universities. In other parts of the world, the focus is on promotion and tenure standards (Dennis *et al.*, 2006). In this issue of *EJIS*, we offer insight into how this discourse is currently unfolding in the German-language academic community. A large section of this community has a long-standing association with research techniques that are seen to fit the design science research paradigm. Hence, the current Teutonic version is wrapped together with design science.

The 'Memorandum' that follows this editorial represents a pronounced view from part of this community. There is a discourse about such research paradigms that goes back many years and substantially precedes the rising IS interest in design science. In this editorial, we will summarize several of the diverse and disputed arguments that inhabit this discourse. (We by no means collectively agree to every side in these arguments!) It is part of an evolution of the German-language scientific disciplines and their institutional embedding since the Second World War, especially concerning business, sociology, and computer science. The German-speaking approaches evolved somewhat differently in comparison to the Anglo-Saxon world. For example, the intersection between IS and sociology for mainstream topics is culturally much smaller in Germany

than in Anglo-Saxon cultures. As a consequence, different positions have emerged that resulted in different research 'habitats'. From a Wirtschaftsinformatik (IS) perspective the difference is that the German-speaking world of Wirtschaftsinformatik has always been, at least, a duality. It consisted of one part that stood in the tradition of the virtues of German engineering (model a problem and solve it) and one part that is more like the prevalent international IS research paradigms. Consequentially, chairs of the first category are sometimes part of a natural science or computer science faculty, while the latter are mostly part of a business school. Later, a third group has also emerged as a dedicated faculty of Wirtschaftsinformatik of its own. These differing institutional habitats of Wirtschaftsinformatik might explain why some chairs emphasize methods, theories, applications and also research outlets one would expect in an international business school. Meanwhile others might lean more towards a computer science school or, as a possibly resulting German-speaking distinctiveness, (IS) engineering. At the same time, the German-speaking area long seemed large enough to at least partly sustain its own Wirtschaftsinformatik/IS-ecosystem including journals and conferences.

This rich history is only beginning to be documented (e.g., in a forthcoming special issue of the *Journal of the Association for Information Systems*), but perhaps this duality (or triality) is an asset of Wirtschaftsinformatik because it incorporates a rich completeness that ranges from understanding through to solving IS-related problems. The 'Wirtschaftsinformatiker' is a happy soul because relevance is an emphasis on normative research as well.

In the opinion of some in the German-language IS community, the duality turned from intellectual to institutional and has grown into a schism. Within Germany there is a disconcertingly emotional debate that risks an unhelpful bifurcation of Wirtschaftsinformatik. The Memorandum may have created a split between those who have endorsed it and those who have not. It is growing as a major concern of doctoral students and junior faculty who are considering a career in academia. Rumors abound about fears that being identified on either side of the debate could lead to substantial disadvantages if this turns out to be 'wrong' side for the situation at hand. As a result, many have refrained from endorsing the Memorandum because no method, theory or perspective should *per se* be favored or discriminated against. Also, many just don't think that the Memorandum offers anything new beyond already published criteria. But it can be hard to shake the suspicions that the choice not to endorse the Memorandum represents a decision to oppress design science research.

Again, in the opinion of some, the Memorandum movement's tone risks splitting the German-speaking IS community (either you are for us or against us) and also the global community (German vs non-German IS). The concern is that institutional variety becomes equated with intellectual exclusiveness and ultimately

the bifurcation will castigate individual persons (he/she is for it vs against it). Friends of both the 'design' and the 'science' in design science may not have signed the Memorandum because of a perception that it bears its emotional aggressiveness: a more political/institutional than intellectual tone that some might feel almost borders ideology. Globalization trends make national borders more transparent and the notion of a 'national IS research' meaningless beyond the institutional level. There are intellectual/methodical/theoretical communities of interest, and they are free to organize their communication channels and outlets. The common goal, though, always needs to be to maintain the highest quality possible, whatever the research outcome type.

