

**IS RESEARCH, PRACTICAL OUTCOMES,
REAL WORLD PRACTICE:
MAKING SUSTAINABLE LINKS BETWEEN COMMUNITIES**

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ABSTRACT

In this article, we seek to problematise the seemingly persistent gap between the results of academic research and professional practice in the field of Information Technology (IT). That this is a problem is widely acknowledged. We propose some ways that this gap can be bridged. However, building bridges to link academic research to practical and exploitable outcomes is not enough, for like all bridges, these particular ones must be maintained. We also propose some ways that this may be done.

INTRODUCTION

"[In] [o]ur comprehensive study of systems planning and analysis research over [a] 30-year period ... we found that academics take a longer-term view than practitioners and tend to do research aimed at the prevention of errors. Practitioners take a shorter-term view, emphasizing the completion of tasks and solution of specific problems" (Lippert and Anandarajan 2004, p. 91).

In a short article published just last year, Lippert and Anandarajan (2004) highlight the

very problem that we were hoping to shed some light on when our call for contributions to this special issue of JITTA was distributed. That is, the one of making the connection between academic research and practical outcomes in industry. It is very important for IS research to excel at both the application of rigorous methodology and at relevance, if it is to be of interest to IS managers and executives. To accomplish that, research must lead to or have the potential to lead to outcomes that are implementable, that lead, rather than chase, practice, and that are the result of research practices that are informed by the practical

contingencies of practice (Benbasat and Zmud 1999).

Back in 1987, Galliers and Land were bemoaning that one “disturbing” tendency in IS research was the emphasis placed on “empirical research more suited to the natural sciences” (1987, p. 900). Furthermore, whilst this “may well be academically acceptable and internally consistent, all too often it leads to inconclusive or **inapplicable** results” (Galliers and Land 1987, p. 900 emphasis added). It is not our purpose here to reawaken the ‘sleeping tiger’ debate on qualitative v. quantitative research methods, it is simply to show that concern over the applicability and relevance of research results to practice has been around for some time. Almost as if 1987 was a watershed year for considering the link between research and practice, Benbasat, Goldstein and Mead published a paper suggesting how Case Study research could be used to provide better insights into the use of IS in business, particularly where insights into the interaction between technology related problems, context and actors are important (Benbasat, Goldstein and Mead 2002 (originally published 1987)). Specifically they suggest such a research method, appropriately applied, would have “significant implications for the practitioner” (Benbasat et al. 2002 (originally published 1987), p. 368).

In 1997, at IFIP8.2, Markus (in an invited paper) took a retrospective look at the use of qualitative research methods in IS and asked us to celebrate “diversity in qualitative methods, converging on content in our field, and **pursuing practicality in IS research**” (Markus 1997, p. 11). We hope in the following sections to show that **practicality in IS research** must not only mean that the research can be conducted using methods that are practical but that the outcomes of this research can be applied in practice. In our view there is little point conducting research in an applied discipline such as Information Systems if the results are inapplicable in the real world (see also Galliers and Land 1987). Practicality of method is not enough; practicality of interpreting and applying the results to real world practice must be considered also.

Again in 1997, at the ICIS meeting of that year, the issue of the relationship between researcher and practitioner was the subject of a panel session which discussed research under the rubric of Really Useful Rigorous Research or RURR (Brown, Markus, Rockart, Sambamurthy and Shrednick 1997, p. 513 n. 1). RURR (a concept descended from RUR, a publication edited by Hoffman in the early 1990s) as noted in the panel description can be described as research where the results are “immediately useful to IS executives” (Brown et al. 1997). The panel explored the challenges of doing and sustaining RURR identifying such issues as identifying mutually perceived benefits and developing trust in the relationship between researcher and practitioner. It appears that creating and maintaining relationships between two communities is of utmost importance if we wish to have research that is of value to IS as a whole.

