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Crisis in the IS Field? A Critical Reflection on the State of the Discipline*

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Abstract

This paper explores the issue of whether the field of IS is in crisis. To do so, the paper first starts by looking back on where the field has come from. Next, it assesses the status of the IS field by exploring where the field is now. That our current status remains a 'fragmented adhocracy' suggests the field may indeed be in crisis or headed for a crisis. This is compounded by the fact that there are two different views on the state of the IS field, each posing its own set of threats. One is the external view of the community (the view of IS from outside the academic field); the other is the internal view (the view from inside the IS community). By analyzing these two views, a better understanding of the problems the field faces emerges. In the next part of the paper, some thoughts are presented on where might the field go from here for overcoming its internal communication deficit. The paper proposes four different types of knowledge for structuring an IS Body of Knowledge (BoK) and following on from that, the value of creating a common BoK for the field. Lastly, the implications arising from the paper's analysis are explored. More specifically, the paper considers various options that are available for overcoming the internal communications deficit the IS field faces. These include changing the way the field thinks about generalizations, changing the institutional publication practices, focusing more on understanding the field's organizational stakeholders, and developing new knowledge creation and transformation networks. If IS as a field can overcome its internal communications deficits, it might ultimately contribute to the societal challenge of developing a deliberative cyber democracy and thereby help to address the social communication deficit which is a feature of modern mass societies.

* Detmar Straub was the accepting senior editor for this paper.

Introduction

The need to step back and consider the central issues of IS as an academic discipline¹ and practical profession has never been more apparent. Consider the view of Lynne Markus (1999) who in a provocative article poses the question: “what happens if the IS field as we know it goes away?” For her, the field is in a state of crisis and at a crossroads. On the one hand, it could grow to become one of the most important areas for business since no organization can ignore the inexorable development and application of new information technology and expect to survive. On the other hand, there is a move to emasculate and devolve the field, moving IS tasks and skills into other business functions and/or overseas.²

Lucas (1999) supports Markus’ concern noting that the migration of IS skills to other business disciplines is occurring, and that many US business school deans have adopted this ‘disturbing belief’. Indeed, our informal discussions with colleagues at peer institutions suggest that many universities no longer support a vigorous and expanding IS group. Deans justify this decision citing declining IS student numbers. Many schools have seen drops of almost 50% in the number of IS majors. Markus and Lucas seem to attribute this drop to the migration of IS skills into other disciplines. However, there is a need to consider another reason: the dramatic increase in the ‘offshoring’ of IS jobs to places like India and China. Even the popular press (*Business Week* 2003; *USA Today* 2003) has reported on this issue, noting that as much as 50% of IT jobs will be ‘offshored’ to India and other off- and near-shore destinations in the next 10 years. Such change – the pundits argue – is nothing more than the natural progression of first moving blue-collar work (manufacturing, textile production, etc.) overseas followed by white-collar work (Morstead and Blount 2003). IT jobs are the most visible to us in the IS field, but the same is happening (or will happen) in accounting, HR, and other business functions/processes (this is the so-called BPO or business process outsourcing phenomenon). Companies typically start with small offshore projects as a proof of concept. If successful, larger and more complex projects follow. Companies are scurrying to find offshore ‘partners’ because of the significant cost savings such arrangements bring. With labor costs in India about 1/5 of what they are in the US and Europe, and the technical skills equal or better, the argument for offshoring is compelling indeed.

No wonder deans are sometimes reluctant to support IS. They see a bleak future for the field.

We thus believe the time is right to consider whether Markus’ contention is correct, i.e., that the field is at a crossroads. Is there a legitimate concern that the field as we know it will disappear? What can we in the field do to prevent such dispersal, assuming of course that we believe the field should not disappear? If one assumes the field is indeed in a state of crisis, then using a medical analogy, four options would appear possible: (1) *let it die* or whither away. Such an opinion might well be held by many of our colleagues in the other business disciplines who feel separate IS departments have exceeded their usefulness and that whatever we have learned can now be integrated within other domains (e.g., accounting, marketing, etc.). (2) *keep it on life-support* in the sense of upholding the status quo in spite of

¹In this paper, we use the terms ‘discipline’ and ‘field’ synonymously.

²An interesting twist to the Markus argument – if one believes the field is in crisis – is that even if the function is of critical importance to an organization, it could still be outsourced and/or sent offshore. That is precisely what many companies are doing. So while the function could be important, this does not necessarily mean the jobs and associated skills will stay internally or even in the same country or continent.

reduced demand. Such a view might be held by some deans who have little interest in killing IS because of the political battles that would likely ensue and believe the lean years will eventually come to an end. A similar position (outcome) could emerge from those within the field who feel there is no crisis, i.e., denial. In this case, the field keeps ticking on without taking any significant corrective action. This means that IS as a field might never realize that it could be perilously close to the precipice and its continued strength or mere survival would become a matter of external chance factors outside its vision or control. (3) *take corrective action*. This requires making significant change to set the field on a more stable course, leading to a long-term existence. Some in our field have sought such change, particularly in relation to professionalization and accreditation. (4) *re-birth/transformation*. Nolan and Croson (1995) have termed this 'creative destruction' with reference to Schumpeter calling for a total transformation leading to a new Phoenix arising from the ashes. This would be a dramatic and radical change, perhaps causing much pain in the IS community. 'Warriors for change' typically prescribe such treatment to overcome the malaise and stagnation that can occur in many fields over longer periods. The need for radical change is, thus, not confined to IS.

On the other hand, some may feel that such talk of crisis is alarmist and misguided. Assuredly, there have been declines in IS student numbers during the years 2000-2003, but this is ephemeral. Such declines are part of the normal cyclical nature that can be observed in many fields (not just IS) from time to time. Whilst the decline in student numbers is dramatic for IS, this can partly be explained by the dot.com effect. The dot.com period was a bubble resulting in artificial growth numbers. When the bubble burst, the numbers returned to a normal state. Moreover, the depressed student numbers also reflect the current state of the economy. Once the economy picks up, so too will student numbers. It happened before in the early 1990s, so why not assume the same will happen when the economy returns to its buoyant self.

In either case, we feel that some underlying structural patterns in IS are in definite need of attention because they could portend trouble in the longer run (possibly even in the short run). Rather than proposing a radical transformation of the field, we believe that taking 'corrective action' could be sufficient to 'right the ship,' so to speak. We feel such corrective action is necessary regardless of whether the field is actually in a state of crisis at this very moment. In this paper, we offer our diagnosis of why we believe this is so, analyze the causes that have led to the current situation and give some indication of possible corrective actions. For those skeptical that the field is in a crisis, we contend that even a situation of relative calm is a good opportunity to engage in a reflective analysis, because it contributes to the field's continued health and stability. If such an analysis reveals reasons for concern, then our proposal for taking corrective action holds, irrespective of whether the field is in a crisis right now. If the field is not in crisis, then our paper should be interpreted as advocating 'proactive change' as a way of avoiding a crisis. In either event, our analysis should have merit.³

Engaging in such a critical reflection is of course neither an easy undertaking, nor one to be taken lightly. We approach this challenge by interpreting what has occurred in the field over the past thirty odd years, capturing as many IS specialties as is humanly possible.

³ Both of us agree that there will be a crisis if a significant number of the jobs for our graduates permanently disappear, i.e. if offshoring or other factors cause the current volume of IS students to continue to decline even if the economy picks up. But that is not our main focus here. Rather than analyzing the basis behind a crisis claim, our purpose in this paper is to reflect on the state of the discipline, crisis or no crisis. We would also contend that a critical reflection on the state of the field is an important prerequisite for any future strategizing.

Fortunately, we can draw upon some of our earlier work for inspiration and guidance. Our prior work has on the one hand been more concrete yet on the other, been more narrowly focused. The internal issues of the field that we will raise have, to some extent, been foreshadowed in Hirschheim (1986a), Klein and Hirschheim (1991) and Klein (1999). This second article introduced the dualism between purposive and communicative rationality in the context of IS development methods and tools. This distinction plays a critical and much broader role in this paper. The external issues of the field were touched on in Hirschheim and Klein (2000) where we first started to worry about the field's disconnects with its external stakeholders. Some of these concerns were also foreshadowed in an earlier paper which looked at societal change and its potential impact on the field (Klein and Hirschheim 1987).

In this paper, we will make a case for the members of the IS field to devote more attention than in the past to the potential role of IS in supporting sincere, reflective, agreement-oriented, yet critical conversations and debates. IS can support the achievement of agreement through the force of rational argumentation in two ways: as a convenient communication medium that reduces the transaction costs of communications; and as potential content provider that gives access to relevant information for evidence giving in critical debates that otherwise would not be available to the participants. This conversational-critical potential of IS was described in Klein and Lyytinen (1992) and then again in Hirschheim *et al.* (1995, pp. 165-169).

With this in mind, we chose to structure the paper as follows. In section 2, we first offer a preview of the line of argument that the paper takes. This may seem somewhat unusual, but because of the nature and complexity of our argument, some up front summary/preview will help the reader follow our train of thought. After the preview, we attempt to assess the status of the IS field⁴, i.e., from where we have come. We offer a brief reflective history noting that the field is fragmented, and our historical treatment helps to better understand why it is fragmented. In sections 3 and 4, we explore the current state of the field. We note that because of the disparate stakeholders the field tries to satisfy, a number of communication gaps are apparent. We term these 'disconnects'. These disconnects are discussed in terms of two communities: the external community and the internal community. The external disconnects are associated with (1) IS researcher-executive, (2) IS practitioner-IS researcher, and (3) executive-IS practitioner communication gaps. The internal disconnects relate to communication gaps between (4) IS researcher-IS researcher, and (5) IS researcher-other disciplinary researcher that significantly influence the well being of IS in the academy. In section 5, we offer a proposal for the direction that corrective action could follow. This is our suggestion for 'where might we go from here?' We discuss the different types of knowledge that may be useful in IS and following on from there, the potential value of creating a shared structure which creates a core Body of Knowledge (BoK) out of parts that are now mostly disjoint. In section 6, we derive some implications and then recommendations from our ideas, particularly as they relate to the setting of research agendas, changes in the institutional publication practices, and the development and use of knowledge creation and transformation networks. Last, we speculate on a new frontier for IS revolving around a new cyber democracy.

⁴ When we use the term "IS field" in this paper, we are primarily focusing on the IS academic community (in general) and in particular, the research performed by the IS academic community.

From Where Have We Come

*Synopsis of Our Argument*⁵

Having been in the field for a combined 60+ years, we have seen considerable growth in and maturation of the field. This includes many fads, but also substantial structural and institutional changes, as well as numerous calls for the need to change, research methods, publication practices, tenure and promotion criteria, editorial policy, and so on. However, even with the normal “give and take” and the cycles that are common to any field, we feel particularly uncomfortable with the current state of the IS field because we see certain underlying structural patterns that give us serious cause for concern. In this paper, we attempt to analyze what these structural patterns are and why they have come about. We also articulate what is deeply disturbing about these patterns. Additionally, we offer a knowledge structuring and social communication perspective on assembling and sharing IS knowledge; *viz.* the concept of an IS Body of Knowledge.⁶ This paper will proceed from a historical background sketch, to a diagnosis of structural deficiencies in IS as a field, to suggesting some directions for corrective action.

We need to first start by identifying the underlying structural patterns from which our concerns arise by presenting a brief historical reconstruction of the evolution of IS as an academic field. We believe that the field needs to understand where it has come from in order to better discern where it might go.⁷ This will also shed light on the fundamental assumptions that lie behind our concerns for the viability of IS as a discipline. The goal of this paper then is to reflect upon what has occurred in our discipline over the past thirty plus years and to consider the possible course of events that would favor or jeopardize the long-term survival of the field. This goal suggests two purposes for this paper: a *diagnostic* one, which is the key focus of the paper, and a *therapeutic* one where we offer our recommendations on how the field needs to change its strategic research priorities and institutional arrangements.

Diagnostic Purpose

First, from a diagnostic perspective, we find that the IS discipline suffers from two problematic structural patterns: (1) a state of fragmentation, and (2) a number of significant communication gaps, which we term “disconnects.” These lead to at least the following major threats: intellectual rigidity and the subsequent lack of fruitful discipline-wide communication; and a lack of relevance leading to possible emasculation through dispersal into other disciplines or business functions or through “offshoring.” If so, the institutionalized IS discipline, as we know it, may cease to exist, at least in most of the Western World. Unless the academic leaders of the field begin to address these structural threats, they will eventually undermine the viability of the field. IS as a discipline could fail internally from a lack of integration, splitting into separate specialties that can then easily be allocated to other

⁵ It has been pointed out to us that many of the claims we make such as fragmentation, the need for a strong communicative function, etc. are not unique to IS. Indeed, perhaps our paper can be used as a template for academics in other disciplines to reflect upon the state of their own fields.

⁶ Such a structure should not be seen as an attempt to ‘unify the field’. Like King and Lyytinen (2003), we question the wisdom of any calls for unification, be it paradigmatic, institutional, or otherwise. On the other hand, some vehicle for structuring a common body of IS knowledge does seem to have merit to us.

⁷ It is somewhat surprising to us that the discipline of IS has few published reflective pieces tracing the historical roots of the field. We are not sure whether the field considers itself too young to need such a reflection or whether there simply are not enough ‘old timers’ around who could provide such a view. Whatever the case, we believe this to be a serious shortcoming of the IS discipline.

management disciplines or be offshored.⁸ Practitioners are facing a similar threat directly and, if they are absorbed or dispersed, academicians will soon follow, for without a thriving practitioner community, there is little need for an academic one. If so, IS would have failed externally for the lack of service it provided to its principal external clients: IS practitioners, business unit users including senior management – CEOs, CFOs, COOs, etc. In this paper, we seek to address these structural deficiencies that are not connected to any economic cycle or “market crash.” To meet this goal, we present a problem diagnosis that arises from a historically informed reflection on the current state of our discipline.