As in the rest of the world, there is a lot of diverse research in the German-speaking countries. The Memorandum is only about design science research. Hence, it does not reflect a universal position of the Germanic IS community nor should it oppress or disperse non-design research. Obviously and as emphasized in the rebuttal as well, we all agree on the need for a plurality of theories and methods to cope with a complex and dynamic world. Bad design research is as un-publishable as bad behavioral research. We all agree that we need theory building science as much as we need technology building science. They belong together because without understanding the world we cannot design the right artifacts for it.

A key to understanding this intense debate is the funding sources for research. In many Anglo-Saxon research settings, business schools pay; they pay salaries, typically with no strings attached and typically with no need to acquire outside research funding. This structure gives researchers a lot of leeway in the way they approach their research projects. In many German-speaking countries, on the other hand, external funding is crucial, and that funding typically determines the contents of the project. While funding is only one reason, it helps explain why the emphasis on design science is so strong and why there has to be a 'justification' for it in the public academic eye. Changes following the Bologna declaration, including putting European universities on par with one another and standardizing their degrees, made it apparent that scholarly evaluation also needed standardization. As a consequence, such a memorandum surfaces in 2010, while the methodological divide between the German-speaking and the Anglo-Saxon community has been operating already for decades.

There are other aspects in the viewpoint expressed in the Memorandum that are not universal across the German-speaking community. It is likely that part of this community would strongly reject their premise, namely the relevance of the difference between design and behavioral science.

A more critical viewpoint might claim that there is a power aspect in the Memorandum. This paper could be (at least partly) aimed at funding agencies. In parts of the German-speaking world, academia, possibly for the first

time ever, is coming under pressure to show results for the money invested in research. Some feel that this academic community functions as a consultancy industry for businesses, and as a result produces little in terms of theoretical and academic contribution (a fact that has been pointed out by minority voices within the community). Some believe that design science is a bandwagon that allows practice-oriented academic work to masquerade as a design science. Such a view would suggest that claims about the unpublishability of design science is merely an excuse for the lack of academic achievements from this practice-mode of research (Stahl, 2009).

For others in the German-language IS community, that more critical viewpoint justifies the Memorandum initiative: A small percentage of business and information engineering (BISE) researchers in the German-speaking countries who monopolize behavioral research as 'science'. They lay exclusive claim to science, with suggestions that the major activities of the vast majority of the community is only 'consulting'. Money invested in completely irrelevant (yet very rigorous) research is raising pressure from funding agencies for research that is solving important, relevant problems in society or business.

From this perspective, the Memorandum clarifies this majority opinion of the German-language on BISE research community. Quality is not the only issue. The global IS research community does not just need more and better design science submissions to its journals. It needs more reviewers and editors who are receptive to design science. Under this viewpoint, as long as the leading editorial and institutional policies automatically treat everything that is relevant as 'consulting' and restrict 'scientific' to the predefined social science standards of rigor, we confront the need for design science research emancipation.

It should not be an issue of replacing one dominating paradigm with another. In the best traditions of democracy, this majority (whether design science or behavioral science) should indeed respect the rights of the few who hold this different opinion, and not demand that all BISE research must be design oriented. The Memorandum offers guidelines about the conduct of design-oriented research. For the German-language IS community, the Memorandum intends only: (1) To demonstrate that design science is a leading IS research paradigm in the German-speaking countries and thus justify design science departments in journals, tracks in conferences, and themes in our selection and promotion processes. (2) To provide a foundation for future consolidated guidelines that regard design science stakeholders, object, goals, results, processes, methods, and principles. (3) To establish the design science research goal of 'rigor of artifact construction' as a valuable addition to its grounding in relevance. These forms of rigor and relevance do not necessarily replace other expectations for grounding, but in some cases may become additional expectations.

The reason why not everybody agrees to the Memorandum is that some details of its text reveal a potentially

problematic view for any science: It is the view that a research field can solely build on the 'scientific literature produced by the discipline', that it should always (yield) a certain benefit and is not required to embrace theory at the outset of knowledge (or system) creation. This view, which is hiding throughout the Memorandums text, is highly problematic. It is problematic, because design science claims to be a part of science and therefore needs to draw from the broadest spectrum of knowledge and needs to be aware of existing theories before plunging into designs.