Following on from this there is also the work of Benbasat and Zmud (1999) as previously mentioned. Williamson, Burstein and McKemish (2000) suggest that research and practice should be closely related in order to among other things: 1) enable the actors to gain a better understanding of situations and problems that can arise in actual practice 2) increase knowledge and provide solutions to problems that can arise in practice and 3) “to provide a body of research findings and theory to inform practitioners” (Williamson et al. 2000, p. 12). Furthermore, they add: “professionals therefore need to be intelligent, critical consumers of research” (Williamson et al. 2000, p. 12). This also indicates that we should provide our graduates with an understanding of how to read and evaluate research publications, an issue we will explore below.

Later on when discussing research in relation to IS, they say “researchers are very conscious about the usefulness of their research results to industry as well as the rigour of their approaches and their contribution to the core knowledge” (p. 18). As is well known, there is considerable angst about the issues of rigour and relevance (see for example, Bacon and Fitzgerald 2001).

Hence, this appeal for a better, or to put it another way, more appropriate alignment between ‘real world’ practice and academic research has a long history. One is tempted to ask why? Why can’t this be achieved? What are the problems? Are there other avenues that could be explored? In the next section of this paper, we will attempt to tease out some ideas that might just help us understand the nature of the boundaries to be crossed and point to some possible courses of action that may be taken. In the final section, we will briefly describe the thought provoking and useful contributions that our contributing authors make to this special edition.

REFLECTIONS ON OUR OWN PRACTICES

This special issue has forced us to think about impacts that our own research has had on IS practice. Some particular instances come to mind—with some intentional outcomes and some non-intentional. In an attempt to put some ‘real world’ insights into a model that one of us (Stephen) was developing as part of his PhD (which was attempting to develop a model that small businesses could use to help them set up an Internet site to interact with consumers), a series of focus groups were conducted with small business counsellors. The somewhat direct comments made by the counsellors about the model (especially in earlier sessions) helped to eliminate some of the ‘academic’ aspects that were present (Burgess and Schauder 2002). However, there was also an unintended effect of the focus groups. We found that the counsellors, in providing their opinions about how small businesses operate, were in turn affected by *our* observations about the role of the Internet in small businesses—which they were then able to take back to their day-to-day counselling roles. Frequently where researchers adopt approaches such as action research, where the researcher is immersed in the environment that is the subject of the research, it is difficult to see how they cannot influence the environment at the same time they are investigating it!

Action research is often intended to bring about a change of *practice*, while

creating knowledge at the same time. (Oosthuizen 2002, p. 161)

In 2002, one of us (Stephen) was involved in study that was commissioned by the Asia Pacific Economic Co-operation (APEC) to interview one small or micro business in each of six APEC countries for the purposes of understanding the barriers, enablers and needs of small businesses involved in intra-regional trade and investment, particularly in relation to technological (especially e-commerce), financial and regulatory factors (Breen, Bergin-Seers, Burgess, Campbell, Mahmood and Sims 2004). The outcomes of this study helped to inform the policies and strategies of APEC at that time in the region. The effects of this are to influence individual government policy in the region and hopefully to eventually affect the targeted businesses. In other words, we are suggesting that there are a number of ways in which IS research can hopefully affect practice other than relying upon the published outcomes of the research reaching the desired audience. Another technique that we have used is to provide research participants with reports that summarise the outcomes of the research. Many businesses are interested in what other ‘sample’ businesses in the region are doing as a means of comparisons against what they are doing.

CREATING AND SUSTAINING LINKS BETWEEN THE TWO COMMUNITIES OF PRACTICE

In shedding some light upon this quandary, it might be helpful to regard IS research academics and IS practitioners as two separate communities of practice (COPs). For those of you unfamiliar with the term it arises out of the work of Lave and Wenger (Lave and Wenger 1991; Wenger 1998) and refers to the way groups of individuals interact and engage in “the sustained pursuit of a shared enterprise” (Wenger 1998, p. 45). It is the activities of the members of these groups both individually and collectively, the construction of and practices at a local level that allow them “to meet the demands of the institution” (Wenger 1998, p. 46) which they work for. In the first case mentioned above, the small businesses were one community of practice

whilst the researcher (Stephen) belonged to another. The small business counsellors also comprised a COP but in this project they also took on the special status of a boundary object (see below).

