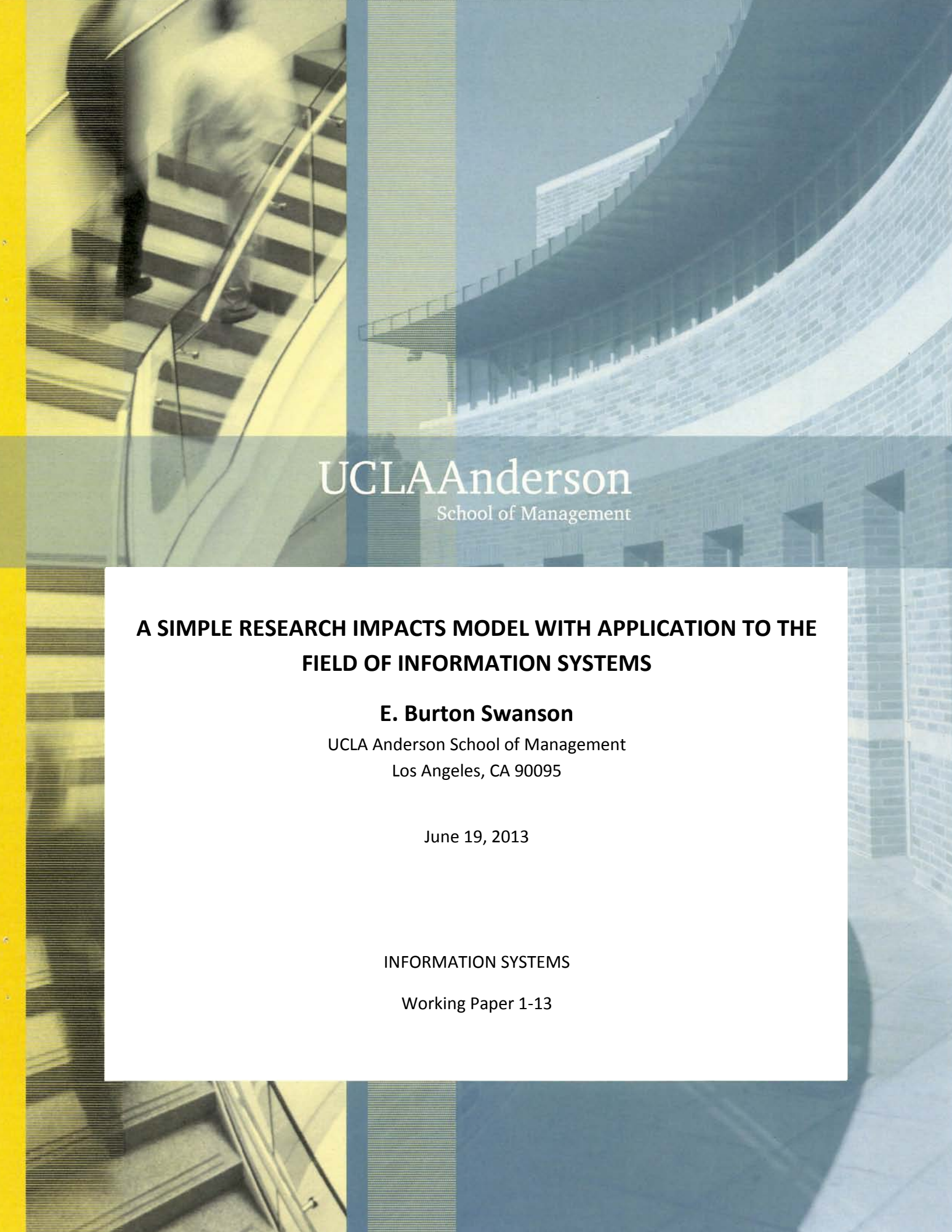

A SIMPLE RESEARCH IMPACTS MODEL WITH APPLICATION TO THE FIELD OF INFORMATION SYSTEMS

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A Simple Research Impacts Model with Application to the Field of Information Systems

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Abstract

Research in the field of information systems is presently under pressures to justify its value by speaking to its impact on professional practice. This paper presents a simple model enabling research impacts to be identified and differentiated, distinguishing between those that occur through direct engagement of academic practice with professional practice, and those that occur through diffusion of practices, both academic and professional. Several conjectures about IS research impacts follow from an analysis of the model.