Another reason why the Memorandum is meeting some skepticism is its potential to be regarded as the position and research agenda for Germanic IS scholars. While design science certainly is important and has been defining IS scholarship in the past (at least in Germany itself), the future holds many more challenges. These challenges include, for example, IS management issues (governance of systems, IT controlling, information management, etc.) or human-computer interaction issues (human values, ethics, emotions, attention management, etc.). These challenges are not necessarily design science related. They may be studied with other methodologies and they certainly need to be studied in the German-speaking IS community to maintain the future importance of that community on a global scale.

We believe the publication of this Memorandum and the response that follows will generate a fruitful discourse on the future of design-oriented IS research in Europe and in the German-speaking community particularly. We hope that discussion now will help lead to the establishment of design science as a valid approach in IS research and recognition that we have effective means to conduct and evaluate research in this area. There is already significant design science literature, but we still have far to go until all editors and reviewers have really internalized these ideas. The Memorandum might well contribute to this goal. In addition, we hope to accomplish a more differentiated understanding of design-oriented research and recognize that there are very different schools of thought (yet) under this very same label.

Design-oriented research has improved, but there is a plenty of relevant design research that could be improved more in terms of research quality standards. We believe that all actors in this discussion (editors, reviewers, and senior researchers) will have to demonstrate their willingness to adapt and improve so that we can exploit the full potential of design science in IS. A continuing discourse in this area, such as that represented by the diverse and disputed arguments above, is one important avenue for bringing us closer to this full potential.

In this issue ...

Following the Memorandum and the response, we have seven superb research papers. Six of our papers in this issue of *EJIS* group around two themes: (1) IT and IT development strategies, and (2) IT and human resources. In the first of the strategic pieces, Lior Fink of Ben-Gurion

University of the Negev investigates the strategic value created by IT capabilities using two perspectives: the reductionistic and holistic approaches. In 'How Do IT Capabilities Create Strategic Value? Toward Greater Integration of Insights from Reductionistic and Holistic Approaches', the author argues that most prior studies in the IT strategic value literature have taken a reductionistic approach in which the impact of each IT capability on strategic value is examined individually. The author argues that IT strategic value involves complex forms of IT capabilities interaction. Thus, drawing upon contingency theory and configurational theory, the author presents two sets of models that take on a reductionistic and a holistic approach respectively. A survey of 293 IT professionals in management positions supports the author's arguments. The reductionistic approach is useful in terms of identifying individual links between IT capabilities and strategic value, whereas an holistic approach provides additional insight regarding how IT capabilities as a whole influence the creation of strategic value. This study provides excellent empirical evidence that IT strategic value can be created not only by individual IT capability but also at the confluence of IT capabilities.

Continuing the theme of strategy and systems, Jonny Holmström of Umeå University and Steve Sawyer of Syracuse University present an interesting interpretive study that explores the complexities of requirements gathering in light of the social construction of technology. 'Requirements Engineering Blindness: Exploring Information Systems Developers' Black-Boxing of the Emergent Character of Requirements' suggests that requirements gathering occurs in a complex social milieu in which requirements are constantly being renegotiated. Under such a volatile environment, social conflicts arise among participating actors in terms of what requirements should be incorporated into a final systems design. Nevertheless, the emergence of requirements and social conflicts are rarely taken into consideration in the actual systems development process. In fact, the findings of this study suggest that developers tend to ignore this complexity in requirements gathering, and take a homogenous view (so-called black-boxing of the emergent character of requirements). This study shifts our view of requirements gathering as a simplified and formalized process to a complex and emergent process that requires social learning and construction.

The third strategic contribution deals with alignment within the IT unit itself. In 'Alignment within the Corporate IT Unit: An Analysis of Software Testing and Development', Colin Onita and Jasbir Dhaliwal of the University of Memphis explore IT alignment between development and testing function within the corporate IT unit. This work is motivated by lack of empirical study that investigates IT alignment at a more granular level relative to a higher level IT alignment between business and corporate IT. The authors offer a development-testing alignment model that can meaningfully be applied in

practice to help enable better alignment between the development and testing functions. The case study of a Fortune 500 company indicates that development and testing functions are indeed largely disconnected, and several factors are found to negatively influence the alignment between the two functions, including specificity of scope, governance, etc. This study provides excellent empirical evidence that development and testing functions are poorly aligned, which entails significant importance in that successful software development often depends on effective collaborative mechanisms between the two functions.