Therapeutic Purpose

Second, from a therapeutic perspective, we contend that IS as a discipline has both *communicative* and *purposive-rational* functions⁹, and that IS research and practice straddles the methodological divide between these functions. Both functions are equally important for IS as a whole, but not necessarily for each of its sub-specialties. Because of the important role that the purposive-rational and communicative functions play, we offer a brief discussion of them.

Purposive rationality is exclusively concerned with achieving given ends with the minimum expenditure of means. The purposive-rational function of IS takes the calculative optimization of the means-ends relationship as the guiding principle of human action, as is presumed in mainstream economic theory and the engineering sciences. For example, a database programmer seeking to minimize response times while keeping duplication and storage needs to a minimum acts in a purposive-rational manner. In distinction to the means-ends orientation of purposive-rational action, the communicative function of IS research and practice attempts to contribute to the achievement of mutual understandings or at least compromises between different agents through negotiated arrangements. The analyst trying to negotiate the definition of requirements with different user groups is oriented toward reaching mutual understanding and agreement (unless he chooses to act strategically using deception, *cf.* Keen’s 1981 description of implementation and counter-implementation games). Therefore, the communicative function of IS needs to examine how mutual understanding and agreements can be achieved in different situations. For this purpose, it is concerned with forming shared interpretations of norms, meanings and values and with maintaining social relationships. The further explanation of the communicative function draws on a general theory of the nature of human communication in everyday life. It analyses how through sincere conversations and discourses on any topic of interest, people can reach mutual understanding through having a minimum of common background assumptions about the world. This also applies to academic discourse in research communities (*cf.* Heath 2001, p. 17; McCarthy 1982 Ch. 4; Habermas 1984, pp. 75). We have elaborated on this in earlier research (e.g., Klein and Hirschheim 1991; Hirschheim, *et al.* 1996) based on the general framework of Habermas ‘Theory of Communicative Action’ (Habermas 1984, 1987).

It is important to realize that the type of knowledge and its role is very different in the purposive-rational and communicative functions of IS research and practice. The principal role of knowledge in the pursuit of rational-purposive action is to acquire powers of prediction and outcome control. The type of knowledge that is most useful for this is nomological, of

⁸ Examples of such disjoint specialties might be web programming, logical database design, database maintenance, ERP customization, e-comm applications, IS security, GUI design, legacy application maintenance, and so forth (whatever the latest phase of IT innovation suggests).

⁹ This is a distinction that is fundamental to the treatment of human action in different branches of the social and cultural sciences (*cf.* Polkinghorne 1983; Heath 2001, p. 35).

which the laws of nature are the most typical example. If purposive-rational strategies are directed against human agents, they involve a claim to social power and treat people either as passive, inanimate objects or as opponents capable of intelligent counter-strategies (for an example of this in IS see Keen, 1981). In contrast, communicative action is based on knowledge of social norms, conventions, habits and historically accepted viewpoints as are typically expressed in ordinary language. Other agents are not treated as inanimate objects or opponents, but as fellow human beings and partners. The kind of knowledge that is most useful in agreement oriented interactions comes from the humanities, especially history, study of foreign languages and cultures, comparative literature and social anthropology. Therefore, the communicative function brings IS close to the methods of history, social anthropology, social psychology, sociology and – at the philosophical level – hermeneutics¹⁰.

While important strides have been made in both the communicative and purposive-rational functions of IS research and practice, their full extent and the interconnections between them have never been widely recognized nor become integral to our culture as an applied discipline – as pointed out in the literature analysis in Hirschheim *et al.* (1996). The communicative function for IS professionals and researchers first should include a shared understanding of our short history – the major intellectual waves that shaped our perspectives. Most of these intellectual waves originated in Europe, in particular the U.K. and Scandinavia, and the U.S. We believe the first time prominent representatives of the differing research world views of the U.S. and Europe engaged in an intense, face-to-face dialogue, was during the so-called ‘Manchester conference’ (Mumford *et al.* 1985). Since then, the US/Europe divide has gradually been broken down. For example, the original Conference on Information Systems (CIS) has become ICIS (the International Conference on Information Systems); AIS – our institutional IS academic body - has a membership consisting of a significant and growing number of international affiliates. Yet, only a few old-timers, who directly participated in the beginnings of the globalization of IS research, know the intellectual foundations that drove these institutional changes and which now legitimize them. Therefore, a historical reflection, biased and incomplete as it necessarily must be here, can provide an essential foundation for a broader dialogue – internally. The second important focus of the communicative function looks outward to our clients. It suggests that all IS researchers need a better understanding of their clients’ ‘lifeworld’ and existential concerns (*cf.* Habermas 1984). The past examples for conveying such understandings were important, but too limited. They consisted of yearly surveys of “Key Issues Facing CIOs,” SIM APC grants, and a few select conferences. Some of the most successful ones were the IS research centers at various universities. However, their reach was rather limited as they served only a handful of elite universities that enjoyed the location and resources to afford them.

¹⁰ Traditionally social anthropology was concerned with understanding the evolution of the human species as a whole, tracing different cultures to their ultimate remote origins in time and space. History has focused on the tradition of specific cultures and its ethnic and spiritual integrity across different time periods. In both cases the assumption is that understanding the past helps to grasp the depth and breadth of contemporary meanings. (An example of this is found in this paper where the meaning of the cultural sphere is traced back to its origins in the 17th and 18th century.) The study of literature goes together with the study of the languages in which the literature was written, be it historical or contemporary literature including the evolution of different literature genres. It thus focuses on a specific product of history - its texts. By studying the texts of different cultures we can better understand our own and overcome the barriers of communication to others. For example, by studying the Koran, Christians can better understand what Muslims mean and do and vice versa for Muslims and the New Testament. Finally, hermeneutics is concerned with conditions that make understanding possible including its limits. “It seeks to throw light on the fundamental conditions that underlie the phenomenon of understanding in all its modes, scientific and nonscientific alike, and that constitute understanding as an event over which the interpreting subject does not ultimately preside.” Linge (1977, p. XI)

A Proposed Solution – A Consensual Body of Knowledge

To achieve the diagnostic and therapeutic purposes for this paper, we note the need for a shared language. Without such a language, it is difficult to arrive at a consensual core body of knowledge or even to begin framing the issue of coding such a shared BoK for the discipline as a whole. Categorization schemes that make up the subject areas of IS (*cf.* Barki *et al.* 1988; Bacon and Fitzgerald 2001) are a useful start for developing a shared language for the field, but have not led to a discussion on how IS knowledge as a whole should be structured.

Moreover, most of the current research efforts have been devoted to knowledge that can serve a technical interest in prediction and control: ISD methods, tools, and other process knowledge such as database design, technology adoption, and so on. This type of knowledge is often widely dispersed (appearing in different disciplinary journals. e.g., management science, computer science, parts of applied psychology, etc.) and therefore not easily accessible. Furthermore, its relevance is often not seen because IS was unable to establish the kind of boundary spanning, social networks – what Klein and Lyytinen (2003) term ‘knowledge creation and transformation networks (KCTNs)’ – that are possessed by other applied fields like medicine, law, and engineering. These disciplines have had a long history where members of their transformational network convert abstract research insights into understandable and action-oriented, practically relevant knowledge. The relevance of research results is not so much an attribute of their research papers’ wordings, but the product of the interaction occurring within a network of different agents and their motivation to transform knowledge similar to components in a food chain. Both the providers and the receivers must expend effort to communicate on the one hand and understand (interpret) on the other. To improve the relevance of its products, IS as a field must invest in establishing the appropriate knowledge creation and transformation networks. We shall return to this idea later in the paper.

In this paper, we shall propose a high-level classification scheme that includes practical, action oriented “applicative knowledge.” We trust that our proposal will not endanger the currently very fertile pluralism that exists in the field. Our proposal for such a body of knowledge needs to be seen as merely a ‘trial balloon’ and not a concrete object. It is a ‘first cut’ to illustrate what we mean. It will hopefully lead to serious follow up research.

The Information Systems Field: A Reflective History

The field of Management Information Systems (or simply Information Systems, as is now more commonly used) has been around since the 1960s and has been evolving ever since. It formed from the nexus of computer science, management and organization theory, operations research, and accounting (Davis and Olson 1985, pp.13-14). Each of these areas or disciplines brought a unique perspective to the application of computers to organizations, but each was also far broader in orientation. None focused specifically on the application of computers in organizations.

The emergence of theory

As computers began to be successfully applied to business problems in the late 1950s and early 1960s, interest grew in the development of ‘theory’ to support continued success. Blumenthal (1969) proposed what might have been the first comprehensive attempt at the development of a MIS (Management Information Systems) theory in his landmark book *Management Information Systems: A Framework for Planning and Development*. The author

claimed his book “is the long awaited intelligent, scientific approach to determining an organization’s information needs and developing the kind of system that is responsive to sound decision making.”

Along the same timeframe as Blumenthal, Börje Langefors in Sweden was developing his own thoughts about IS. This culminated in Langefors’ (1973) seminal work *Theoretical Analysis of Information Systems*, which provided “a formal theory [of information systems].” Langefors drew on systems theory noting: “...we try to support statements by drawing analogies from other systems theories, for which precise solutions to the specific problems or techniques for solutions, have already been devised (p.17).” Dickson (1968) proclaimed a dawn of a new era. He wrote: “A new academic discipline, ‘management information-decision systems’ is emerging to integrate these techniques and to provide the analytical frames of reference and the methodologies necessary to meet the new management requisites (p.17).” Other authors rallied around the growth of MIS ‘theory’ and saw the development of total information systems solutions for organizations (cf. Young 1968; Zani 1970; Gorry and Scott-Morton 1971). But not all were enamored by the emergence of total information systems solutions (cf. Ackoff 1967; Dearden 1966, 1972). A debate ensued in the early years of the field about the efficacy of MIS (cf. Rapport 1968; Emery and Sprague 1972). Nevertheless, the field grew and flourished as discussed in Dickson’s (1981) thoughtful history of the field. There he noted that the “genesis” of the IS concept could be linked to decision making and “viewing the management process as a cybernetic control system within the organization, relying heavily upon the computer as the control mechanism (p. 6).”

Keen’s (1987) articulation of the field’s mission reaches beyond Dickson’s focus on decision making and cybernetic control within organizations:

The mission of Information Systems research is to study the effective design, delivery, use and impact of information technologies in organizations and society. The term ‘effective’ seems key. Surely the IS community is explicitly concerned with improving the craft of design and the practice of management in the widest sense of both those terms. Similarly, it looks at information technologies in their context of real people in real organizations in a real society. (pg. 3)

Because of its roots in multiple disciplines, such as computer science, management, and systems theory, it is hardly surprising that the field of IS cast a wide net when defining its boundaries, sweeping in many themes and areas. Nor is it surprising that there is considerable disagreement about what the field actually includes and does not include, and what its core features are. Mason and Mitroff (1973), for example, in their classic framework of IS, characterize the core components to be: psychological type (of the user), class of problems to be solved, organizational context, method of evidence generation and guarantor of evidence, and mode of presentation of the output. Ives *et al.* (1980) define IS in terms of five environments (external, organization, user, IS development and IS operations), three processes (user, IS development and IS operations), and an information subsystem. Lyytinen (1987) divides the field into nine components: the information system itself, IS operations environment, IS development environment, user environment, organizational environment, external environment, use process, development process, and operations process.

Swanson and Ramiller (1993) discuss the field in terms of the broad areas on which people write papers: computer-supported cooperative work, information and interface, decision support and knowledge-based systems, systems projects, evaluation and control, users,

economics and strategy, impact, and IS research. Others have used co-citation analyses to identify intellectual subfields upon which IS draws (*cf.* Culnan 1986, 1987; Culnan and Swanson 1986; Cheon *et al.* 1992). Culnan (1986) for instance, noted the existence of three categories of 'referents' upon which IS draws: fundamental theory (e.g., systems science); related applied disciplines (e.g., accounting, computer science, finance, management, and operations research); and underlying disciplines (anthropology, political science, psychology, sociology). Keen (1987) categorized the field in terms of the problem areas each historical era chose to focus on. For example, in the early 1970s the focus was on "managing systems development, design methodologies, economics and computers." In the mid 1970s the focus changed to "decision support, managing organizational change, and implementation." In the early 1980s the focus was on "productivity tools, data base management, personal computing, organizational impacts of technology, and office technology." And in the mid 1980s, it changed to "telecommunications, competitive implications of information technology, expert systems, impact of IT on the nature of work (pg.1)."

The beginnings of institutional infrastructures and diversity

The growth of the IS field over the past three decades has manifested itself in three ways. First, as the field has grown, *new specialties and research communities* have emerged, and the level of research has increased dramatically. Second, *new journals, new conferences, new departments, and new IS programs* are indicative of the dramatic growth of the field. We have witnessed the generation of a wealth of literature in information systems. Third, as the field moved into the nineties, this literature could be characterized as diverse and pluralistic. This is manifested in *diversity of problems addressed, diversity of theoretical foundations and 'referents', and diversity of research methodologies* (Benbasat and Weber 1996).¹¹ Regardless of whether diversity is considered a blessing (e.g., Robey 1996) or a curse (e.g., Benbasat and Weber 1996), it is widely accepted as a defining characteristic of the field (Cooper 1988; Banville and Landry 1989; Alavi *et al.* 1989; Keen 1991; Orlikowski and Baroudi 1991; Swanson and Ramiller 1993; Markus 1997; Mingers and Stowell 1997; Mathiassen 1998; Benbasat and Zmud 2003; King and Lyytinen 2003).