Academic research in the field of information systems (IS) is presently under institutional pressures to justify its value by speaking to its actual, not just intended, or imagined, impacts on professional practice. In a recent meeting of the Senior Scholars of the Association for Information Systems (AIS), held at the 2012 International Conference on Information Systems (ICIS) in Orlando, a group was formed to take up this issue and consider how to address it. The present paper is written in support of this initiative.[1]

To begin, it should be noted that the institutional pressures on academic research are broad ones and not aimed only at the field of information systems. Business schools, in particular, have had the usefulness of their research as well as their educational approach questioned (see, e.g., Pfeffer and Fong, 2002). The American Association of Collegiate Schools of Business (AACSB) has responded with a controversial study, speaking to "mounting criticism from both inside and outside business schools," and finding that "existing faculty policies and systems have caused too much emphasis on counting journal articles and favored basic research over other forms of scholarship such as contributions to practice and teaching." (AACSB, 2010 p. 4) The study recommends that future accreditation require business schools to report on their research impacts.

Government support of academic research or the lack of it has been one important source of institutional pressure, and the social sciences, perhaps unsurprisingly, have felt this, in particular. In one response, an Impact of Social Sciences Project has been undertaken at the London School of Economics and Political Science (LSE), one of its products being a practical "Handbook on Maximizing the Impact of Your Research" (see LSE, 2010). One of its recommendations: "36. Academics should move beyond simply maintaining a CV and publications list and develop and keep updated an 'impacts file' which allows them to list occasions of influence in a recordable and auditable way."

Of course, recommendations such as these, while well intentioned, can come across as "show me (or else)" suggestions, putting academics and their schools in a largely defensive posture with regard to research impacts. The institutional pressure is in effect ratcheted up within academia itself. Academics are asked to spend more of their time and effort attending and attesting to the reception of their work by others, rather than letting it speak for itself, or relying on public evaluation alone. Whether their research would ultimately be made more impactful and beneficial to society through such reporting and auditing measures is, however, an open question.

The field of information systems, with close ties to both business schools and the social sciences, faces it own set of challenges as to the usefulness of its research. With its focus on information technology (IT), it faces perhaps higher expectations than in other fields that it certainly should contribute significantly to practice, while at the same time, to the extent it *is* practically oriented, it may face criticism from fellow academics that it is altogether too much so. Or worse, that it is practically oriented without actually being useful to practitioners. So it may sting some when one of its own, now a business school dean, writes, "Looking beyond our academic institutions, we – IS academics – are not, in general, perceived as relevant by IS practitioners. They do not turn to us (the IS

[1] This effort is being led by Fred Niederman, who stimulated my interest in the issue of information systems research impacts. The views expressed here are my own. Comments and suggestions are welcome.

academics) for help with their most significant problems. They do not, in general, read what we write." (Ginzberg, 2012, p. 7)

Ouch, indeed! But when we in the IS field step back from the heat generated by such comments, in the context of the research impacts issue and its associated pressures, how should we understand the substance of the research impacts themselves? What are they, where should we look for them, and how would we recognize them if found? In this brief paper, I attempt to frame these questions in terms of a simple research impacts model.

Research impacts model

Fundamentally, how do research impacts happen? Putting this in the broadest perspective, a recent article identifies "eight ways useful ideas flow from campus to society: (1) Students carry ideas and skills to jobs in industry, government, and the nonprofit sector; (2) Academic researchers publish results in journals, which are read by users in the public and private sectors; (3) Academics present their ideas at conferences, seminars, and other events that bring them into contact with potential users; (4) Industry sponsors a focused research project by an academic scientist; (5) Groups of companies and academic scientists collaborate in cooperative research projects; (6) An academic researcher enters into an individual consulting arrangement with a company; (7) Academic researchers engage in entrepreneurial ventures that do not involve university-owned intellectual property; (8) University licenses intellectual property to a private firm or spins off a startup company." (Malakoff, 2013, pp.750-1)

In the present paper, then, a simple model that touches upon these points and ties them together is advanced to elucidate how research impacts happen. A macro-process model, it offers a broad portrayal, rather than a description of the micro-processes that would provide a more refined explanation. However, it enables us to make some useful observations. While it is a general model, it is applied here to the field of information systems (IS) by means of illustrations.

The essence of the model is to portray the basic interactions between academic and professional practices, such that research impacts can be identified and differentiated.[2] Figure 1 provides an overall sketch. For analytic purposes, academic practice is broken down into linked research, publication, and education components. Thus interpreted: research leads to publication (while also relying on it), which then also serves education (and responds to its expressed needs).