In this way, we can perhaps postulate that one reason for the ongoing mismatch between our two communities is that academics (for reasons of better recognition within their community and organisational demands that they publish in order to obtain promotion or secure tenure) are encouraged to publish works in academic journals that for the main part seek to advance theory, whilst our community of practitioners tend to read and absorb information from more trade-based publications where they can find out what is happening in their sector of the market (they have no time to peruse the countless 100s of academic journals when they are in the real world). The research of Lippert and Anandarajan (2004) supports this view. One suggestion arising out of this is that academic journals and institutions, if they wish to encourage research that leads to practicable outcomes, should encourage reporting of work so it becomes accessible and more meaningful to practitioners. Academic institutions may also like to give thought to altering their promotion or tenure requirements so that a person's publication record should include articles written especially for business consumption.

One of the advantages of using the COP approach is that it serves to highlight boundaries that exist between communities; these may arise from a variety of causes that we needn't consider here. These boundaries serve to separate different communities and are often only revealed when we realize what learning is needed to move from COP to another. What is important for our purposes is that these boundaries are not impermeable, a community cannot exist in total isolation to the rest of the world—there exist entities that serve as boundary objects (Star and Griesemer 1989) that are able to move between the different communities and “coordinate the perspectives of various constituencies for some purpose” (Wenger 1998, p. 106). Examples of boundary objects are documents (such as research publications), terms,

concepts, people and other artefacts that are capable of communicating between the two communities creating connections between them. Thus, in the case study above, the small business counsellors were able to act as boundary objects as they created a link between the researcher and the business owners.

Wenger (1998, pp, 112-114) identifies three types of boundary encounters—these can be meetings, conversations and visitations and can happen at various levels. There can be a one-to-one encounter where two people meet and discuss issues involving the boundary relationships of relevance to them. Another type of encounter is an immersion. This can take the form of a visit to a practice. “This kind of immersion provides a broader exposure to the community of practice being visited and how its members engage with one another” (Wenger 1998, p. 112). One disadvantage of this type of encounter is that the passage of information is essentially one way. The members of the visited community find out very little about the community the visitor belongs to. An academic working as a consultant to a business is an example of such an encounter. The final type of encounter is a delegation where multiple participants from each community meet for a mutual exchange of knowledge. In this type of exchange meaning is negotiated between members of each community and across the boundary. A group of practitioners meeting with a group of academics to thrash out the details of a collaborative research project is an illustration of this form of encounter.

Now, how does this relate to the situation we are discussing? There are a number of important issues to consider here. First, we have two communities of practice, secondly, these communities are separated by boundaries, thirdly, we wish to improve the communication between the communities and fourthly we have insights as to the nature of interactions between communities. Figure 1 depicts the two COPs and shows some of the possible ways the authors perceive the boundary may be crossed. It is not meant to be exhaustive but merely shows how these exchanges may be reified. As an example, IS practitioners undertaking higher degrees can

reenter the academic community bringing with them practical knowledge. Academics can become more aware of issues from real life; in return, they can also use these issues to provide educational opportunities for the students. In a number of other ways, academics have the opportunity to help students become more aware and understanding of the outcome of research projects.

We address these matters in the following sections.

The Role of Education

Whilst editing a book on possible skills required by students graduating from an e-Business course (Wenn 2002), one of us (Andrew) was reminded of one of the main and most valued skills he gained whilst undertaking his undergraduate education that is, learning how to learn. But, the important

thing here is not the “learning how to learn” but a recognition that learning is a lifelong process. This notion of lifelong learning is one that is being given increased attention by many enterprises, educators, governments and organizations (Adult Learning Australia (ALA) 2004; McPherson and Nunes 2004) and is one that we as academics can prepare our students for.