In view of the rich diversity, it is not surprising that no unifying perspective on the nature of IS and IS research has gained widespread acceptance. The abundance of different schools of thought in the field is suggestive of its rich and diversified nature. The proliferation of different schools of thought in IS research, however, has its disadvantages as researchers in the different schools appear to work on disjoint or non-pertinent topics (Bjorn-Andersen 1984; Huber 1983) without much cross-communication. This has raised the concern that IS research does not contribute to a cumulative research tradition (Keen 1980), thereby throwing into question the value of IS research. To answer this challenge, several attempts have been made to find a common conceptual platform (paradigm) on which to ground, build and organize IS research (Mason and Mitroff 1973; Ives *et al.* 1980; Weber 1987; Farhoomand 1987; Ein-Dor and Segev 1981; Wand and Weber 1990; Hirschheim *et al.* 1996).

¹¹ Consider, for example, the phenomenon of IS implementation. It has been examined from such diverse perspectives as technical implementation (DeMarco 1978; Gane and Sarson 1979), planned change models of Lewin and Schein (Keen and Scott-Morton 1978; Alter and Ginzberg 1978), political theories (Bardach 1977; Wilensky 1967; Keen 1981; Newman and Rosenberg 1985), action learning (Argyris and Schon 1978; Kolb 1984; Heiskanen 1994), marxist economic theory (Sandberg 1985; Nygaard 1975) and institutional economics (Williamson 1975; Alchian and Demsetz 1972; Kemerer 1992; Heikkila 1995). To make matters worse, there are probably as many conflicting messages about what constitutes 'good IS implementation' as there are perspectives.

From diversity to the beginnings of fragmentation

However, Banville and Landry (1989) shed doubt on the possibility of achieving such a common conceptual platform. Through a sociological analysis of dependencies among researchers in IS, they concluded that the field is more a “fragmented adhocracy” than a unified discipline. Why a fragmented adhocracy? Because in order to work in IS one does not need a strong consensus of one’s colleagues on the significance and importance of the problem to be addressed in research as long as there exists some outside community for support. Nor are there widely accepted, legitimized results or procedures on which one must build “in order to construct knowledge claims which are regarded as competent and useful contributions (Banville and Landry 1989, p. 54).” In addition, there exists high task uncertainty in IS research, because problem formulations are unstable, research priorities vary among different research communities, and there is little control over research goals by a professional leadership establishment (such as bars or licensing boards for physicians and engineers). For example, IS research groups may choose to define projects that do not follow the familiar patterns of engineering or empirical social science. There exists considerable local autonomy to formulate research problems and standards for conducting research and evaluate research results. In fact, this has been a matter of lively debate for many years (Ives *et al.* 1980; Keen 1980; Mumford *et al.* 1985; Culnan 1986, 1987; Farhoomand 1987; Cash and Lawrence 1989; Benbasat 1989; Kraemer 1991; Nissen *et al.* 1991; Backhouse *et al.* 1991; Landry and Banville 1992; Galliers 1992; Hirschheim *et al.* 1995; Lee *et al.* 1997; Mingers and Stowell 1997; Checkland and Howell 1998; Currie and Galliers 1999; Klein and Myers 1999).

The State of IS Today

Today, we believe that fragmentation is a root cause of the field’s potential crisis. Whereas Banville and Landry (1989) described the field as a fragmented adhocracy, they did not explain why this condition arose nor whether this was a problem. Indeed, they believed it to be a strength.

In contrast, we believe the fragmentation is evidence of a structural problem for the field that portends a crisis. To be clear, we do not equate fragmentation with pluralism. Pluralism – for us – relates to diversity of ideas, perspectives, research approaches, paradigms, etc. But there is at least some underlying core set of knowledge or beliefs that all in the field share. There is a sense of shared belonging and empathy to others in the field. This is different from fragmentation, where there is insufficient (insignificant) communication between the different communities such that no core knowledge set exists. Individuals work in their own sub-communities without reference to other sub-communities. For us, this is a serious concern and in this paper, we shall explain why we feel this way. To do so requires us to reflect on the state of the field as it currently is. We start by considering the role of IT.

Critical to the evolution of the field was the development of technology – IT to be precise. The advancements in IT spawned new areas of IS research. This is a point cogently made by Orlikowski and Iacono (2001) and Benbasat and Zmud (2003).

From a historical perspective, the discipline that at first used to be called data processing (DP), then MIS and later IS, has been undergoing another subtle name change to IT, particularly in industry. Each of these name changes reflects the discarding of an identity in search of another. The identity changes are not so much related to generations of hardware capabilities as to usage patterns associated with new technologies. According to Dahlbom (1996), there have been at least four such information technology usage eras. The first, DP,

was epitomized by the automation of transaction processing. The second, MIS, was characterized by using computers as instruments of control and rationalizing administrative systems. The notion of an integrated IS perhaps best characterizes this second stage of MIS. To the third era belongs “personal computing,” which boosted personal productivity and end-user computing to create a measure of independence of individuals from the centralized power centers of “administrative computing.” With the arrival of wide-spread networking from LANs to the Internet we have entered a fourth era, where computers begin to look more like information appliances: mere access points to a vast array of services available to all with minimal computing literacy. The commercial exploitation through e-commerce and e-entertainment has just begun and we don’t know yet whether this will lead to another qualitative identity change into a fifth era of the global e-village.

As IT evolved, it has clearly influenced the IS profession. To be sure, IT is neither the root cause nor the technological fix for the structural patterns which lie at the base of the ‘crisis.’ The offshoring, the disconnects, and the internal communication gaps that we identify in the next sections as the basis of the crisis are not caused by IT. But there is one exception: as the IS field embraces technical specializations, the widely recognized rapid change and proliferation of technology encourages ever finer divisions of labor and with this comes more and more rapid social differentiation contributing to the communication gaps: the “techies” versus the “softies” research cultures for example. Otherwise, IT has an enabling or mediating role in the underlying patterns. The following three points illustrate the role of IT from our perspective. It is the attention to the mediating role of IT that differentiates IS from other business disciplines.

IT as Enabler of Sourcing and Offshoring

The phenomena of outsourcing and offshoring would be impossible without the high speed and reliable global networks on which industry has come to rely since the mid to late nineties. In this case, IT is clearly an enabler that has opened up new strategic options for structuring IT and business operations. However, the causal driver of exploring and implementing these options is clearly economics: improving profits through cost savings. In addition to the availability of the new high bandwidth technologies, it was important to prove the concept (e.g., that outsourcing IT to a third party provided could be done), and to develop the detailed know-how and skills that would lead organizations to trust in the viability of such options. It took several years to do this. Hence those pundits believing in a current crises point out that most of the U.S. industry is now poised to take full advantage of options such as offshoring with the long-term view that few IT jobs will be left in the US and Europe. Moreover, a new business cycle upswing will not bring back the jobs lost domestically even though the offshoring target countries may benefit, especially India and China

IT as Enabler and Catalyst for Commoditization

The new buzzwords of “IT-enabled services” (Kern *et al.* 2002) and “utility computing” (Westerman and Ross 2003) point to another important side effect of technology that has been one of the key characteristics of ‘modernization’ since the beginning of the first industrial revolution – the expropriation of individual skills into explicit methods and techniques that are then coded in specific turn-key technology “solutions.” From a systems perspective, the same phenomenon has been labeled as “black-boxing.” The operators of the turn-key solutions need no longer be able to master the level of detailed craftsmanship that is necessary to perform the work that the turn-key solution automates, because the original complexity has been hidden behind the levers and buttons of an interface. As a result, the operator of a programmable lathe needs fewer skills than the old blacksmith, or

the factory-trained laborer in a semi-automated shoe factory has a fraction of the skills of the old shoemaker workshop. Modern IT has allowed extending this market logic of commoditization to white collar work – clerical work initially (e.g., payroll computations) and now all the way to business processes (business process outsourcing - BPO). Hence, IT has served both as a medium and catalyst of turning subjective skills and know-how into a market commodity that can be contracted out to the lowest bidder.

If the crisis pundits are correct, this process has now come full circle by ironically hitting the IT profession itself: they will suffer what they have done unto others. The key point here is that whilst commoditization is not wholly dependent on IT, the causes of commoditization are deeply rooted in the progress ideal of the enlightenment and liberalist ethics of market economics. IT simply extends its reach and speed with which it spreads throughout the economic system.

IT – A Part of the Solution?

In section 2.1, we alluded to the important role of social knowledge creation and transformation networks (KCTNs). We see them as a possible vehicle for overcoming the communication gaps that manifest themselves in multiples disconnects that we will explore in the next two sections. Clearly IT cannot provide the initial motivation, commitments and social bonds required to make these networks a reality and keep them functioning. However, once established, IT can provide an important support function to make them more effective and reduce the costs of communications. Once the motivation for establishing such networks leads to widespread commitment, it is a matter of socio-technical research to determine which type of interfaces (video conferencing vs. telephony vs. email), information repositories and symbol transformation capabilities could support and to some extent replace expensive face-to-face communication. From the perspective of Actor-Network-Theory (A-N-T), IT components could serve as complex “actants” in KCTNs enabling them to behave differently than they would without these techno-actants.¹² We shall return to the idea of KCTNs at the end of the paper.

Summary and Preview

With this reflective history in mind, we turn our attention to an assessment of the field. In the next section we assess where we are now from two alternative perspectives: an external perspective where we focus on the view of the field from the eyes of management; and an internal perspective where we look at the state of the discipline from the eyes of the academic community.

Where Are We Now: The External View from the Management World

It has been and continues to be commonplace to bemoan the lack of relevancy of IS research for professional practice (*cf.* Keen 1987, 1991; CAIS, 2001). In the current state of discussion, it is now widely agreed that we need to ask who the stakeholders for our research are and what relevancy means for them. In exploring the meaning of relevancy “one rather critical distinction is between relevance to and serves the interests of or is of value to” (Cresswell 2001, p. 2). With this distinction, Cresswell points out that some research could be rather critical of practice and could undermine a stakeholder’s interests, yet this would not

¹² A-N-T uses the term actant to refer to both human and non-human actors or agents in complex socio-technical networks (*cf.* Walsham 1997).

make the research irrelevant. In fact, Creswell's point needs to be taken one step further. It would be ideologically biased and therefore ethically questionable to require that publicly funded researchers like University faculty should place the interests of one external stakeholder group, i.e., industry shareholders or their agents (management), above those of other stakeholders. Other stakeholders who should benefit from academic IS research are the employees of firms and organizations, their agents (e.g., unions), community and other levels of government and the general public. In addition to multiple external constituents for IS research relevancy, IS researchers have important stakeholders within academia, for example funding agencies, colleagues in other disciplines, university administrators, and last, but not least, students. (cf. Bhattacharjee 2001). Insofar as different stakeholder groups tend to possess conflicting interests arising from differing value systems, IS relevancy depends on value judgments that should be made explicit while not engendering opportunities to learn from the interaction with any stakeholders that are willing to open themselves to IS researchers.¹³

In this paper, we can deal with the IS research relevancy issue only selectively. Therefore, under the heading of "external" relevance, we shall focus only on the "serves the interest of" relationship of IS research for the most commonly espoused *external* stakeholder groups, i.e., industry management.¹⁴ In section 4, we shall consider how the relevancy issue presents itself from the internal perspective of the IS research community, i.e., we shall examine whose interests IS research is required to serve to achieve academic success.

For analyzing the external relevance issue, we must not consider industry management as one homogenous stakeholder group. At a minimum, we need to consider two groups of actors in addition to the IS researchers themselves. These are senior management and the practitioners in IS departments. By focusing on the interdependences among these two groups and IS researchers, we conclude that the current situation is characterized by three 'disconnects'. *First*, there is a disconnect between expectations as formulated by senior management and the practice of IS departments in the way they interpret their mission. *Second*, there is a disconnect between current IS research and senior management expectations. *Third*, there is a disconnect between IS researchers and the practitioners in IS departments because IS research is insufficiently relevant to the concerns of professional IS practice. For the sake of completeness there are two additional disconnects with which we shall deal under the "internal view." Disconnect *four* exists within the IS research community itself due to numerous IS research sub-communities that insufficiently communicate with each other. It involves the internal fragmentation of IS research. A *fifth* disconnect exists between the IS academic research community and academics in other disciplines. We shall explore these latter two disconnects in section 4, *the internal view of the state of the research community*.

Disconnects between the worlds of business and academia

The disconnect of both IS researchers and practitioners from senior management expectations is a matter of outsider perceptions and expectations of IS academics and practitioners alike and therefore concerns *the external view of the state of the community*.

¹³Ormerod (1996) for example, called for "the synergistic combination of consulting and academic research in IS". Davenport and Markus (1999), in like fashion, note the value of consulting and academic research learning from each other. Similarly, Avison *et al.* (1999) advocate a greater use of action research to make IS academic research more relevant to practitioners.

¹⁴ Klein and Hirschheim (2001) analyze the fundamental value choices that would have to be considered to make IS research relevant for multiple stakeholders.