<insert Figure 1 about here>

Beyond the linked effects within academia, the model distinguishes between two forms of impact: (1) those that occur through *direct engagement* of academic practice with professional practice, and (2) those that occur through *diffusion of practices*, both academic and professional, in their respective institutional fields (see, e.g. Phillips, Lawrence, and Hardy, 2004; Strang and Meyer, 1993). As will be seen, the model's various effects come together to generate some very different impacts on practice. I elaborate on each basic form.

[2] The focus here is on research that impacts professional practice. It is noted that some research may have broader social impacts not mediated by changes to professional practice, however, it falls outside the scope of our attention.

Direct engagement

Research impacts from direct engagement are seen as occurring through the research itself, or through its publication, or through subsequent education, as shown in Figure 1. The three vertically-oriented double-headed arrows suggest that the impetus for engagement can originate with either academic or professional practice. Both practices have their respective motivations to engage, as each looks to the other for validation and support of their work. Thus, academia is presumed to be committed to preparing individuals for professional practice, and practitioners as professionals seek specialized knowledge and accreditation that affirms and confirms their practice in the public interest.[3]

Research engagement

Direct engagement of academic research with professional practice can take various forms, according to both the substance of the research and the methods employed. In the IS field, for example, action research may entail helping a firm implement a new system (Baskerville, 1999). Design science research may involve working with an industrial partner to develop an innovative software tool (Hevner, March, Park, and Ram, 2004). In both cases, the research impacts are intended, relatively immediate, and specific to the engagement.

A broader impetus for direct research engagement can come from government agencies, such as the U.S. National Science Foundation (NSF) and professional practice organizations (such as the Society for Information Management, SIM), which may provide financial support to encourage it. SIM's Advanced Practices Council has a long history of soliciting and supporting academic and practitioner research collaborations, in studies of broad professional interest, for instance.[4]

In other IS research, such as in those field studies where there may be no commitment toward improving a specific practice, there are nevertheless likely to be impacts even if unintended, as it is widely understood that the observed may not be unaffected by the observation. However, these impacts are likely to be less observable and can be problematic to assess.

Certain other IS research, such as studies that employ analytic models or are based in the analysis of secondary data, which may involve negligible direct engagement, may not impact professional practice at all, until it is concluded and enters the publication process, where it then has another opportunity for engagement. Even then, because this research tends to be the most esoteric, its findings may be problematic to convey or may not have immediate relevance to professional practice.

Publication engagement

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[3] Pelikan (1992) provides background and perspective on the university and its relationship to the professions. The motivation for engagement between IS academics and professionals also arises naturally from the notion of the IS field as "a *market of ideas in which scholars (and practitioners) exchange their views regarding the design and management of information and associated technologies in organized human enterprise*" (Lyttinen and King, 2004, p. 221) . See also King and Lyttinen (2006) and Hirschheim and Klein (2012).

[4] See http://www.simnet.org/?page=About_APC

Direct engagement of academic publication with professional practice can similarly take various forms. For example, the IS researcher may publish her work in a journal targeted toward practitioners, such as *MISQ Executive* or *Sloan Management Review*. She may also present it at a practitioner conference or meeting, such as those held by SIM. Or she may be interviewed by local or national news organizations about the work.

Even where the IS researcher publishes principally to communicate with other researchers, there may be some engagement with professional practice. For instance, while the researcher might maintain her personal web page and its contents with other researchers uppermost in mind, she might also include content directed toward professional practice. Her own academic institution might produce videos in which she explains her research to a professional audience, for instance, for posting to her web page.

The more prestigious research publications, such as *MIS Quarterly* and *Information Systems Research* (*ISR*), are typically aimed more at researchers than at practitioners. A certain engagement may be sought by requiring that articles speak to their "implications for practice." However, in the review process, peer researchers, not practitioners, confirm that this requirement is met. (As a note in passing, in *MISQ*'s early years, when it was co-published by SIM, it attempted to involve practitioners as reviewers. It has since given up such engagement and now focuses more exclusively on its academic audience.)