Remember that research can broadly be defined as an enquiry into some aspect of the world and is an activity whereby we learn something new about the world or confirm or disconfirm some aspect of our knowledge. We learn in a variety of ways which we need not rehearse here, but one thing we can do for our students is prepare them to become “informed consumers of research” (Williamson 2000, p. 287).

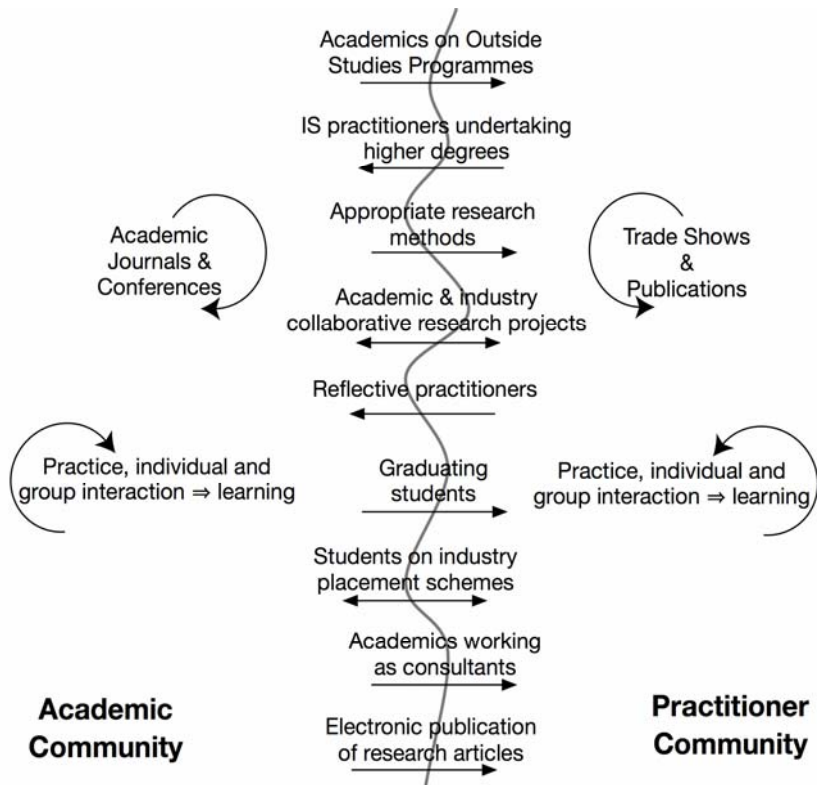


Figure 1. The two communities of practice and some of the boundary objects (the straight arrows) that exist or can be created to enhance knowledge transfer. The circular arrows depict localised entities that contribute to learning within the individual communities.

Learning occurs within COPs but what we can do as academics is ensure that we provide our students with the appropriate skills to locate, read, comprehend and analyze critically and constructively academic publications. Fowell and Elliot (2002) remind us that students “need to be aware of current trends in research, practice and different industry sectors” (p. 38). Students must be able to acquire the information and have the critical thinking skills to be able to assess its worth and applicability—students must be information literate (for a discussion of Information Literacy see Bruce 1997). Fowell and Elliot quote Michael Earl as saying that “this *information literacy* of the workforce [is] one of the critical success factors for organizations participating in e-business” (Earl (2000) as quoted by Fowell and Elliot 2002, p. 38).

The other side of the coin here is that our students can supply us with material and knowledge from the ‘real world’ (Fowell and Elliot 2002; McPherson and Nunes 2004) which we in turn can reflect on and incorporate into the learning experience and maybe even expand into ideas for future research. There is of course, a proviso or two that we need to be aware of here and that is that not all our students will be working or have had working experience in a relevant area. (One only needs to think of undergraduate students who have come from a secondary education for instance).

