Editorial

Special issue on futures for research on information systems: prometheus unbound?

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The premise of this special issue is that a combination of forces both endogenous to and exogenous of the information systems (IS) community is creating another inflection point – a time at which choices about the focus and purpose of our endeavor will shape the next few decades of the IS community and presage either growth or stagnation. To advance this point we continue by outlining the motivation, purpose, and goals of this special issue. Following this introduction are four papers that advance opportunities for the IS community authored by Susan Winter and Brian Butler, Erwin Gianhcadani, William Dutton, and John L. King.

Motivation

We begin by noting that, like many, the co-editors of this special issue have traveled among multiple intellectual communities that share an interest in information and communication technologies (ICT). In these travels we have been impressed by these communities' overlapping interests in ICT and its use, and have become more aware of differences in focus and in forms of scholarship. These travels have also highlighted the importance of thinking more broadly about the phenomena of interest to IS. Our intent with this special issue is to encourage you to do the same.

Susan's training spans doctoral programs in management IS, management and policy, and organizational psychology. She has worked in industry, as well as in schools of social science, engineering, and business. At the National Science Foundation (NSF), she represents IS and the science and practice of collaboration to a broad range of social scientists while simultaneously representing the social sciences to an even broader range of physical scientists and engineers. Steve's training spans engineering, social science, and management. He has spent his academic career in iSchools¹, including helping to start the iSchool at Penn State, and serving as program chair for the first iSchool Conference. While our paths may be unique, our travels are not. Many IS scholars have participated in more than one intellectual community.

We observe that IS scholarship is facing an inflection point – the phenomena of interest in IS has morphed. Scholars of human–computer interaction (HCI) faced a similar inflection point in the late 1970s when the character-based landscape of the computer screen shifted to a graphical and more flexible interface (Grudin, 2011).

The HCI field was strengthened by engaging these radical changes; the intellectual community that originally coalesced bears little resemblance to the HCI of today. Now, IS is facing a similar change. Contemporary ICT has evolved from isolated tools designed for highly bound tasks (e.g., running payroll or detecting incoming missiles) into an emergent suite of increasingly ubiquitous, flexible and multi-purpose technologies, and broad scale platforms that are integral to the very fabric of society. Simply put, accessing Facebook from your mobile phone bears little resemblance to the development and use of the transaction processing systems that framed much of the early IS research. Magnified by current economic, social and political trends (e.g., globalization, government austerity programs targeting educational and research institutions, etc.), these changes warrant proactive attention to the future of the IS community.

IS as an intellectual community

It is helpful to separate the underlying endeavor of IS research from the structuring institutions that surround it. The history of ICT reaches back to analog calculators such as the astrolabe of ancient Greece used for astronomical calculations, and ancient alphabets are arguably communication codes that enabled writing, an early advance in information storage. However, the IS scholar community is relatively young and tied to the digital age, and much of the current IS scholarship is about data access, data processing, and supporting organizational communication and decision making.

Snir (2011) recently defined the computer and information science and engineering community as 'the study of the design and use of digital systems that support storing, processing, accessing and communicating information.' (p. 38) He argues persuasively for an inclusive view in which use-inspired basic research draws heavily on traditional foundations in mathematics and physics to address the physical limitations of digital systems, as well as on contemporary foundations in social sciences, to enable widespread use and integration of these technologies into society. Snir further argues that applied research must draw on deep knowledge of application areas (e.g., business, medicine, science, arts, humanities) to develop useful ICT-based artifacts. This perspective is useful for the IS scholars.

One large and influential segment of the IS community can be traced to precipitating events of the 1950s, such as the LEO project for commercial business applications in the United Kingdom, IBM-computer-enabled business and defense department-networked computing in the United States (Winter, in press), and a broader range of organizational computerization studies and essays from the 1960s (Aspray and Campbell-Kelly, 2004; Land, Aris, and Mallor, 2003; Edwards, 1996). For many, the first International Conference on Information Systems (ICIS), held in 1980, was arguably a defining, if not formative, moment in this aspect of the IS community's intellectual development. Other segments of the IS community developed from different historical roots and evolved differently, but related, institutional structures. The heterogeneity is broad, even within the IS community: the ICIS, Association of Information Systems (AIS), Computer Supported Cooperative Work (CSCW), Computer-Human-Interaction, and iConferences attract IS scholars.

In 2011, IS is now loosely organized with a somewhat permeable center, multiple, related sub-communities, and overlapping membership and research interests. There is a residual, central IS community represented by scholars who attend the AIS conferences, subscribe to ISWorld, use the online resources of AISNET, or read and/or publish in IS journals. This community numbers about 4000 worldwide, with about half in North America. In contrast, the Academy of Management is about four times larger, the HCI/CSCW community is about five times larger, while the information science community is about half that size.² Comparisons with economics, psychology, sociology, or computer science will provide similar contrasts.