Our interpretation of the external view is based on formal and informal interviews of hundreds of IS managers on three continents over a fifteen year period. These culminated in a variety of publications (Hirschheim *et al.* 1988; Hirschheim and Miller 1993; Lacity and Hirschheim 1993a,b, 1995a,b; Bhattacharjee and Hirschheim 1997; Hirschheim and Lacity 2000; Sabherwal *et al.* 2001; Hirschheim and Sabherwal 2001; Hirschheim *et al.* 2003). Our interpretation also reflects the results of other IS researchers who have studied the actual practices of IS (*cf.* Ward and Peppard 1996; Earl 1996; Willcocks *et al.* 1997; Henderson and Venkatraman 1999; Currie and Galliers 1999; Brown and Sambamurthy 1999; Pepper and Ward 1999; Zmud 2000). They point to five expectations that senior management and peers in other business functions have for IS managers.¹⁵ These five expectations stand in contrast to the regularly published “top issues facing the CIO” published in places like *MISQ*, because they have more persistence about them. As our data have been accumulated for well over a decade, we reached the conclusion that they have continually shaped the quality of the relationships of IS practitioners with the organizational environment in two ways: horizontally with the other business functions and vertically with senior corporate management. These expectations are: (1) lower costs of the IS function; (2) increased speed of delivery of IS products and services; (3) comprehensive, cross-functional data availability; (4) demonstrable value add; and (5) leadership in shaping corporate strategic direction.

Even a cursory examination makes it apparent that the IS community as a whole (consisting of practitioners and IS researchers) has not been able to meet these ‘external’ expectations in the past nor is it likely to do so in the foreseeable future. This is not to imply that we believe all of the following expectations are legitimate or even reasonable. They may in part be based on misconceptions and part of the future challenge for IS academics is to discern legitimate expectations from misconceptions.

(1.) Lower costs of the IS function. While it is true that hardware functionality in terms of processor speed, bandwidth and storage capacity has been increasing as prices decrease (and this trend seems likely to continue), this simply misses the point. Lower IT costs typically do not translate into lower overall costs for IS functionality,¹⁶ but the IS practitioner community has historically had difficulty arguing why this is so. Simply put, IT costs only make up a fraction of overall IS costs. As the IS function delivers more and more products and services to the business units, its overall costs go up inevitably (Lacity and Hirschheim 1995a). Consider the analogy with the car industry: consumers expect greater functionality from cars, yet do not necessarily expect them to go down in price, even given a decrease in price of some car components. So does it make sense for senior business executives to expect lower costs from their IS units?

(2.) Increasing speed of delivery of IS products and services. One of the persistent challenges confronting IS departments is the speed with which it can deliver products and services. As the number of products and services demanded from it increase, the function struggles to meet expectations. Just as senior management uses the decline in hardware costs to buttress its belief that IS costs should go down, it also believes that new technology

¹⁵ In part these expectations and where they come from, how they are formed and what they lead to are taken up in Hirschheim *et al.* (2003).

¹⁶ Of course there have been times, such as in the early 1990s when many IS departments did lower their budgets typically through downsizing, but this often led to a concomitant rise in hidden IT spending in the business units that did not show up in the corporate IS spending figure. Hence, the perception that IS costs had actually gone down during this period is somewhat illusory. And where it was not illusory, organizations typically suffered degradations in IS service quality due to too few IS employees trying to handle increasing service demands.

should aid IS in delivering products and services more expeditiously. And it does, to some extent. But this point of view is misguided. The IS function is increasingly attempting to balance a greater and greater number of system demands. Whether it is implementing an ERP across the organization, maintaining legacy applications, putting in a new telecommunications infrastructure, and/or preparing the organization for electronic commerce, these demands simply place an enormous burden on IS. And the burden grows daily as more and more business units request new and ever more complex services.

(3.) Comprehensive, cross-functional data availability. Although organizations for some time have wished for and – to some extent – have been promised information systems that could deliver data that was comprehensive and spanned the entire organization (and even spanned across organizations), such a desire was more pipe-dream than reality. Nor did IS organizations help themselves with the overselling of data base technology, decision support systems and executive information systems, promising senior executives exciting integrative possibilities now that data were accessible from across the entire organization. In fact, these systems, while potentially beneficial to management, were not the panacea they were often sold to be. While they did provide richer data that was easier to access and understand, they were neither comprehensive nor truly cross-functional. Senior management needs this kind of information, but perhaps until recently – with the advent of client/server based ERP applications and data warehouses – such wishes could not be met. Again, in many ways this mismatch of expectations is in part IS's fault. Delivering cross-functional data and applications is not only a technological problem but a political one as well. Getting disparate organizational units to share 'their' data is typically a political minefield. The IS function has simply not done a good job in making this situation visible to all.

(4.) Demonstrable value-add. Perhaps the most intractable problem that IS faces is the issue of how to get management to see the value-add of the IS function. This issue is connected to the evaluation of IS, i.e., the evaluation of IS products and services. While IS evaluation has received a fair amount of attention in research,¹⁷ the results have been disappointing in that no reliable method has been found to measure the value of an IS before it has been built (and even after it is built, *cf.* Smithson and Hirschheim 1998). *A fortiori* it follows that the evaluation of the IS function as a whole is even more intractable. According to Lacity and Hirschheim (1993a), the IS function is often perceived as overhead; that is, a cost of doing business but one to be minimized. In such an environment, it is hard for IS to demonstrate its strategic contribution to the organization when it has had to focus its attention on justifying why it charges what it does to the business units (*cf.* Ross *et al.*'s 1999 discussion on the need for IS to chargeback the costs of its services). Simply put, IS continues to be seen as overhead rather than a valuable investment. With all the negative connotations this brings with it, it will be increasingly difficult for the IS executive to focus on IS's strategic role, and more specifically, to convince senior management to focus on IS's strategic potential. It does not help matters when an IS function's successes (e.g., new applications successfully implemented on time and on budget) are perceived as 'business unit successes' yet IS failures (e.g., new applications where budgets are overrun) are labeled 'IS failures.' According to Hirschheim *et al.* (2003), one of the major failures of IS has been its inability to provide credible success stories that become part of company folklore.

(5.) Leadership in shaping corporate strategic direction. Somewhat paradoxical to the last point where IS is typically perceived as overhead, organizations often wish IS to take an active role in shaping a corporation's strategic direction. The belief seems to be that the IS

¹⁷ See for example the latest rage based on the so-called 'balanced scorecard' (Martinsons *et al.* 1999).

function is uniquely suited for this role for two reasons. First, because IS develops systems for all the business units in the organization, it is believed that it has to understand how the different systems fit together. Therefore IS leaders are well suited to having a good overview of all the functions and systems of the organization. Second, IS is perhaps the most knowledgeable group of individuals in the organization on new technologies. Given these new technologies may provide opportunities for the organization to get into new businesses, new markets, etc., such technology expertise could prove invaluable for setting strategic direction (Wheeler, 2002). Hence IS is uniquely placed to provide leadership both in an integrative role and in shaping a company's strategic direction (Luftman, 1996; Ross *et al.* 1996). Yet, here too we note a serious inconsistency. On the one hand, IS has been perceived as being an overhead, as too expensive, as failing to provide comprehensive data across the organization and insufficient value for money; while on the other hand, it is supposed to provide leadership in strategic direction. The first set of problems with IS has led the function to being ignored as a source for corporate senior management positions. How often does one find a former IS director in the capacity of chief officer of a corporation? Answer: not very often. To us, it is totally inconsistent to expect IS to take a lead role in shaping strategic vision and direction without giving IS the necessary access to senior management positions and the knowledge and motivation that comes with it.

Reflection on the disconnects between the worlds of business and academia

So where does this leave us? Clearly there is a problem with the non-IS practitioners' view of IS. They have an unrealistic image of IS and concomitantly, unrealistic expectations about what IS can and cannot accomplish. But there is also a significant disconnect between IS practitioners and IS academics that is well known. IS practitioners feel academics live in ivory towers engaging in research that is devoid of any practical relevance. IS academics, on the other hand, feel that practitioners do not understand the need for theory and are only interested in vocational training. (This is a theme we will take up again in the Conclusions.)

In placing these unmet expectations into a historical perspective, we have reached the conclusion that the image of information systems to which the IS research community has subscribed over some time has been incongruous with that held by the external consumers of IS research. As a result, they do not look for enlightenment through IS research, because they have given up on our research a long time ago.. If we truly believe that at least some IS theories are, indeed, relevant for practitioners, we must have done a very poor job of communicating it in a convincing way. (We do not want to imply that every bit of theoretical exploration has to be immediately relevant for practitioners.)

There are two sides to this incongruence issue. First, the view of IS that is held by IS practitioners is at best only partially supported by some of the theories that guide IS research (e.g., structuration theory, agency theory, and actor network theory). In part this is a result of the pressure in MBA education to keep all courses focused on purposefully rational concepts and relevant skills. Second, the view held by non-IS practitioners, i.e., senior management or business unit managers, is even more at odds with the academic notions of information systems and also quite different from the IS practitioners' beliefs about the nature of IS. Many of these managers have degrees outside of management. Their views are then shaped by the assumptions underlying these degrees (provided they have degrees at all) moderated with crash courses in "executive education," which often are even more narrowly focused than MBA curricula. This contributes to a credibility crisis for IS as a whole that engulfs both academia and practice.

As researchers, we must ask ourselves: is there anything that we can do to illuminate the issues at stake from a longer-term perspective? For a start, we believe that research should be undertaken in at least two areas:

(1.) There is a need for increasing the amount of research directed at *understanding IS practitioners* and engaging them in a discourse about a realistic set of expectations for what the IS academic research community can and cannot deliver. As an applied discipline, we need to better understand what each community expects from the other.

(2.) There is a need for increasing the amount of research directed at *understanding non-IS practitioners, especially senior management*, and engaging them in a discourse about a realistic set of expectations for what the IS function can and cannot deliver. We also need to provide well-articulated arguments to the IS practitioners by which they can state their case to senior management that a thriving IS department is needed along with the other functional units.

One pointer on how the above might be accomplished can be found in Lynne Markus' address to the 1997 IFIP8.2 conference in Philadelphia. She argued that one of the directions the field should now take is "the appreciation of practicality in IS research (Markus 1997, p.18)." The intent of what she terms practical research is not to replace or overshadow research that builds or tests academic theory, but rather to complement theoretical research with "rigorous research that describes and evaluates what is going on in practice (Markus 1997, p.18)." This is underscored by the conference theme of ICIS 1997 with its emphasis on the issue of relevance and relationship of IS research to practice (Kumar 1997, p. xvii). Later, *MISQ* announced a renewed thrust aimed "at better imbuing rigorous research with the element of relevance to managers, consultants, and other practitioners (Lee 1999a, p. viii)." The discussions presented in Benbasat and Zmud (1999), Applegate and King (1999), Lyytinen (1999), and Lee (1999b) support this thrust. (We shall return to the external relevancy issue in section 6 of the paper – Recommendations.)

Summary and Preview

If, in its current state, IS research appears to be ill equipped to address these issues, it will be necessary to face several intellectual issues and social dynamics that are driving IS research from within the academic community. These issues neither resonate with the five expectations of senior management nor align themselves with IS practitioner interests. The first of these issues to consider, is the fragmentation that characterizes the internal state of the IS research community.

Where Are We Now: The Internal View of Crisis Symptoms in Academia

We now turn to the internal view of the state of the research community and the disconnects that exist within the IS research community arising from the lack of communication among the numerous research sub-communities. This leads to an internal fragmentation of the field. Within the 'internal view' we also address the disconnect that exists between the IS academic research community and academics in other disciplines.

Internal Disconnects

We postulate that there are four expectations that come from our internal constituencies that again do not resonate with the current state of the field: (1) we are supposed to accept or be tolerant of different research sub-communities, implying tolerance of alternative paradigms; (2) we are supposed to have general theories; (3) we are supposed to be rigorous; and (4) we are supposed to be relevant, but for whom?

(1.) Pluralism, yet a need for common ground. It is our belief that the discussion of preferred reference disciplines and paradigms have shaped the current ways of thinking and agendas in the IS research community more than anything else.¹⁸ The effects of conflicting paradigms and commitment to incompatible visions of the nature of IS have fragmented the IS research community along several dimensions to the point that it has reached the so-called “fragmented adhocracy¹⁹.” Hence the greatest issue that the IS community faces internally is its fragmentation into numerous specializations (or what we might call “sects”). They are in want of intellectual synthesis that could emerge from a fruitful discourse. However, we lack a set of shared assumptions and language, and as a result the various sub-specializations lack the motivation and capability to communicate with each other. Our large conferences like ICIS, AIS or HICSS are reincarnations of the Tower of Babel. Fruitful, cross-sectional debate almost never occurs. And it has been like this for decades (*cf.* Hirschheim 1986b).

Traditionally, the relationship between alternative paradigms was conceived as being one of the following: dominance, synthesis, incommensurability, eclecticism or pluralism (Morgan 1983). For example, positivism, through the centuries, has enjoyed great success. Its position was one of dominance. More recently, however, critics have surfaced calling into question positivism’s dominance. A call has gone out for pluralism rather than dominance in research (*cf.* Lincoln and Gupa 1985). From an historical perspective, one can distinctly see the uneasy tension that has existed in the application of positivism in the social sciences. This has given rise to what Tashakkori and Teddlie (1998) have termed “the paradigm wars:” battles fought by the adherents of positivism against those from other paradigms.

For Landry and Banville (1992), the paradigm wars can be recast into three types of researchers each with its own outlook on paradigm appropriateness. They have characterized these types or groups as ‘mainstream navigators,’ ‘unity advocates,’ and

¹⁸ We do not overlook the importance of reference discipline focus as a source of differentiation, i.e., training in preferred reference disciplines and professional experience as an engineer, accountant, economist, etc. This source of influence was of particular importance during the early era of IS when there were no internally trained IS faculty. This influence works through the personality of influential researchers. It affects their vision of an IS and their paradigmatic assumptions. Hence it is indirectly acknowledged. A more detailed treatment of this source is beyond the scope of this paper.