Encouraging Reflective Practice

One of the skills that we need to foster in both our students and ourselves is the ability to reflect on our experiences. For instance, students can be encouraged to think about how what they read differs from what they encounter in practice (Fowell and Elliot 2002). They can also be encouraged to reflect on the knowledge they acquire whilst in class and how it could be applied in practice.

As any educator would know from experience, asking students to take knowledge acquired in one subject and apply it in another is a difficult process; to ask them to take that knowledge and apply it when they are in the workforce will be even more difficult. One of us (Andrew) specifically introduced a

reflective component into an undergraduate subject he taught in 2004. At first the students had difficulty with the process and actually writing down their thoughts, but by the end of the semester they were more confident, their written reflections showed a greater depth and many admitted that the process was useful. Of course the real success will be if they can apply the same techniques when they gain employment. So whilst as educationalists we may be hesitant to encourage reflective practice it seems to be worthwhile persevering.

From Stephen’s reflections above you can see the value of employing reflection both during and after research process. During work on his PhD, he was able to reflect the small business counsellor’s comments and change his model and his understanding of certain business concepts, the result being a more applicable model that small businesses could use.

(For some cautions about being a reflective practitioner and researcher the reader is referred to Heiskanen and Newman (1997)).

What Else Can be Done?

Aside from the items discussed above, we must also be aware that conferences that seek to involve both practitioners and academic researchers are another means of creating and encouraging the sustainability of links between the two communities (this is one of the roles that the organisers of the ISOneWorld conferences are hoping to achieve). As Williamson et al. write “[t]he role of conferences which involve practitioners and academic researchers is crucial in the development of research partnerships and the fostering of research related to professional practice” (2000, p. 15).

Universities and organizations responsible for administering grant schemes have over the last few years been urging researchers to enter collaborations with outside organizations. For instance in Australia the Australian Research Council [http://arc.gov.au/arc_home/default.htm, accessed 19 Jan. 2005] has for the last few years had a scheme of “Linkage Grants” specifically designed to encourage the

development of collaboration between higher educations and industry.

Another possibility that springs to mind is to encourage journal publishers to make better use of the Internet for the publication and dissemination of research papers that make explicit links with practice. The practitioner community would certainly appear better equipped to access electronic versions of such papers than the paper-based ones that often gather dust in University Libraries. Businesses would, we are sure, be more willing to pay for a single article that was relevant than a costly subscription to a whole journal that may contain a large percentage of papers unrelated to the particular problem they wish to solve.

SOME REFLECTIONS

Having briefly reviewed the literature and discovered a long-lived concern for the forging of closer ties between IS researchers and practitioners we then raised the idea that these two groups might usefully be seen as different communities of practice. Using this notion and Wenger's 1998 work on communities of practice, we advanced some suggestions as to how these links may be established and maintained. Among these was the need to ensure that researchers, students who will eventually become practitioners and existing practitioners are encouraged to adopt a more reflective attitude to their work, consider how it may benefit members of their own communities, their own learning and interested and concerned members of communities external to the one they are currently in.

It is important that you, the reader, realise that many of the suggestions made here are not supported by practical research that evaluated how effective each one was. This article only sought to problematise what can be viewed as a continuing conundrum. What now remains to be done is for members of both communities to establish links and initiate discussions on what directions should be taken and whether the ideas raised here are worth considering. We ask the reader to consider the relationships between academics and practitioners in the contributions to this special issue, and to think about how the actions of

one COP might have affected the other during the research.

THE CONTRIBUTIONS

As previously stated, the aim of this special issue of JITTA is to showcase IS research that addresses these needs and leads to research of potential interest to practicing managers in industry. This included:

1. Papers that use field study research methods to support or demonstrate the validity or effectiveness of IS theory, concepts, or methods by observing it in real organizations.
2. Papers that propose and demonstrate methods for accomplishing IS management, while making the case for the implementability or applicability of the method.
3. Papers that propose new IS theory or concepts, while making a case for the applicability of the theory to practice.
4. Other papers that move IS research toward practical applicability.