The IS community represents a substantial intellectual force that both overlaps with and can be distinguished from many 'near neighbors.' The success experienced by the IS community is rare and special. Congratulations to all of us. In the decades since its formation, the IS scholarly community has been celebrated for the diversity of topics and approaches that it embraces (Lyytinen and King, 2004). The centrality of ICT to modern society is now widely recognized. Nevertheless, opportunities and challenges remain. The IS field's identity remains unclear, its relationships to sister communities are underdeveloped and often distant. Snir is one of many who have called for IS and these other communities to recognize their common interests and more thoughtfully – and jointly – organize to pursue these.

Opportunities and challenges

The big opportunity – the aforementioned inflection point – is precipitated by ICT's ubiquity; its reach extends far beyond that of previous large organizationally centered systems. The IS scholarly community has not adapted to this transformation. Enrollments in IS programs in US business schools are well below peak historic levels and some IS departments have been closed or merged with other areas within business schools. In contrast, enrollments have increased in information, new media, and communications programs and many of these programs are clamoring for faculty with expertise in social computing, digital design, and Internet studies. Furthermore, the

growth of iSchools has not translated into growth in positions for IS scholars, or in a wider audience for IS scholarship. Winter and Butler note in their paper that efforts to address societal problems rarely involve IS scholars. Designing better ICT systems has never been more important, but the IS scholarly community seems to have little voice. Indeed, the 'consumerization' of ICT is growing at the very same time that the IS field is struggling.

Within the IS scholarly community, these issues seem distant as debate persists over the proper focus of IS research (e.g., rigor vs relevance) and fratricide continues over theoretical, methodological, and topical boundaries of the community. These debates seldom engage scholars in other intellectual communities, and they almost never involve practicing professionals. Distinct IS research sub-communities have emerged,³ but most IS researchers can still be found within management or business schools and must work within the incumbent intellectual traditions and structures of professional management education – accepting simply by their location within these schools the norms and aspirations of that larger community. The papers by King and by Winter and Butler argue that these norms and aspirations drive curricula, influence what is seen as desirable research topics and methods, and shape consulting and other outreach opportunities to practice.

The IS research community will likely continue to be structurally fragmented, hindering its unity and its utility, even as other areas of relevant scholarship are struggling with the same issues and reinvent the very concepts that we, as an intellectual community, find most interesting (and on which we have the most to say). For example, Gianchandani argues in his paper for the importance of ICT in improving health outcomes, while Dutton's paper suggests that researchers in schools of physical science seldom directly address issues with the design, development, uptake, and uses of the ICT that they depend on for success.

As ICT has become ubiquitous in business, entertainment, government, education and so on, the realm of human enterprise itself has changed. The papers by Dutton, Gianchandani, and King describe this phenomenon and its implications in research, health care, and commerce. Where ICTs were once isolated and immensely expensive; today ICT is pervasive and comparatively inexpensive. This transition alone has reshaped the use of ICT in many ways, making participation more voluntary and more open, transforming the ways in which work is organized and completed, changing the everyday human experience (be it families, education, entertainment, culture). We stand at a point in time at which IS scholars, should we adopt an appropriately expanded conceptualization of IS scholarship, can be looking more broadly at the nature of ICT in organizations and society, while focusing more precisely on the emergent mechanisms of ICT-enabled change.

The special issue

Articles for this special issue were commissioned from members of an invisible college that transcends intellectual communities and overlaps with IS. Papers were reviewed by the special issue editors, editors-in-chief, and by senior members of the *JIT* editorial advisory board. The authors

were asked to produce papers that would help current IS scholars think more broadly and strategically about IS scholarship, by *articulating relevant research issues and opportunities*. Therefore, while the papers in this special issue are topically and methodologically diverse, they are united by an appreciation of the importance of ICT and each advocates for the promise and the value of broadening IS scholarship.

Susan Winter and Brian Butler explore how the IS community's impact is constrained by its limited capacity to create big problems. They argue that IS suffers from an inability to articulate compelling problems or recognize efforts to solve large-scale, broad-scope problems as legitimate IS scholarship. Winter and Butler argue that the IS community could benefit by engaging the grand challenge rubric common in science and engineering. As an example, they describe how the grand challenge of mapping the human genome transformed the Biology discipline and show that effective grand challenges act as socially constructed boundary objects. The authors argue that there are two paths by which IS scholars can engage grand challenges. One is to contribute to large-scale efforts of concern to society or to other scholarly fields. The other is to address issues internal to the IS scholarly community. To enable the IS community to mobilize resources, enhance the impact of IS scholarship and bolster the legitimacy of IS, we must move beyond the limited set of concerns central to business firms and focus instead on problems of much greater significance and difficulty.