¹⁹ By applying Whitley’s (1984a, 1984b) model of cognitive and social institutionalization of scientific fields (or academic disciplines), Banville and Landry (1989) conclude that the field of IS is a “fragmented adhocracy”. This is so because in order to work in IS one does not need a strong consensus with one’s colleagues on the significance and importance of the research problem as long as there exists some outside community for support. Nor are there widely accepted, legitimized results or procedures on which one must build “in order to construct knowledge claims which are regarded as competent and useful contributions” (Whitley, 1984a, pp.88 -123 as quoted by Banville and Landry, 1989, p.54). In addition, research involves high task uncertainty, because problem formulations are unstable, priorities vary among different research communities, and there is little control over the goals by a professional leadership establishment (such as bars or licensing boards for physicians and engineers). For example, some IS research groups may choose to define and cherish projects that do not follow the familiar patterns of engineering or empirical social science, although such groups are generally in the minority. There appears - to some extent at least - local autonomy to formulate research problems, and standards for conducting and evaluating research results (*cf.* Goles and Hirschheim 2000).

'knights of change.' The first group, mainstream navigators, is composed of supporters of the dominant orthodoxy. Their epistemological roots are in logical positivism, which cements them in the functionalist paradigm. The second group, unity advocates, is more concerned with the acceptance of information systems as a scientific discipline than with a specific paradigm. In the unity advocates' view of the world, an immature or pre-science discipline is characterized by the existence of several competing paradigms. A more desirable state – that of a full-fledged scientific discipline – is characterized by the reign of a single dominant paradigm. They would be agreeable to using any paradigm as long as it granted them scientific respectability. Since the current state of information systems research is dominated by positivism, unity advocates tend to cluster towards this end of the paradigm dimension. The third group, knights of change, is of the opinion that reality is multifaceted, and forged from the interpretations and interactions of individual actors. They also give credence to the belief that no single research approach can fully capture the richness and complexity of what we experience as reality. Thus they champion a collection of assorted research approaches arising from multiple paradigms.

Yet, even the knights of change, with their clarion call for methodological pluralism, argue for change *within* Burrell and Morgan's (1979) four paradigms. Others argue that Burrell and Morgan's framework, by virtue of its widespread acceptance and impact, has normalized and rationalized emerging streams of research, constraining alternative perspectives.

In time, influential frameworks can become as restraining and restrictive as those they originally challenged. ...we are sometimes presented through responses to a conceptual framework ...with a new, rich set of alternative perspectives through which we can continue our study and talk about our subject matter. (Frost, 1996; p.190)

In addition to the three types of paradigm warriors identified by Landry and Banville, a new group is emerging that is calling for an end to the paradigm wars – the pacifists. These theorists and researchers argue that there are strengths and weaknesses in both the positivist and non-positivist positions, and point out that the conflicting paradigms have, in spite of the best efforts of their most ardent supporters, achieved a state of coexistence (Tashakkori and Teddlie 1998). Datta (1994) has presented five compelling arguments in support of this assertion. (1) Both paradigms have been in use for a number of years. (2) There are a considerable (and growing) number of scholars arguing for the use of multiple paradigms and methods. (3) Funding agencies support research in both paradigms. (4) Both paradigms have had an influence on various policies and (5) much has been learned via each paradigm.

In the IS research arena, the existence of such paradigm pluralism can be found, but it is not as wide spread as Datta (1994) and Tashakkori and Teddlie (1998) suggest. Worse, the supposed interplay between researchers of different paradigms does not occur – as was noted above – because of the communication gap that exists among the alternative paradigms.

(2.) Generality: the unresolved challenge. IS as a field has had difficulties with generalization from its beginnings. It started with story telling of experiences that were generalized into insights that should apply to many situations (e.g., the five lessons from Ackoff 1967 or the "myths" of Dearden 1966). Such reasoning was later debunked as "unscientific" and replaced with "rigorous" hypothesis testing. It now appears as if IS research has come full circle by returning to new forms of story telling (the politically correct term is, of

course, “narratives”). Whereas the new story telling movement can point to much better and more explicit philosophical grounding than “the great wise men” had for their story telling, this does not necessarily make it “more general.” In fact it lags in generality behind the insights offered by the earliest authors. Moreover, it shares this weakness with the failure of positivist research to offer a few broad theories that contribute to general orientation and bring some measure of order to the perpetual confusion in our field. So far the application of interpretivist theories has not resulted in more general theory formulations than the positivists. Should it turn out that the interpretivist approach is equally unable to deliver results of general interest, i.e., that reduce the complexity of coping with reality by applying to a large number of instances, it may fall into disrepute quicker than the attraction of positivism is waning. (cf. Klein and Myers 1999 for a proposal to strengthen the generalization potential of interpretivist research). So how does one deal with this dilemma?

It appears that the generalization deficit is a concern that affects interpretivists and positivists alike, yet is largely ignored by both. However, there may be hope here. We propose that this deficit could be addressed by a change in paper reviewing practices in the direction of giving generalization the same weight as methodological rigor. Often authors are discouraged from generalization, because they cannot support it with the same degree of plausible evidence as narrowly conceived hypotheses. This practice discourages prospective authors to connect specific hypotheses or ethnographic findings to broader theoretical lines of reasoning that might qualify as some form of general theory, at least within a specific sub-community. If papers are rejected for lack of rigor, then the same should apply for lack of generalization. The degree of rigor required should be tempered in relation to the degree of generalization attempted. The more generalization, the less rigor would be expected. Lee and Baskerville (2003) make a welcome attempt to place the topic of generalization on the agenda of serious discussion. They diagnose certain limits of statistical generalizability and propose a framework of different types of generalizability. Hopefully their proposal will spark further debate on this important topic.

We believe that a new genre of papers should be encouraged, which takes a major block of specific studies and molds them into a larger theoretical framework. There are examples of this kind of work (e.g., Zmud 1979; Ives *et al.* 1980), but they are far too few. Of course, engaging in such work not only requires considerable effort, but also typically leads to papers that are longer and conceptual rather than empirical in nature. Most journals have page limitations that specifically militate against such efforts. Thus in encouraging these new papers, journal editors would have to revise their editorial policies in the following ways. (1) Engage sympathetic Associate Editors and reviewers to broaden their view about what types of papers are acceptable to their journals; (2) set different and realistic new page limitations for such papers; and (3) revise the scope and aims of their journals to reflect the broader focus. (See section 6.4 for additional suggested changes to the field’s institutional publication practices.) For the sake of completeness, we do need to mention that a number of books exist such as Checkland (1981), Checkland and Scholes (1990) and Walsham (1993), which offer good generalizations drawn from action research and detailed field studies respectively.

(3.) Rigor: what does it mean? A dictionary definition of rigor typically uses terms such as “severity, sternness, strictness, stringency, harshness” to describe its nature.²⁰ In academic research, the term rigor has become the touchstone for quality and scholarship. “If it isn’t rigorous, it isn’t scholarly. If it isn’t rigorous, it shouldn’t be published.” Rigor seems to have

²⁰ For some interpretivist researchers, such notions of rigor seem totally understandable as that is the way their research often seems to be treated by reviewers, i.e., harshly!

taken on a life of its own in academic research. Rigor is usually manifested in research through Greek symbols, mathematical formulas, number of experimental controls and conforming to the standards of the best research the community of scholars interprets it has done so far. Typically, this means applying the hypothetico-deductive method – the accepted method of science. Such a view of rigor however, excludes other forms of scholarly research that do not subscribe to such positivist standards.²¹

We contend that there are many scholarly vehicles for knowledge creation and they need to be recognized as rigorous as long as they employ sound forms of reasoning and evidence giving. Indeed, we believe that any knowledge claim emanating from research should be scrutinized using a sound reasoning process. This might embrace Habermas' (1984) notion of the 'force of the better argument' where competing knowledge claims are evaluated, and the knowledge claim based on the better reasoning, arguments, and evidence is judged as 'accepted.' Such a process can be used to evaluate interpretive as well as positivist research even though interpretive research is considered inherently more difficult to be 'evaluated objectively,' because the community consensus about its standards have not yet solidified. Nevertheless, it can be done. An objective evaluation would typically involve considering three aspects of the research: intelligibility, novelty and believability. Intelligibility relates to how well the research approach and results are comprehensible, i.e., how closely others can follow them with similar qualifications and how much effort they have to expend to absorb them in the sense of making the new knowledge a part of their mind set. Novelty can be judged in at least three ways: (1) by the amount of new insight added; (2) by the significance of the research reported in terms of the implications it has for seeing important matters in a new light and/or provide a new way of thinking about the phenomenon under study; and (3) by the completeness and coherence of the research report(s). Can the author provide an overall picture so that its components link up to each other without major holes in the picture that is being painted? Believability, on the other hand, relates to how well the research arguments make sense in light of our total knowledge. The key question for believability is how well the research in method and results fits with other ideas and arguments that are taken for granted within the current state of knowledge. A first measure of this is the number of references with which it is consistent (or which it challenges). This is based on Quine's idea that the current state of research forms a web of beliefs that is only sparsely connected to "hard" evidence (Quine 1970). New research inevitably challenges a part of the web of beliefs introducing inconsistencies suggesting that some parts of the knowledge web need to be reformulated if not discarded. References provide the links to those part of the belief web with which the new research is consistent. In this way, the references connect the new research to other parts of the belief web that so far had not been considered as pertinent. In this way knowledge is updated and restructured by a bump and shift process. Another useful image of the state of knowledge is the fact net and its proliferation in the sense of Churchman (1971). The more references are challenged, the less believable, but potentially the more significant is the research. For believability, each author must demonstrate how his research "fixes" the net of our knowledge. If the research "takes out" certain parts of the knowledge net, the author must reconnect the loose parts. Often this requires relating to some forgotten or remote parts of the web of belief (which may be the domain of some other research community). By bringing in more references from other areas, authors can often successfully challenge major parts of a local (within one discipline) web of belief.

²¹ The fact that IS is struggling with the issue of rigor should come as no surprise. It is an issue that has been debated in most disciplines, often without any consensus being reached. In sociology, for example, rigor is thought to embrace six elements: (1) properly theorized question; (2) clearly defined concepts; (3) method appropriate to the question and to the context; (4) good technique involving careful execution; (5) subjected to attempts to 'disconfirmation'; and (6) open to checking (not replication) (Castleman, 2000).

For sociological reasons, intelligibility and believability are inextricably linked and together are often inversely related to the degree of novelty in the following way. The more radical a new idea is the more difficult it is to explain and comprehend and the more evidence is required to make it believable. Alas the newer an idea is, the less “hard” evidence is usually available to support it. Moreover, anything that is difficult to explain tends to be less believable than what is “clear and simple.” In addition, there often exists an attitude in management circles that truth is recognized by its clear and simple formulation, which contrasts with attitudes in physics and engineering (e.g., Einstein’s theory of relativity or particle theory is neither clear nor simple for most people, yet believed to be useful by most). Ultimately they are a measure of what the research community terms “the validity of the research.” Although all research projects must produce results that are intelligible, novel and believable for the community of scholars to label them a contribution to the state of knowledge, the criteria are perhaps more subjective in interpretive research projects. To this end, Klein and Myers (1999) offer assistance. They present a set of criteria on how to judge knowledge claims generated from interpretivist research. We feel this is critically important for the IS discipline because interpretivist research can often offer better insights for practice than its counterpart. Interpretive research is typically descriptive and explanatory, hence practitioners can usually better relate to it as the research is closer to practice, involves actual case studies, involves real people in real situations, and is undertaken in real world settings. They talk about the results offering new insights, and the results are more translatable into the ways people actually work in organizations. However, interpretive research is not prescriptive. It is typically weak in providing clear normative advice on what to do or how to improve matters in practice. Therefore, it is doubtful that interpretive research as practiced today is any more relevant for management and practitioners than its counterpart, especially if one considers its normative value. So why then has it gained in popularity in the IS research community? This leads us to the issue of internal relevancy.

(4.) Relevancy but for whom? From the internal perspective of the IS research community, stakeholders from within academia are equally or even more important than external stakeholders, because they control the advancement of IS researchers and the field as a whole more than anything else. Fact is, much IS research is done with an eye to other academics – academics from other departments in the business school and other faculties on campus. These communities, often at odds with each other, may have entirely different sets of goals and expectations for IS. Even if they share the applied focus of IS (like the other management disciplines), that does not mean that marketing, finance, management, operations management have consistent expectations for their IS colleagues. Hence there is continuing pull on IS academics to make their research and teaching useful for others, i.e., to serve the interests of too many masters. These pressures can be especially strong for junior IS faculty if they know that their tenure committees are dominated by non-IS faculty. They need to strike alliances lest they do not perish even if they publish.

Beyond this, many of the disciplines on campus are not applied, and see applied research as ‘unacademic’ and hence not valued. And if such work is not valued, this poses a problem for the IS academic whose rewards (tenure and promotion) and punishments (failed tenure and promotion cases, rejected research proposals) heavily depend on other academic groupings. IS academics can ill afford to ignore what these groups consider to be relevant. Many IS researchers have succumbed to this pressure by undertaking highly theoretical work, which is relevant not only for the broader university community but for IS academics themselves.

Whilst such a strategy has helped make IS an arguably accepted discipline,²² it has done so at the expense of practitioner relevancy.