The editors of this special edition are happy to present the articles in this special edition, each of which uses an innovative approach to research into IS.

John Beachboard, from Idaho State University, uses an exploratory case study research design to develop a descriptive model that describes the central roles that organizational culture and knowledge play in mediating the effects of information technology, organizational resources and IT management policies on IT policy compliance, implementation and use. The article describes a study that took place in a large government agency and sheds some light on the interaction of a wide range of technical and social artefacts (procedures, policies and practices) illustrating how projects may fail if insufficient attention is paid to particular aspects.

Neil Ramiller, from Portland State University, also adopts an holistic approach to his study of a system project undertaken within an organization whose understanding and use of IT definitely places it in Rogers'

(2003) laggard category. He uses Actor-Network Theory (ANT) as his research lens to describe and draw out the practical implications for the management of systems implementation. Whilst ANT is often viewed as being too academic and prone to using peculiar terminology (Wenn 2003), it is enjoying increasing usage within IS circles and this paper does an excellent job of employing it to extract practical insights that are of value to academics interested in conducting theoretically grounded research and managers seeking to understand and enrol user participation in the integration of new systems into their workplaces.

Jo-Ann Kelder and **Paul Turner**, from the University of Tasmania, examine the many challenges in developing information systems to support information intensive collaborative work such as weather forecasting. In this instance, their study involves the Australian Bureau of Meteorology. The article explores the use of distributed cognition (Dcog) theory as one approach to overcome these research challenges and generate insights for the design of the Bureau's next generation of weather forecasting tools.

Csaba Veres, from the Norwegian University of Science and Technology, and **Gittan Mansson**, from the University of Arizona, argue that data modeling for information systems cannot be divorced from human perception, and is therefore marked by the subtle and often unconscious vagaries of cognition. Without formal semantics for modeling languages, this can result in models that are subjective, ambiguous, and difficult to interpret. They argue that current models represent a designer's psychological perception of the world rather than some idealized, philosophical description of that world and propose a more precise ontology of cognitive perceptions.

There is no doubt, as we argued above, that an education that provides a variety of learning experiences and promotes cognitive skills and uses realistic problems will lead to better employment outcomes for the students. With this in mind, **Robin Johnson** and **Mark Stubbs**, from Manchester Metropolitan

University Business School, address the problem of providing learning experiences suitable for developing high-level organisational analysis skills in a climate of increased student numbers. They do this by exploring the potential of interactive web-based case studies for creating realistic, personalised experiences that scale for large numbers of students in a Business IT department. Included in this are mechanisms that encourage both students and teachers to reflect on the learning experience, again another valuable experience particularly so if the graduates can be encouraged to do this in the workplace (Heiskanen and Newman 1997).

In their paper, "*Measuring Internet Behaviour: using total time and activity diaries as research methods*" **Karianne Vermaas** and **Lidwien van de Wijngaert**, from Utrecht University, examine how Total Time Diaries and Activity Diaries can measure online behaviour. In doing this they examine two diary studies on online behaviour conducted in the Netherlands in 2001 and 2003. They address the theoretical issues as well as practical issues that need to be taken into account to perform such a study, as well as reflecting on the practical applicability of diaries as research instruments.

As you can see, we have gathered together a number of different approaches to IS research from assorted countries. The editors of this special edition hope that these innovative approaches inspire the reader to occasionally 'look outside the box' for those solutions that can help to forge the links between IS research and practice.

We would like to take this opportunity to thank all our contributors and those who acted as reviewers for us. At all times, your timely communication and attention to detail has helped make the compilation of this special edition a pleasurable experience for both of us. We would also like to thank the organisers of ISOneWorld 2004 and Ken Peffers, Editor-in-Chief of JITTA for creating the opportunity for contributors to the conference to revise and expand their papers so that they reach a wider audience.

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