Erwin Gianchandani describes one possible grand challenge the solution of which will require the engagement of IS scholars: transforming a health-care system from one designed to treat acute disease to one that improves the lives of those with chronic illnesses. Enabling improvements in health care hinges upon significant advances in appropriate requisite digital tools such as databases, modeling, decision support, data mining, visualization, reporting, sensing, telemetry, robotics, and computer vision/visualization. Some IS scholars have been involved in this endeavor, but these efforts remain largely peripheral to the central IS community. Actively participating in solving this large-scale, socially important problem would demonstrate the relevance of the IS scholarship and enhance its legitimacy.

William Dutton presents a second possible grand challenge. He argues that the conduct of science itself is being transformed by the presence and uses of ICT. Building from studies of e-science collaborations, Dutton shows that key aspects of the research process are changing in ways that may democratize science and threaten institutional control. Understanding the roles and potential of ICT in this transformation, the implications of ICT relative to changing political and social dynamics, and designing better systems represent another grand challenge that IS scholars could engage. Doing so will require embracing a perspective that is both broader and longer than that usually adopted in much of the contemporary IS community.

John L. King provides a perspective on the 1990 joke that 'CIO is starting to mean Career Is Over.' While IS scholars might rejoice that there are more CIOs now than there were in 1990, and the role of the CIO appears to be

growing rather than contracting. However, King argues, CIO really means 'Concept Is Over,' where the concept is the C-Level executive itself. The concept of the 'chief' is embodied and entombed in a mid-twentieth century managerial orthodoxy that was formed by early twentieth century industrial administration, particularly the m-form organization. This orthodoxy began to solidify in the 1960s and 1970s, at about the time that the first effects of the information revolution on human enterprise were being felt. However, the long gestation of the orthodoxy and the rapid growth of management education in the decades from the 1960s to the 1990s helped marginalize the transformative effects of ICT. The orthodoxy never took the measure of the change underway. The transformation from information technology has become transgressive. As human enterprise changes, the orthodoxy is being upended. IS research is, or should be, inherently transgressive. Rather than seeking safety, IS researchers should plan how best to live dangerously. Transforming the institutions of IS research to value transgressive research represents an internal grand challenge for the IS scholarship.

Together, the message that these papers convey should encourage IS scholars to move beyond the older conceptualization of IS as management IS confined to the business world. As John King notes, staying managerially focused places IS in a subsidiary role within a larger intellectual community that has not been particularly friendly and may not be as relevant in the future, even for IS scholars who remain in business schools. The central tenet is simple: the IS scholars must play a more active role in solving serious problems. IS scholarship should focus on addressing societal grand challenges that require direct engagement of systems that defy easy characterization and represent new levels of complexity. This will require both greater clarity among IS scholars and increased interaction with other intellectual communities.

What next?

In the face of overwhelming changes in ICT and its role in society, the IS community cannot remain static and succeed. We must surface and carefully examine our assumptions about the web of computing. Limiting IS research to formal organizations, and to for-profit businesses, cripples our understanding of the design and use of ICT. What if we relax the assumption that work and instrumental motives are dominant aspects of IS? What will be different about ICT in environments in which experience, enjoyment, and emotion dominate? What kinds of IS will extend, and enliven, people's curiosity and creativity, and what will this mean for organizing? What will work, users and management mean in organizations that are organized around different types of production from the m-form organization? How should IS be developed for emergent processes, for discovery, and for problem forming? The message these papers carry should be seen as profound: the opportunities for IS scholarship go well beyond merely thinking about other contexts for study.

Through these papers we exhort IS researchers to pursue larger ideas and think more broadly about the phenomena that we study. The IS research community's value to others,

and our scholarly focus, can be reinvigorated by showcasing overlapping issues of common interest, sharing findings and theories, and interacting regularly with scholars in other intellectual communities. Moreover, while IS scholars can continue to pay attention to management IS and for-profit organizations, these should not form the boundaries of the IS community. Instead, we encourage IS scholars to apply themselves to new venues where their insights, concepts and approaches will help refine theories regarding IS, advanced IS design, development, uses and value, and improve the state of human endeavor.

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Notes

- 1 For more on these schools, see <http://www.ischools.org/site/>.
- 2 The growth of iSchools reflects a convergence across many of these intellectual communities, something IS has not focused on during its 30-year drive to distinguish itself as independent from other areas of scholarship.

- 3 Sawyer and Huang (2007) identified five distinct sub-communities in their analysis of IS publishing patterns.

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