Education engagement

Academic education and its instructional programs can also engage professional practice with resulting impacts. Here students in these programs are understood to be future or practicing professionals. IS instruction can incorporate research findings directly, through assigned article readings or lecture slides and notes, or through textbooks in which the research is referenced. IS research can also be communicated through executive and other continuing education programs, offered either by academic institutions or by professional associations or private firms that specialize in practitioner education. Again, the engagement may get its impetus from either academic or professional practice.

Because the academic educational process is of substantial interest to professional practice, whether academic research is or not, certain engagement initiatives reflect this. A prime example in the IS field is SAP's University Alliance Program, whereby participating schools obtain licensed access to SAP enterprise software and resources for use in their instructional programs. Members of this program also meet regularly and share their experiences and teaching approaches. The program provides an excellent example of academic and professional practice collaboration, although it does not primarily target support for academic research.[5]

Diffusion of practices

Diffusion of academic and professional practices constitutes the second basic form by which research impacts result. In Figure 1, semi-circular feedback arrows indicate the multiple points where diffusion takes place. Academic research, publication, and

[5] For an overview of SAP's University Alliance Program, see http://scn.sap.com/docs/DOC-7876.

education each has its own diffusion process, and all are differentiated from that of professional practice. The effects are of a second-order, where those from the engagement of some as described above, are now passed on to others in the institutional fields, who, one by one, however slowly or quickly, leverage the learning in their own work. It is through these diffusion processes, then, that research acquires its longer-term cumulative impact.

In the case of diffusion of professional practices, the second-order research impact accumulates with each successive adoption of an improved practice resulting from the earlier engagement of one or more practitioner members of the field. So, for example, the use of "critical success factors" (CSFs) by IS executives spread from firm to firm in the late 1970s, after its original introduction by Jack Rockhart and the Center for Information Systems Research (CISR), with its direct links to practice, at the Sloan School (Rockhart, 1979). The impacts of the original CSF research were thus substantially extended. In the case of diffusion of research in the academic field, in contrast, there may be little impact on practice, unless further direct engagement takes place as already described. Still, the greater the academic diffusion, the more opportunities there will be for such engagement. Thus, a certain potential for eventual impact on practice is accumulated through diffusion purely in the academic field.

It will be helpful to elaborate on the diffusion processes in the fields of both professional and academic practice next.

Professional practice diffusion

In the case of professional practices, much is known about their diffusion from relatively recent IS research. Studies of "organizing visions" and their career paths, for instance, have explored the origins and spread of innovations such as enterprise resource planning (ERP), customer relationship management (CRM), and Web 2.0 and yielded insights into the underlying institutional mechanisms (Swanson and Ramiller, 1997; Swanson, 2012). Important role players include vendors, consultancies, technology analysts such as Gartner, trade and popular press writers, advertisers, bloggers, academics, and conference organizers.

All of these role players serve a kind of publication process for professional practices that parallels the more formal one familiar to academia, but is much more open, free-wheeling and dynamic, obviously driven by market forces. Thus, when a firm happens to innovate with IT, such that it has a success story to tell that might impress and attract others to follow in its footsteps, those who might gain from subsequent diffusion come together as institutional entrepreneuers to get the story, write it, and put it too into play, such that it captures management attention (Wang and Swanson, 2007).

While IS academics may be involved directly or indirectly in the diffusion of IS professional practices, they are not usually major players. Rather, practitioners look to each other, with the considerable help of consultancies and technology analysts, to monitor new developments and determine which new practices (and associated products and services) to seriously pursue. These consultancies and analysts are themselves heavily invested in being recognized as "thought leaders" and therefore brand their own

ideas accordingly, more than they refer their clients to the published contributions of IS academic researchers.

Academic practice diffusion

In the case of academic practices, the diffusion process is quite different and may be differentiated according to the research, publication, and educational components, to be better understood. Considering first the research itself, those academics who undertake it often do so as part of a larger program, such that the results of one study inform and motivate the next. Too, as junior participants such as doctoral students gain study-specific experience and move on to other academic institutions they carry these research pursuits to new venues. Thus, for example, the research on group decision support systems (GDSS) and electronic meeting rooms begun at the University of Arizona in the 1980s spread through its disciples to other schools across the U.S. (Nunamaker, Dennis, Valacich, Vogel, and George, 1991).

Under prevailing publication practices, the published research diffuses in the classical way when other researchers absorb its findings and lessons and leverage it in their own work, with appropriate citation. Again, the research impacts may accumulate comparatively quickly, where a study's importance is immediately recognized by research peers, or slowly, where its importance emerges gradually, or impacts may fail to accumulate at all. Certain research may become widely popular and diffuse so thoroughly through its publication that it becomes almost overrepresented, and members of the field eventually argue for moving on from it, as happened with the technology acceptance model (TAM) (Benbasat and Barki, 2007).