In fact, the strategy has led to the rather dubious condition of what might be termed 'the vicious cycle' of academic research. Many academics with an applied perspective feel caught in this particularly unflattering condition. In the traditional or 'virtuous' model of research, the purpose of research is to generate knowledge. The model starts out with a problem, which leads to research, which in turn leads to knowledge, which in turn informs practice, which in turn encounters new problems, which starts the whole cycle over again. In the vicious version of this cycle model, the purpose gets distorted to one where a research problem leads to research, which leads to new research problems, which leads to research, which leads to more research problems and on without end. The feedback control loop to practice has been lost entirely; research remains entirely in the ivory tower.²³

Summary of Communication Deficits

To summarize, there are many different recipients of IS research, each with their own particular interests and views of what relevance means. Our diagnosis of the current state of the IS discipline leads us to recognize a double communication deficit. Internally, this deficit manifests itself in structural fragmentation with a lack of discipline-wide discourse, or even worse, the undermining of the motivation to engage in such discourse. This diagnosis should not be confused with the argument for a single paradigm or disciplinary unification. Such singularity of focus is dangerous, because it tends to lead to rigidity and dogmatism. Rather, we argue that pluralism needs to be accompanied by interaction to translate the most important insights from different research approaches and interests into a language that most IS researchers can understand so that each specialty can contribute its key results to a living core BoK.

The second communication deficit affects the field's relationships with its external stakeholders. It surfaces as doubts about the relevance of IS research and the superficial diagnosis that currently, IS research *de facto* has pursued relevance more in the context of relevance for academic communities. This is superficial, because the real causes for the perceived lack of relevance – at least as we see them – are the disconnects between IS research and the external stakeholders: practitioners, executives, and ultimately political leaders and their constituencies supplying the financial support for university research and teaching. We note that a better understanding of the relationship between IS and the senior management of profit and non-profit organizations may take on a larger role than in the past, thereby leading to refocusing research and curricula on methods and contents that cannot easily be outsourced. The solution cannot be more java programming and ERP software skills, but a focus on managerial problems and expectations. The consideration of these matters needs to become a two-way street that is mediated through discourses in boundary spanning that involve social knowledge creation and transformation networks. If we fail to establish such interaction networks, the field could slip ever deeper into a crisis, if it has not already started to do so. We in the discipline need to broaden our notion of relevancy to

²² We are, of course, aware that not everyone would agree with this view, but we will have to leave that discussion for another time.

²³ This description is not to imply that each research publication must immediately inform practice. Hence it is compatible with the first and fruitful version of this cycle that IS research stimulates other research, as long as some of it is eventually translated into ever more applicable results via different research specializations including consultants and textbook writers. We refer to this as the "social network view of knowledge creation, transformation and diffusion".

include other groups who use or could use the knowledge generated by IS research.

From Diagnosis to Therapy

To better understand the forces that affect the ever changing IS research directions and priorities, we need research on how all the various stakeholder groups come to understand IS and how they form their perceptions about the proper role of IS as an academic discipline. This certainly includes, but it is not limited to, the need for understanding the interaction patterns among business unit management among themselves and with senior executives in industry (and not-for-profit organizations). And if there is a mismatch between what business unit managers and senior executives see as the role of IS, then hopefully IS research can contribute persuasive arguments so that all parties reconsider their positions with a view to communicatively address the mismatch. Fundamentally, we must extend our notion of relevancy to include stakeholders other than just IS practitioners and management, and from this it follows that IS research will have to deal with a much broader set of values than the proverbial bottom line. To some extent, this has happened earlier under the banner of the participation and quality of work life debate in ISD. However, these classical debates about the values that should drive ISD and IS use still adhere to a view of values, which is too limited.

Future research on relevancy will have to consider the general relationships between values and the meaning of human action in all walks of life, given that computers have penetrated even the private sphere as never before. If we follow the pointers of recent philosophical debates, perhaps interpretive research (*ceteris paribus*) is the preferred methodology for improving the communicative rationality of our work. Interpretivism is closer to the reference disciplines that deal with human sense-making and understanding: language theories (in particular speech act theory), social anthropology, philosophy and history. While these have recently gained increasing influence on the IS research community, most interpretive research has had a rather narrow focus. Typically, it has dealt with specific cases and thereby improved our appreciation of practice. It needs to broaden its focus to look at discipline-wide communication gaps of strategic importance. This could significantly strengthen the communicative functions of the IS discipline just as the empirical-analytical methods of engineering contributed to advancing the effectiveness and efficiency of IT applications to support the instrumental and strategic imperatives of purposive rationality. With these considerations, we have already moved from diagnosis to the issue of possible corrective action, the topic of the next section.

Where Do We Go From Here: Addressing the Communication Deficit through the Development a Body of Knowledge in Information Systems

We have outlined a number of internal and external problems that by themselves may go unnoticed in the short run. However, in the context of global outsourcing and the commoditization trends of market economies, they take on the nature of a serious threat that appears beyond the control of IS – a small cogwheel in the large scale evolutionary pattern of Western societies. Is there something that IS can do to influence the course of these evolutionary patterns that will improve chances for its continued viability and legitimacy?

While there can be no guarantees, we feel our prior analysis points to one major piece of

advice: the need to strengthen the communicative functions of our research and teaching programs. By strengthening these functions internally, many different voices will contribute to a few major themes (paradigms). By strengthening them externally, IS contributions will be better perceived and understood. We suggest that two avenues need to be concurrently pursued. First, we need to build motivated and committed institutional arrangements to better integrate IS to its societal support base. The support base includes all of those whose daily work can and should benefit from IS research, including: consultants, teachers at vocational schools, text book writers, industry trainers and many others, ultimately including the highest levels of decision makers in industry and government. As this is taken up elsewhere (Klein and Lyytinen 2003), we shall focus in this paper on the second avenue – the intellectual side of improving the communicative function of IS as a field, i.e., the sense-making, meaning creations, and negotiations among ourselves. One side of this issue is *linguistic*. The IS specialization has come to such a point that we can no longer understand each other – the Tower of Babel syndrome. Others have pinpointed this too (*cf.* Benbasat and Zmud 1999). The other side relates to *content*. But before we spend any effort on developing an appropriate set of core concepts that can help to overcome the Tower of Babel syndrome, we need the *content* that all feel is worth expressing to stimulate more discourse across the adhococracy.

To address this issue we need a rallying point across all IS sub-specialties, something that all feel is important to strive for. We do not advocate a drastic restructuring or reformulation of all research programs. Rather adding something that lends a communicative dimension to what all in the field are doing, including those members of the discipline whose primary research interests relate to the goal of improving technical, purposive rationality. We propose that a discipline wide focus on a properly structured, core body of knowledge (BoK) could provide this rallying point. Moreover, a broad base discussion on what to include and how to structure and code such a BoK would create the key terms of a shared, continuously extended language as well. Clearly, if everyone is committed to contributing something that our external stakeholders find useful, then we should be able to say which subset of our specialty knowledge is intended for that purpose. This will then be proposed for the core BoK. Such a professionally oriented core BoK would then also be an important vehicle around which KCTNs can coalesce and would help external stakeholders to better perceive the identity and value add of our field.

Therefore, in this section, we wish to expand on the concept and need for such a core BoK. In order to keep this section within reasonable bounds, we shall focus on a possible framework for structuring the knowledge needed by members of the IS community. We do this in the spirit of providing a first cut into what will hopefully become a discipline – wide debate.

The importance and possibility for a professional BoK for IS as a whole

The specification of a discipline wide BoK is a challenge that to the best of our knowledge has proved largely elusive.²⁴ Even established classical disciplines like mathematics,

²⁴ There have been a number of undergraduate and post-graduate IS curriculum proposals (*cf.* ACM 1968, 1979; Couger 1973; Nunamaker *et al.* 1982, Buckingham *et al.* 1987; Gorgone *et al.* 1994; Couger *et al.*, 1997) which have offered, often implicitly, a description of the general types of knowledge that IS professionals supposedly need. But such knowledge has traditionally been translated into subject areas (e.g., telecommunications, IS management) that an IS student should know and certain skills (e.g., data base design, java programming) that the student should have mastery of. Nor was there much consideration of an IS professional body of knowledge.

physics, accounting, and medicine struggle with this continuously. In order to tie attempts at generalizations to the nuts and bolts of specialized research results, it is necessary to capture the interplay between specific knowledge fragments and alternative frameworks that are more speculative but able to relate the fragments in a meaningful way across sub-disciplines. We have reached the conclusion that defining a theoretically appealing, yet practically relevant, action – oriented body of knowledge could provide a type of “Rosetta Stone” for IS as an applied discipline. It also closely relates to better understanding the core competencies of IS specialists and to advancing the identity of IS as a discipline among its fragmented membership. Institutions like AIS and ICIS need a shared worldview that is flexible and built from the ground up. They need to draw on a community that shares meaningful visions and stands for more than a coalition of loosely aligned interest groups, yet engages in vigorous debate rather than submits to fallacious consensus through “group-think.” In this paper we offer some thoughts on how such a BoK might proceed. (This is based on the ideas presented in livari *et al.* 2003).

In order to define the body of knowledge for the IS discipline as a whole, we need to proceed from several specific bases, i.e., we should begin with specifying the BoK of one of the more mature IS sub-specializations.²⁵ Only after we better understand the BoK of several core specializations can we hope to join these to a central BoK. To the best of our knowledge, no IS sub-specialization has defined its BoK to date. Thus, we looked to the oldest sub-specialization that once defined the core of the IS discipline during its emergence in the late sixties and early seventies, i.e., information systems development. We felt encouraged to do this because of significant prior work in ISD, which has aimed at synthesizing the vast extant literature on the subject (*cf.* Hirschheim and Klein 1989; Hirschheim, *et al.* 1995, 1996; livari *et al.* 1998, 2000; and Klein and Hirschheim 1992, 2001). We believe that the literature on ISD could provide an exemplary test case for defining the BoK in other sub-specialization such as DSS, CSCW, Knowledge Management, Information Systems Planning, etc. Proceeding to a shared understanding of the BoK of IS as a whole is, of course, even more complex than focusing on the BoK of IS sub-specializations.

A possible starting point for identifying the distinguishing characteristics of the BoK in ISD is the discussion about defining the BoK of professional software engineers. Such a discussion can be found in SWEBOK (2000), a joint project of the ACM and IEEE Computer Society on a software engineering BoK. An analysis of the ten knowledge areas listed in SWEBOK (2000)²⁶ shows that they do not include any knowledge about applications (see also Denning *et al.* 1989). The software engineering process, on the other hand, is extensively addressed. According to livari *et al.* (2003) there are five specific knowledge areas in ISD: *technical knowledge*, *application domain* (i.e., business function) *knowledge*, *organizational knowledge*, *application knowledge*,²⁷ and *ISD process knowledge*.²⁸ Further, ISD process

We believe the knowledge areas in IS are broader than the ones articulated in the many undergraduate and graduate curriculum proposals.

²⁵ Of course a potentially thorny question is what are the IS sub-specializations and where would such a listing of them come from? Special Interest Groups (SIGs) might be one way to distinguish various sub-specializations. Swanson and Ramiller (1993) categorization of research topics in IS may be another.

²⁶ The SWEBOK knowledge areas are: Software configuration management, software construction, software design, software engineering infrastructure, software engineering management, software engineering process, software evaluation and maintenance, software quality analysis, software requirements analysis and software testing.

²⁷ Application knowledge as used in livari *et al.* (2003) refers the knowledge of typical application which is knowledge about software applications in a given application domain. It involves the knowledge about typical applications, their structure, their functionality, behavior and use with a view to identify the possibilities to support

knowledge is broken down into four distinctive competencies that IS experts are suggested to possess: (1) *aligning IT artifacts* (IS applications and other software products) with the organizational and social context in which the artifacts are to be used, and with the needs of people who are to use the system as identified through the process of (2) *user requirements construction*, including engineering, analysis, elicitation and specification.²⁹ The third area of process knowledge is (3) *organizational implementation* from which (4) *the evaluation/assessment* of these artifacts and related changes is factored out, (We make a distinction between the first two because organizational alignment and user requirements construction may be quite distinct activities, for example in an ISD project involving business process redesign or reengineering.) These competences are virtually ignored or at best weakly taken into account in the ten knowledge areas of SWEBOK.

Further details of our proposal for a possible description of the applied BoK in ISD are beyond the scope of this paper but see livari *et al.* (2003). Nevertheless, the prospects are encouraging in that it appears possible to present a specific proposal for defining the body of knowledge of a particular sub-specialization (like ISD) in the space of a single journal paper (albeit a long paper). Hence, it would be possible to construct one set of proposals for identifying the body of knowledge for several sub-specializations in a number of journal papers. Clearly, one needs two or three such proposals for each sub-specialization, as defining the relevant BoK is very likely to be controversial even within a specific sub-specialization. However, without any documentation of the body of knowledge, no matter how tentative and controversial, we cannot even begin a discussion on what constitutes relevant knowledge, let alone work toward some consensus. The reason for this is that the relevant BoK is very widely dispersed over many books, journals, etc. and hence difficult to find and even more difficult to retrieve. We therefore have reached the conclusion that access to systematically conceived, but concise descriptions of the BoK for at least a few major areas of specialization could lift the discourse on the state of knowledge in the IS research community to a new level for both the internal and external constituencies. To initiate this discussion, it does not matter if the first specifications of the BoK are very controversial. As the critical discussion of these initial specifications proceeds, it will be possible to work toward ever broader (and updateable) practice-oriented BoK specifications that at any given time will embrace much (though never all) of what is accepted wisdom in IS, similar to the clinical literature in medicine or law.