We also present three articles that deal with human resources issues related to IS. The first article in this group deals with the relationship between technology and learning. In 'Usage and Impact of Technology Enabled Job Learning', Gholamreza Torkezadeh, Jerry Cha-Jan Chang, and Andrew Hardin of University of Nevada Las Vegas offer a stimulating essay in which the relation of systems use with technology outcomes is investigated through the lens of technology-enabled job learning. Although the impact of systems use on technology outcomes has been studied widely in the IS literature, the authors argue that the impact of systems use is mediated through technology-enabled learning. Specifically, it is hypothesized that the systems use of decision support, work integration, and customer service positively influence job learning. This technology-enabled job learning subsequently helps produce positive outcomes in four areas (task productivity, task innovation, customer satisfaction, and management control). The analysis of data from a large-scale survey suggests that technology-enabled job learning indeed plays a significant role in mediating the impact of systems use on technology outcomes. This study underscores the fact that technology outcomes are not a pure function of systems use itself, but rather a result of job learning enabled by systems use.

The other two papers in the human resources group deal with the IT professional. In 'IT Professional Identity: Needs, Perceptions, and Belonging', Nita Brooks of Middle Tennessee State University, Cindy Riemenschneider of Baylor University, Bill Hardgrave of Auburn University, and Anne O'Leary-Kelly of The University of Arkansas el Tenne investigate factors that influence the formation of IT professional identification, focusing on the lack of theoretical explanation as to how IT professional identification can be developed in a workplace. Drawing upon three theoretical perspectives: identity theory, social identity theory, and self-categorization theory, the authors suggest that there are three types of factors that influence IT professional identification (individual, social, and profession-related factors). A theoretical model is presented, and tested against quantitative data collected through a survey of 305 IT professionals. The findings suggest that IT professional identification is formed by a need for professional identification, similar to others in the profession, and individual perceptions of the

profession. In addition, public perceptions of the profession are found to influence professional identification through individual perceptions of the profession. This interesting study underscores the importance of establishing a strong IT professional identification, and uncovers three factors that may help achieve this.

In 'Information System Personnel Career Anchor Changes Leading to Career Changes', Christina Ling-hsing Chang of National Pintung Institute of Commerce, Victor Chen of National Cheng Kung University, Gary Klein of University of Colorado at Colorado Springs, and James J. Jiang of the Australian National University present an interesting field study using grounded theory approach. Motivated by lack of understanding in the relation of career stages with career anchors, the authors explore how career anchors change as IS personnel progress in their career. The authors define career anchors as an individual's self-perception about his or her ability and needs that must be fulfilled while performing professional duties. Using the four-staged career model of Dalton, Thompson, and Price, the authors report certain patterns of career anchor changes over four careers stages that emerged from interview data with 10 senior IS professionals. We learn that there are different career anchors that need to be fulfilled at different career stages. Furthermore, the findings of this study provide excellent guidance for designing work duties and incentives for IT professionals who are at different career stages.

Finally, apropos the growing importance of social networking with IS, we conclude this issue with a paper dealing with the social characteristics of websites. In 'How Website Socialness Leads to Website Use', Robin Wakefield and Kirk Wakefield of Baylor University, Julie Baker of Texas Christian University, and Liz Wang of University of Dallas, present an interesting study that investigates the effect of perceived website socialness on the intention to use a website. The authors suggest that a richer user interaction supported by e-commerce websites induces positive user attitudes toward using such websites. Drawing upon social response theory, the authors suggest that website socialness perceptions promote enjoyable user experience with a website; thus, increasing the intention to use the website. In this study, website socialness is manipulated by a built-in interactive streaming video, and its impact is examined in two different commercial websites. The findings suggest that the websites that provide the built-in interactive streaming video will induce a higher level of user enjoyment as well as a higher level of intention to use the website. E-commerce websites can increase the user enjoyment and help attract more users by incorporating richer social interaction means with users.

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