In the case of educational practices, the diffusion takes place most obviously through adoption of textbooks, cases, and readings across programs and their courses, as well as through borrowed and adapted syllabi and lecture notes by faculty more informally. This diffusion is reinforced and perhaps accelerated through the standardization of curriculum (see, e.g., Topi, Valacich, Wright, Kaiser, Nunamaker, Sipior, and de Vreede, 2010). Research findings that work their way into IS curriculum can accordingly engage all the students exposed to them.

Discussion

Having worked through the simple model, here I briefly discuss some of its ramifications. In doing so, I offer three broad conjectures on research impacts, to motivate further consideration by the IS academic community. The conjectures speak to each of the three academic practice components: research, publication, and education. Because it has already received much attention and generated substantial controversy, I begin with academic publication.

IS Academic Publication

As already mentioned, IS is not the only field in which the practical impact of its published research has been called into question. In management more broadly, there has been notable self-examination, anguish and calls for reform. One recent study examines the research published in two premier journals, *Administrative Science Quarterly (ASQ)* and *Academy of Management Journal (AMJ)*, since their inception, and finds that it has

over time become increasingly less "actionable," i.e. usable either conceptually or instrumentally by a practitioner (Pearce and Huang, 2012). Among the speculated reasons for this decline is the push by business school deans to have their junior faculty publish in the most prestigious journals, those which will help increase a school's ranking, whether the published research is actionable or not. This has led to a large increase in submissions to the leading journals, it is said, a decreasing proportion of which reports actionable findings.

In the IS field, the identification of leading journals has itself become something of an obsession, reflecting these same pressures. As one indicator, the AIS Senior Scholars recently enlarged their recommended "basket of six" top journals to a "basket of eight", arguably in an attempt to relieve institutional pressure. At the same time, the journals themselves are increasingly subjected to citation-based studies that generate that own rankings, as in one that attempts to validate the "basket of eight" (Lowry, Moody, Gaskin, Galleta, Humphreys, Barlow, and Wilson, 2013). And so, where research publication is concerned, the IS academic community is presently much turned in on itself.

In these circumstances, should IS academics really be surprised or disappointed if IS practitioners spend little or no time reading what is written in leading IS journals, which do not directly engage practitioners in the publication process? Perhaps such readership expectations are basically unrealistic. Perhaps the leading research journals are not the place to look for IS research that achieves impact through direct practitioner engagement.

As already mentioned, journals are just one means of research publication. Researchers can also present their findings to professional meetings and forums aimed specifically at practitioners. They can directly engage practitioners even though their important journal article goes unread. Of course, if they do not thus engage practitioners, one way or another, their published research may go unnoticed and indeed have little impact on the profession. And so, as a first conjecture, it is suggested that: (1) *IS academic research publication should not be expected in the absence of direct engagement with practitioners to substantially impact IS professional practice*.

Fortunately, opportunities for direct engagement are many, and, as the model indicates, are not limited to engagement in the publication process alone.

IS Academic Research

Probably the most obvious way for IS academics to directly engage practitioners is in the research itself, prior to its publication. Where this engagement is with a single research sponsor or collaborator, the impact may be limited in part by design. However, when the engagement is with a broader professional group such as SIM, the research undertaken might gain a more substantial foothold among those with a potential interest in it, which can then carry over to its publication.

Such a foothold is important in both the research and its publication, because the initial impacts on practice, in the form of new professional practices informed by the research, can subsequently be driven by the diffusion of the practices themselves, where the IS professionals look to each other, not to the IS research, to guide their adoption decisions. With such diffusion, the impacts can accumulate on their own, so to speak, with or

without the further involvement of the researcher. Of course, to the extent the researcher gains acclaim among practitioners for the work that underpins the new practice, he or she may be able to ride the innovation wave as its guru or consultant, increasing the prospects for future research engagement.

The basic insight leads to a second conjecture: (2) *IS academic research can impact IS professional practice as much through its diffusion among practitioners, as it can through its direct engagement with practitioners.* While the latter is necessary to initiating impacts, its value can be multiplied many times over when the diffusion process extends these impacts to others.