Building and reflecting on this work, we now wish to speculate on what might be appropriate high level umbrella categories that could organize the more detailed core knowledge of IS specialties other than ISD. Clearly these cannot be derived from looking at the ISD literature, but need a more general conceptual base. Perhaps the philosophical theory of knowledge, which is broader than the philosophy of science, is the preferred place to look for inspiration on the most general knowledge typologies.

user tasks with IT. This is different from applicative knowledge which emerges from applying theories and abstract principles to solve practical problems in a creative way, as defined earlier.

²⁸ These knowledge areas correspond closely to the knowledge areas identified by Vitalari (1985): application domain knowledge is compatible with his "functional domain knowledge," application knowledge to his "application domain knowledge," organizational knowledge to his "organizational specific knowledge," and ISD process knowledge to his "knowledge of methods and techniques".

²⁹ The term "requirements construction" was coined by Flynn and Jazi (1998). This term like "requirements engineering" implies that requirements are not out there to be gathered and analyzed, but that they are socially constructed. We prefer "requirements construction" because it does not imply a specific engineering paradigm.

Four knowledge types

In this paper, it is of course impossible to do justice to the issue of 'knowledge' given the voluminous literature on the subject. Instead, our discussion of knowledge is based, in large part, on our understanding of the philosophy of knowledge, and in particular, the writings of classic philosophers/social scientists such as Aristotle, Kant, Gadamer and Habermas who had much to say about the theory of knowledge.

From the perspective of the philosophy of knowledge, it is logical to structure knowledge into four types: *technical knowledge*, *normative (ethical) knowledge*, *theoretical knowledge of an explanatory-descriptive-predictive nature*, and *applicative knowledge that is practical and action oriented*.

Technical knowledge deals with specific 'rules of skill' or technique which is ostensibly the knowledge needed to carry out specified operations to achieve a more or less well-defined end product. It typically improves purposive-rational action. *Technical knowledge* appears to be a good label for this, because it retains the root of Aristotle's use of the term "techne" and points to our earlier claim that such knowledge is often packaged as a commodity as part and parcel of technical turn-key solutions. *Ethical knowledge* involves the moral value choices to be made between competing alternatives. It includes both ethical theories and cases in which a choice has to be made by applying sometimes conflicting principles of ethical theories. We do not expect that these two knowledge types will cause much controversy, but they are insufficient. Two more knowledge components are highly relevant for research, teaching and practice. The first of these is also widely accepted, but much more difficult to capture because it is very abstract. It is *theoretical knowledge*. This type of knowledge focuses on articulated understanding, including the understanding of the consequences of one's research for action (as exemplified in the classic Oppenheimer nuclear energy case), the potential of predictions and hypothesis formation through various modes of inference, and last, but not least, conceptual frameworks that help to organize large bodies of knowledge. It covers everything from testable hypotheses and models (such as the TAM – Davis, 1989, or Lucas' 1975 classical IS failure framework) via very general social theories and frameworks to paradigms, as have more recently have been introduced in IS research. Examples of *theoretical knowledge* are Giddens' (1984) Structuration Theory and Latour's (1987, 1999) Actor Network Theory, or the paradigm knowledge elaborated in Chua (1986), Hirschheim and Klein (1989), and Iivari *et al.* (1998).³⁰ In spite of its diffuse and abstract nature, we expect that it can be imported from the current IS literature with some modifications.

The fourth important knowledge component is the kind of knowledge that is required in dealing with everyday problem solving, which includes getting along with people at work (e.g., management and office politics) and in one's personal life. No commonly understood word exists for this kind of knowledge in our everyday language except that it is often referred to as "wisdom" or simply "seasoned experience." Kant (1964, p. 27) referred to important parts of it as "imperatives of prudence" or "counsels of prudence" (contrasting them with imperatives of skill and command of morality). In the contemporary philosophical literature, this type of knowledge has been labeled applicative knowledge or simply practical

³⁰ In principle, *theoretical knowledge* could also be defined to include reasoning with ethical theories, but because values and ethical issues in modernity have often been banned from the cognitive realm, it is appropriate to recognize the special status of *ethical knowledge* by listing it separately to emphasize its equal significance and role along with other types of knowledge.

knowledge, because it captures an important aspect of what we mean by saying that someone possesses good practical common sense.

Application or practical knowledge does not mean to neglect theory. Rather it is concerned with a special type of knowledge beyond theoretical knowledge that is required to apply theoretical knowledge to specific circumstances, similar to the way a judge has to interpret the law to solve a court case in litigation. It may be thought of as common sense. To connote the full meaning of practical knowledge with its Aristotelian connection, we prefer to call it *applicative knowledge* with reference to Gadamer (1975, p.275) and Habermas (1988, p.163).³¹ Some further discussion of this category is needed to better understand its meaning.

The Special Characteristics of Applicative Knowledge

Freely interpreting Gadamer (1975) and Habermas (1988), we can identify three characteristics in which applicative knowledge differs from the other three types. First, it has a close relationship to a person's identity. It typically takes hard work and painful mistakes to acquire it and therefore becomes part of an individual's personality. It is mostly learned through various forms of apprenticeships, mentoring and the "school of hard knocks." This suggests that applicative knowledge can at least be partially shared among frequently interacting groups, but much of it remains tacit knowledge. As such, it is closely related to personal insight and wisdom. The preferred research approach to make such knowledge visible to outsiders would be hermeneutic field studies (in the form of ethnographies using participatory observations and intensive interviewing, cf. Klein and Myers 1999).

Second, because of the above characteristics, applicative knowledge closely connects to personal emotions and interests. It depends on the whole complex of presuppositions, fundamental beliefs (prejudices) and attitudes that are part and parcel of a person's character. In contrast, technical knowledge is relatively neutral and external to a person's inner core. Insofar as applicative knowledge is acquired from the environment, the process is more one of socialization than cognitive learning even though cognitive, intellectual abilities are important to filter and digest what is acquired through social interaction. This naturally leads to the third characteristic, the holistic nature of applicative knowledge. It cannot be easily split into goals and means, but rather is rooted in the lived experience consisting of work, play, and travel, various forms of symbolic communication and, last but not least, the tradition into which someone is born or into which a person has chosen to integrate when leaving his/her native community.

It is particularly the last characteristic that makes applicative knowledge so critical for achieving mutual understanding and consensus. By relating other cultures to one's own experiences, applicative knowledge allows for cross-cultural dialogue, and by understanding one's place in the tradition in which one lives, it helps to overcome vertical communication barriers, e.g., between government and citizens, between old and young, and in organizations, and between rank and file. Therefore it is not surprising that applicative knowledge is one of the areas of expertise in which successful politicians and managers

³¹ Aristotle called applicative knowledge *phronesis* to refer to political-ethical knowledge and distinguish it from *episteme* (theoretical knowledge) and *techne*. We referred to *techne* (the etymological root of technique) as rules of skill and technical knowledge. Modern science tends to include some application knowledge with its teaching of theory (and with this introduces a technical attitude towards theories), whereas Aristotle meant by *episteme* primarily the kind of theoretical contemplation that is not necessarily action oriented, but "pure" thinking or reflection.

excel compared to technical experts or the common person. In summary then, applicative knowledge is a fourth category of knowledge, because it is not simply acquired as a byproduct of learning the other three. Without it, a person would have difficulty benefiting from the theoretical knowledge that he may have learned. Of course, in practice, all four types of knowledge will also inform every action that a person takes, but to differing degrees.

If one accepts the above knowledge classification – at least as a working hypothesis – there is yet another reason why the IS field faces an external communication deficit (in addition to the missing institutional use of KCTNs). We believe that one reason for the so-called relevancy deficit is not so much that our theoretical knowledge is too conceptual or unnecessarily complicated (even though this may also contribute to the deficit) as has been argued by the relevancy vs. rigor debaters, but rather because research into applicative knowledge has been very weak. And even if it were already available, we seem unable to communicate it very well because we lack the social infrastructure of KCTNs.

The problem that this poses for strengthening the external communication function of IS as a field becomes more apparent if we relate the knowledge types to a particular IS specialization. In Figure 1, we attempt such a classification, relating the various knowledge types to information systems development. The four knowledge types are mapped with the four ISD process core competencies (organizational alignment of IT; user requirements construction, organizational implementation, and evaluation/assessment of IT artifacts) possessed by IS specialists and that distinguish them from Software Engineers (this is further discussed in section 5.4). We believe that ISD is a good exemplary specialization to choose, because during its early days, ISD was the principal core area around which IS as an academic discipline coalesced. Even today, ISD is an integral part in most sub-specializations from DSS and groupware, to enterprise systems, to e-commerce and other Internet applications.

ISD Process Core Competency	Types of Knowledge with Examples			
	<i>Technical Knowledge</i>	<i>Ethical Knowledge (insight and wisdom)</i>	<i>Applicative Knowledge</i>	<i>Theoretical Knowledge</i>
(1) organizational alignment of IT	technical IT knowledge	understanding the diversity of demands from different departments	ability to negotiate acceptable alignment criteria	Strategy theories, organization theories
(2) user requirements construction	technical specification	understanding the competing needs of users	ability to develop acceptable ISD requirements criteria	cognitive psychology, sociology, engineering
(3) organizational implementation	technical implementation	understanding values of individuals using IS	ability to develop acceptable implementation criteria	organizational conflict theories
(4) evaluation/assessment of IT artifacts	technical evaluation	understanding competing values/perceptions associated with IS	ability to develop acceptable assessment criteria	cost benefit analysis, managerial accounting

Figure 1: Components of an IS BoK Applied to the ISD Area of Specialization

Using the extensive literature on ISD and relating it to the left side of Figure 1, which was already discussed above, we propose that, in principle, it should be possible to create a BoK for the IS discipline.

However, to create a BoK for the IS discipline in general, two questions immediately surface. (1) What would be the principal procedure for applying the highest level categories of the four knowledge types to other IS specialties? (2) What are the principal gaps in the contents of the four knowledge types?

(1) Presumably, each discipline would ultimately map its contributions to the four knowledge types on the column headings. The table rows would be discipline specific. The collection of all of these matrices would comprise the total IS BoK at least for the consensual core body. This suggests that the IS field (a) define its boundaries, (b) identify all of the processes or tasks that take place within the boundaries, (c) form the matrices and thereby generate the knowledge.

(2) From Figure 1, it is clear that technical and theoretical knowledge exists in abundance for all four areas of ISD process competencies. Yet the same cannot be said about ethical knowledge and applicative knowledge. These types of knowledge are difficult to develop and not abundant. Indeed, we would argue there is a gap in both these knowledge areas as the literature on them is rather sparse (but see Klein and Hirschheim 2001 for one example which addresses ethical knowledge). Thus, the biggest gap in the BoK currently is applicative knowledge.

An essential part of this classification is that all four knowledge types are of equal importance and hence deserve equal respect. Even though they do not submit to the same quality criteria, ultimately all have equally exactingly high quality standards. We emphasize this, because today, pure theoretical knowledge has been devalued to some extent, especially in the practitioner literature. It is, therefore, important to reintroduce the value of pure theorizing, but give applicative knowledge an equal status. Paradoxically, many academic communities devalue applied research oriented toward applicative knowledge. One of our key messages is that these negative attitudes in industry and academia toward certain types of knowledge can and should change. The four types of knowledge may have somewhat differing quality criteria, but ultimately are equal in the level and difficulty of their standards. (Knowledge quality standards is an important special issue, but beyond consideration here.)

Implications for Ethical and Applicative Knowledge

If the above knowledge types are accepted as a valid characterization of the knowledge that should be developed in IS, then a serious gap appears to exist between the types of knowledge that IS researchers attempt to develop and the types of knowledge the field needs. The field has focused almost the entirety of its resources on theoretical and technical knowledge, ignoring ethical and applicative knowledge (although there are some notable exceptions, *cf.* Szajna 1994). The reasons for this are varied, but one obvious remedy is to reallocate some of the field's research resources toward ethical and applicative knowledge. This, of course, raises the question of how could the two under-researched knowledge types (i.e., ethical and applicative) be strengthened in IS. In the case of ethical knowledge, this should be relatively easy because there exists a substantial body of well-conceived textbook and research monographs on ethical theory (e.g., Brandt's 1959 *Ethical Theories*; Rawl's 1971 *Theory of Justice*, and so on). Moreover, there have been some attempts (two of which we were involved in - Hirschheim and Klein, 1994; Klein and Hirschheim 2001) to apply some

of the logic of ethical reasoning to core areas of IS (cf. Mason 1986). Of course, this kind of theoretical knowledge in ethics will have to be supported with appropriate knowledge transfer vehicles. Cases seem to be the most appropriate mechanisms for this³² and Figure 2 provides a classification of the common types of cases available. Given the existing case writing expertise in IS, it should be possible to create a good case base for dealing with ethical knowledge.

However, the matter is much more difficult for applicative knowledge (AK) for reasons that are somewhat different for the two subtypes of AK. The first subtype is the kind of knowledge required to move from recognized theory (assuming good theories do exist) to practice. This kind of applicative knowledge is similar to the insight a judge needs when using a body of law to decide a court case; the engineer when using a mathematically formulated theory to solve a practical design problem; or the physician when diagnosing a patient by applying the state of the art of theoretical medical training. For this kind of applicative knowledge IS could follow the institutionalized models of professional apprenticeships well established in legal articling or medical clinics. The difficulty here is not conceptual, but lies in the lack of an educational tradition that legitimizes the substantial resources needed to transfer these models to IS. Ethnographic field studies and ethnomethodology appear to provide recognized research approaches to track the evolving nature of this type of knowledge.