One means by which IS academics can both engage practitioners and seed the diffusion of their research is through the establishment of their own research centers, with practitioner membership. The Sloan School's CISR, already mentioned, is perhaps the leading program of this kind.[6] Beyond providing funding, the center's membership model provides a forum for the initiation, publication and sharing of the research, such that its subsequent diffusion is substantially enabled.

IS Academic Education

Finally, we note again that the IS academic education process provides an important vehicle for incorporating research that impacts IS professional practice, primarily in degree programs that prepare future professionals, but also in continuing education programs that reach current practitioners. Most significantly, IS curricula in degree programs can incorporate research findings that are tuned not just to the fashionable technologies of the moment, but to the longer term perspectives and understandings needed to become a responsible professional.

Consider a study which takes a socially critical perspective of a current business practice, for instance, and questions whether it should be permitted to continue largely unrestricted. One might think here of research that examines systems that gather information from children online, with the objective of marketing to them, for example, and finds the associated practice exploitive and harmful.[7] While such a study might not be well received by those currently engaged in this practice, who might be oriented toward extending it, its findings might be usefully incorporated in educational materials aimed at educating the larger IS practitioner community with respect to the broader social impacts of their work.

Traditional coursework is also where future professionals encounter concepts and theories that are the natural products of research. It is in such coursework that students may first learn of "communities of practice" (Brown and Duguid, 1991; Lave and Wenger, 1991), for instance, which may profoundly shape the way they subsequently think about how the systems they develop are ultimately used. When such concepts are

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[6] See cisr.mit.edu. My own school has had an IS research program, supported by an IS Associates Program for more than thirty years. See anderson.ucla.edu/is-associates. This footnote seems a good place to extend my gratitude for this long-standing support.

[7] I have no particular study in mind here. See Singer (2012) for a recent report on the practice. See Livingstone (2003) for a perspective on the research needed.

also taken up and diffused in the broader practitioner community, their impacts may then multiply.[8]

Of course, not all IS theoretical concepts are well suited to be taken up and used by practitioners, as some seemed aimed more at researchers. The notion of a "communication genre" (Yates and Orlikowski, 1992) might first be thought to be a likely candidate for this, given its level of abstraction. However, when I did a quick search, I found that the concept was featured as if it was well understood, without any explanation of it, in a magazine article aimed at computer professionals (Harper, 2005). So perhaps our more theoretical work finds its way into practice more than we might think. Too, even those concepts which don't become widely taken up may be helpful to the educational process, and ultimately influential to informed practice.

So, while a prevailing, but perhaps misplaced, concern is whether IS practitioners are reading what is written in IS research journals, a corresponding, perhaps more serious, concern is whether IS research findings are significantly and adequately incorporated in IS textbooks and educational materials aimed at educating future practitioners, in particular. In a growing profession such as IS, these future practitioners are of course many.

Hence the third conjecture, which serves as a reminder: (3) *IS academic research can impact IS professional practice as much through the education of future professionals, as it can through the dissemination of its findings to current professionals.*

Conclusion

A simple research impacts model applied to the field of information systems reveals that the impacts are diverse and accumulate over time in ways not easy to assess and measure. Simplified notions of impacts, for instance, those based in the idea that practitioners will read published research articles to be guided in their actions, may largely miss the important impacts themselves. Any suggestion that the IS field stands condemned when practitioners "do not, in general, read what we write" is misguided. Rather than focusing on this one issue, IS academics should seek a more sophisticated understanding of the impacts of their research, by all parties.

Such an understanding might begin by retaining the distinction between immediate impacts from direct engagements with practitioners in research, publication, and education, and second-order impacts that accumulate through the diffusion of practices. In the case of direct engagements, it should not be too difficult to identify and catalog those types characteristic of the IS field, for subsequent reference. A number of these came easily to mind in preparing this paper, for instance, but they are hardly definitive. A collective effort to develop a comprehensive catalog might be a worthwhile effort. With such a catalog at hand, then, IS academic programs should find it relatively easy to characterize their own direct engagement and compare their own profile to that of others.

Less easy, of course, is the assessment of the actual impacts of direct engagement, although here too certain immediate impacts may make themselves known through the

[8] I recently spoke with an IS professional who made reference to "building a community of practice" in the introduction of a new enterprise system. When asked, she was a little vague about how she happened to be familiar with the concept.

engagement itself. Separating out research impacts from other impacts, for instance, by tying the research content of an executive education program to its reception by professional participants, and assessing its influence on subsequent actions, is still more daunting. Does anyone really want to undertake this? Might it not be more worthwhile to focus on direct engagement profiles and how they are successful or not, and then step up our efforts to engage more effectively, so as to actually increase impacts?

With regard to research impacts that accumulate through the diffusion of academic and professional practices, it may be possible to conduct studies that monitor the spread of the field's important concepts in the academic and practitioner literatures, to shed more light on how this diffusion takes place. This might also give us a better sense of what the IS field actually amounts to, in terms of its evolving theory (see, in particular, Davis, 2000). Whether this would be helpful to finding new ways to facilitate the diffusion processes is an open question, however.

Finally, it is suggested that more attention be given to the incorporation of IS research findings in the field's textbooks and instructional programs. To my knowledge, there have been no empirical studies that have assessed the actual extent to which our research has been leveraged in our educational endeavors (though I have not searched systematically for such studies, so they may well exist). It would be helpful to know more about where we actually stand with this.

References

AACSB International (2008) Final report of the AACSB International Impact of Research Task force, St. Louis.

Baskerville, R. L. (1999) Investigating information systems with action research, *Communications of the AIS*, 2, 19, 1-32.

Benbasat, I., and Barki, H. (2007) Quo vadis, TAM?, *Journal of the AIS*, 8, 4, 211-218.

Beyer, J. M. (1997) Research utilization: bridging a cultural gap between communities, *Journal of Management Inquir*y 6, 17-22.

Brown, J. S., and Duguid, P. (1991) Organizational learning and communities-of-practice: A social-practice perspective, *Organization Science*, 12, 2, 198-213.

Davis, G. B. (2000) Information systems conceptual foundations: Looking backward and forward. In Baskerville, R., Stage, J., and DeGross, J. I. (Eds.) *Organizational and social perspectives on information technology*. Springer, 61-82.

Harper, R. (2005) Toward a new communication genre, *IEEE Computer*, August, 99-101.

Hevner, A. R., March, S. T., Park, J., and Ram, S. (2004) Design science in information systems research, *MIS Quarterly*, 28, 1, 75-105.

Hirschheim, R., and Klein, H. K. (2012) A glorious and not-so-short history of the information systems field, *Journal of the AIS*, 13, 4, 188-235.

King, J. L., and Lyttinen, K., Eds. (2006) *Information systems: The state of the field*. Wiley, West Sussex, UK.

Lave, J., and Wenger, E. (1991) *Situated learning: Legitimate peripheral participation*. Cambridge University Press, Cambridge.

Livingstone, S. (2003) Children's use of the internet: Reflections on the emerging research agenda, *New Media & Society*, 5, 2, 147-166.

Lowry, P. B., Moody, G. D., Gaskin, J., Galleta, D. F., Humphreys, S. L., Barlow, J. B., and Wilson, D. W. (2013) Evaluating journal quality and the Association for Information Systems (AIS) Senior Scholars' journal basket via bibliometric measures: Do expert journal assessments add value?, *MIS Quarterly*, forthcoming.

LSE Impact of Social Sciences Project (2010) Handbook on maximizing the impact of your research, http:// blogs.lse.ac.uk/impactofsocialsciences.

Lyttinen, K., and King, J. L. (2004) Nothing in the center? Academic legitimacy in the IS field, *Journal of the AIS*, 5, 6, 220-246.

Malakoff, D. (2013) The many ways of making academic research pay off, *Science*, 339, 750-753.

Nunamaker, J. F., Dennis, A. R., Valacich, J. S., Vogel, D., and George, J. P. (1991) Electronic meeting systems, *Communications of the ACM*, 34, 7, 40-61.

Pearce, J., and Huang, L. (2012) The decreasing value of our research to management education, *Academy of Management Learning & Education*, 11, 2, 247-262.

Pelikan, J. (1992) The idea of the university: A reexamination. Yale University Press, New Haven, CT.

Pfeffer, J., and Fong, C. T. (2002) The end of business schools? Less success than meets the eye, *Academy of Management Learning & Education*, 1, 1, 78-95.

Phillips, N., Lawrence, T. B., and Hardy, C. (2004) Discourse and institutions, *Academy of Management Review*, 29, 4, 635-652.

Rockhart, J. F. (1979) Chief executives define their own data needs, *Harvard Business Review*, 57, 2, 81-93.

Singer, N. (2012) U.S. is tightening web privacy rule to shield young, *New York Times*, September 27.

Strang, D., and Meyer, J. W. (1993) Institutional conditions for diffusion, *Theory and Society*, 22, 467-511.

Swanson, E. B. (2012) The manager's guide to IT innovation waves, *Sloan Management Review*, 53, 2, 75-83.

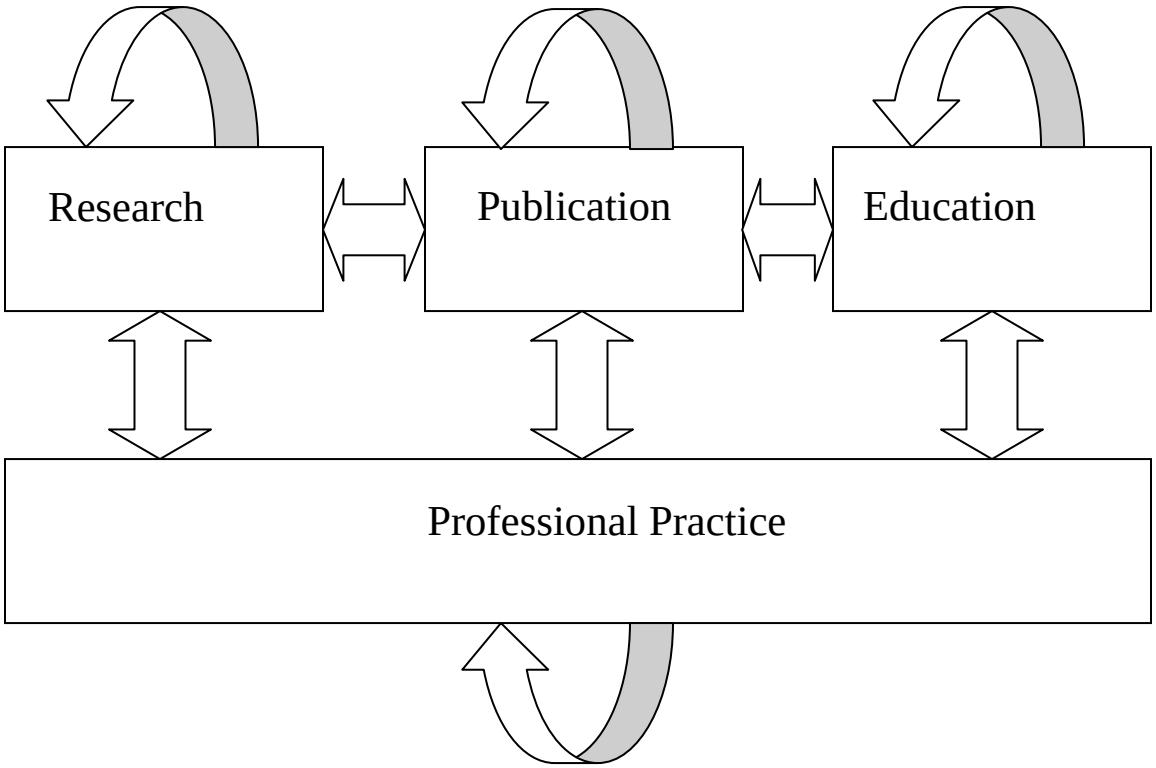
Swanson, E. B., and Ramiller, N. C. (1997) The organizing vision in information systems innovation, *Organization Science*, 8, 5, 458-474.

Topi, H., Valacich, J. S., Wright, R. T., Kaiser, K. M., Nunamaker, J. F. Jr., Sipior, J., and de Vreede, G. J. (2010) *IS2010: Curriculum recommendations for undergraduate degree programs in information systems*, Association for Computing Machinery (ACM) and Association for Information Systems (AIS).

Wang, P., and Swanson, E. B. (2004) Launching professional services automation: Institutional entrepreneuership for information technology innovation, *Information and Organization*, 17, 2, 59-88.

Yates, J. A., and Orlikowski, W. J. (1992) Genres of organizational communication: A structurational approach to studying communication and media, *Academy of Management Review*, 299-326.

Figure 1. Academic Research Impacts Model



Impacts key


Indicates direct effects between academic processes


Indicates direct effects from engagement between academia and professional practice


Indicates diffusion effects within academia


Indicates diffusion effects within professional practice