It is often suggested that cases provide a good vehicle for teaching applicative knowledge. However, while cases are somewhat useful, our analysis of typical textbook case material suggests that they are much more limited than is commonly believed. As is evident from Figure 2, cases are written mostly for researchers or beginners and not for seasoned practitioners. Therefore, we lack a good vehicle to document the AK that should go along with good theories. The conceptual and methodological difficulties arising from the lack of a good elicitation and representation mechanism are even more severe for the second type of AK.

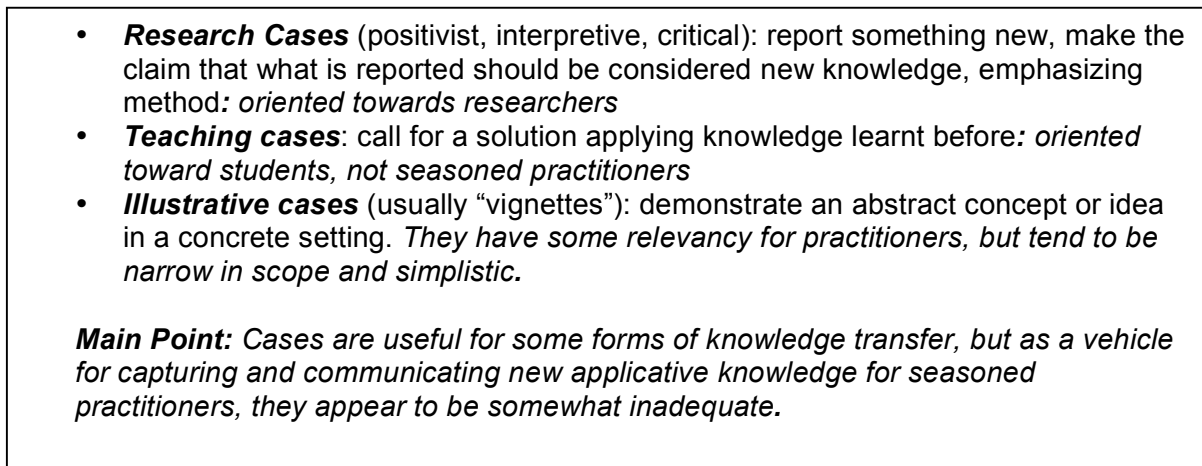


Figure 2. Tentative classification of common types of case reports

³² Whilst cases may well be the most appropriate vehicle, they are not the only one. Role-playing, focus groups, and other team-oriented exercises may also prove valuable knowledge transfer mechanisms.

The second type of AK consists of “pure craftsmanship,” i.e., mostly tacit knowledge for which either no adequate theory exists or which for other, poorly understood reasons, cannot be articulated. A classical example of this type of knowledge is the sculptor or painter who practices his calling (i.e., makes sculptures or paintings) without having studied the medical theory base of anatomy (in sculpting human postures as the Greek statues) or the chemistry of minerals yet can become of master of his craft. Similarly, our ancestors built good ships without the benefit of aerodynamic or hydrodynamic models. Of course, the limits of this kind of knowledge are often less clear than that of theoretical knowledge leading to disaster. For example, the shipbuilders of the VASA overextended their knowledge base under pressure from Sweden’s King and the VASA sank within view of the King’s palace on its maiden voyage.

There are good reasons to believe that an essential part of the practice of IS depends on this kind of “atheoretical” knowledge that tends to be acquired by socialization into a community of practice. (*cf.* Matthiassen 1998). (Maybe software engineers should take the lesson of the VASA case to heart and resist the pressures for constantly overextending the experiential knowledge base of ISD; this might then contribute to getting software development failures under control.) As far as we know, the only known vehicle to acquire applicative knowledge appears to be the master – (talented) student apprenticeship, which typically takes 2 to 4 or more years depending on the craft to be learned.³³ To better understand how such knowledge evolves and how it is *really* passed on in various types of craftsmanship would take new types of research projects. Whereas such projects could build on the currently known stock of research methods, especially interpretive ones, they would likely have to invent substantial adaptations of these methods. Based on the analogy of handicrafts, we are also led to hypothesize that this kind of research would take much longer than most current IS research to come to publication stage. For example, we guess it would take at least 3 years to understand how an apprentice acquires a tradesman level of skill and how tradesmen become recognized masters in their area of expertise. Hence, we reach the conclusion that an essential part of AK will require substantial new research resources and research skills, and a significant reallocation of existing research capacities.

Recommendations

The main body of this paper has been built around the idea that there exist significant communication gaps in the field - both internally and externally – and that these gaps are a serious concern for the future of the field. More pointedly, if we do not address these gaps – and address them soon - we may not have any field to worry about in the future. So the question is: what can we do now?

It seems to us, that we must first look at ourselves, i.e., the IS academic community. In order for our field to become more relevant to its external stakeholders, IS research must become more relevant for ourselves and to become more relevant for ourselves we must strengthen the communicative function of IS research. The internal communication deficit that has been building since the mid 80s weakens our ability to meet evolving legitimate needs of our immediate stakeholders and, we may add at this point, also our societal stakeholders. Except for researchers with a specific interest in social issues or social impacts of computers (*cf.* Kling 1980), the societal stakeholders have so far not played a major role either in mainstream IS research or in this paper. (But we will return to this issue in section 7.)

³³ The European tradition for PhDs is built on this master-student apprenticeship.

In order to overcome the internal communication deficit, both the amount and quality of communication between different IS research schools and subspecialties would have to increase dramatically. This means that we must devote more effort into discipline wide discourse to achieve a better understanding of the differences between us and based on this, work towards more synthesis of ideas and integration of results by building on each others' work. Yet, what is being preached is that IS as a field will become more relevant if it better caters to the interests of our immediate stakeholders, i.e., if it better serves the purposive rational interests of a managerial elite and their masters, the shareholders. IS are primarily seen as instruments of effectiveness and efficiency. The focus on cost cutting, to which offshoring is simply the newest strategy, is an example of what we mean. Thus, substantial external pressures exist to become more externally relevant by putting most of our resources into research that serves externally given, purposive rational ends while neglecting research on the "communicative aspects" of human action and the potential role of IS and IS research to support the communicative side of organizations (and society).

In this section, we shall first outline which resources are primarily under our control that could help to overcome the internal communication deficit. Having clarified this, we shall then ask whether strengthening the internal communication function might help us to meet future challenges that will assign a larger role to IS within the societal information infrastructure.

Information technology has been metaphorically described as the "information highway" implying that the traffic for the highway will come from elsewhere. This is the equivalent of saying that newspapers are just printing machines and distribution channels that deliver contents submitted to them from independent outsiders. Clearly, this is not so. Just as the press combines contents with distribution, so IT will soon come to play a similar role of mixing content and distribution as the press in the societal process of policy debate and social will formation. To some extent, the mixing of content and technology is already happening on the Internet: Browser technologies provide content portals. If so, IT will and should respond to the same policies that, in theory at least, should govern the operation of a democratic press: freedom of inquiry, universal access and an equal chance for the widest possible diversity of opinions to be heard. These are values of communicative rationality which have not been given the attention in mainstream IS research that they deserve because IS research has ignored the importance of discourse in creating and conveying information and knowledge in social settings. Practicing better discourse internally could very well be a good starting point to more external relevance if our prediction is on the mark that IS as part of IT plays an important role in overcoming the communication deficit in modern mass societies (Dahlberg 2000, 2001). For many reasons the press has fallen behind in filling this important societal role which has led to a deterioration of the public sphere (Habermas 1971, 1989, 1993).

So what can we do to address our internal communication deficit? We see five action items the resources of which are primarily under the control of the field. Each of these items addresses an important aspect of the internal communication deficit. Taken together, they could significantly improve the cohesion and cooperation of the different sub-communities that currently make up the fragmented adhocracy from which the field suffers.

- Change our research priorities: Work from paradigms towards broader, more general theories.
- Focus on the viability of a discipline wide core BoK that is not legislated but emerges from consensual negotiation which would contribute to the communicative role of IS

research in two ways. First, the process of identifying and formulating the elements of a discipline wide core BoK, would intensify interactions across specialties; and second, the result would serve as a guide post for a shared orientation.

- Study our stakeholders' "forms of life" to better understand their "being," i.e., their time frames, lifeworlds and expectations. This should include helping them understand the "IS Research World" so as to allow them to form realistic expectations and overcome misconceptions, which underlie some of the current external disconnects as noted in section 3.1.
- Reconsider our institutional communication and publication practices from the perspective how they can support different research priorities, stakeholders, and the negotiation of a core BoK.
- Adopt Knowledge Creation and Transformation Networks (KCTNs) as a new way to disseminate the results of our research, thereby helping to address the field's communication deficit.

Each of these five action items is now discussed in greater detail.

From Paradigms to Generalizations

Our review of the paradigm debate in section 4 illustrated that the discourse on research methodology has risen to a new level of sophistication. Whilst this is generally positive, it does have the undesirable side-effect of adding to an already existing significant communication barrier. The difficulties arise from both new terminology and different epistemological orientations. Both point to new barriers to fostering more and better communication among IS researchers. Just as the statistical-mathematical jargon of positivism is difficult to understand, so too are the new philosophical concepts of interpretivism and critical research (e.g., axial coding, discursive formation, communicative competence, lifeworld colonization, etc.). The way one research specialty expresses its findings and approaches is not in terms understandable and useful to other research specialties. Benbasat and Zmud (1999) called for a translation of specific jargons into more widely understood terms. We agree, but this is only part of the problem. Based on the notion of "dualism in the social sciences," positivism and its counterparts foster very different attitudes of what constitute worthwhile research questions and good methods to explore them. Add this to the complicated jargon and you have a highly charged atmosphere not conducive for "rational discourse." So how can we overcome this?

Certainly, not by dropping the precision of technical vocabularies that are needed in the "trenches" of day-to-day research, but rather by broadening how we think about generalizations. In order to establish the broader meanings of specialized research results, it should be possible, perhaps, to generalize very specific findings from time to time across more than one specialized research contribution, even if the generalization is based on 'insufficient' evidence. Yet the current academic culture of rigor tends to inhibit this – a point that could be addressed by introducing a new category of research papers (see section 6.4 below). In addition, generalization is inherently very difficult: it requires a creative, intellectual leap to see the general behind the specific. Because of these reasons, IS as a whole lacks internal transparency and suffers from the following generalization deficit, which neither positivists nor interpretivists have seriously addressed.

In most papers, generalization is only concerned with abstraction from data to middle-range hypotheses or conjectures. It rarely advances to the building of broad theories that span multiple systems of hypotheses or conjectures as building blocks. Even though the

generalization deficit is a concern that affects all paradigms, positivist, interpretivist and critical alike, it is also largely ignored by all. Without a concerted effort from opinion leaders in some of the major research subcommunities, fragmentation is likely to get worse as subspecialties spawn new sub-communities at a greater rate than older sub-communities die out. To mitigate this trend, more attention needs to be paid to the theoretical side of publications. The current theoretical part of most papers consists of minor theory building blocks (hypotheses usually diagrammed as boxes and arrows) for broader theories of human action and interaction that at best are implied (*cf.* Habermas 1988 for an outline of classical action theories) and at worst do not even exist. The result is a multitude of hypotheses with associated significant tests (or ethnographic insights with associated thick descriptions), which as a whole go nowhere. They go nowhere, because their interconnections do not exist or are at best transparent to the insiders who have to spend an extraordinary amount of time with the literature of a specific sub-community. (An example cogently illustrating this situation is Fjermestad and Hiltz's 1998 cross-tabulation of variables, methods and results of approximately 200 controlled experiments in group support research. Similar indexing work could be done for interpretive research). Add to this the different preferences of what constitutes "good research" and it is easy to see why the findings of one research community are typically not known and valued by another, let alone by researchers from other disciplines or practitioners. We are stuck too much into one corner of the literature and lose sight of the greater, overarching issues. In fact, there is currently little broad-based debate on identifying overarching issues let alone on exploring them. In the following three sections on setting new research priorities and changes in institutional publication practices, we explore how this problem might be addressed.

The Communicative Role and Viability of a Core Body of Knowledge for the Field

It is difficult to see how generalizations and discipline-wide debate can come about by self-organization only without some landmarks to which all can relate. In Computer Science, the *Communications of the ACM* has played such a role for many years and to some extent has continued to do so after the 1993 change in editorial policy. But other, more "action oriented" guideposts are needed for research that will contribute to better communication among IS specializations. One such guidepost could be the project of identifying and reformulating the elements of a core body of knowledge, to which all specializations would contribute their most important findings. This does sound a bit like reinventing the Tower of Babel, but the idea is not for at all to agree on such a BoK as an instrument of defining what good knowledge is. On the contrary, it would be the debate and disagreements about what is and is not good core knowledge that would produce the most important and almost immediate benefits to overcoming the internal communication deficit. As partial agreement emerges, the growing partial BoK would also become a convenient vehicle for addressing the external communication deficit.

While it became apparent in section 5 that defining the relevant BoK for IS would be a very controversial project, we surmise that most would agree that it is important for the field because without *any* agreed body of knowledge, we cannot identify the externally relevant knowledge for IS. Engaging the conceptual, epistemic and practical issues of specifying a recognized body of knowledge in IS provides us with an immense challenge that we all can welcome and by its nature *must be shared*. According to Banville and Landry (1989, p. 54), it is the high strategic task uncertainty that gives us the status of a fragmented adhocracy.³⁴

³⁴ With reference to Whitley (1984a, p. 205-206), Banville and Landry (1989, p. 54) write "strategic task

The BoK could reveal the underlying reasons why strategic task uncertainty exists. Hence, we believe the time is right to consider possible approaches to building a theoretically appealing, and practically relevant, action oriented body of knowledge for the field. Such a BoK should reflect the fact that the field is an applied discipline like law, medicine and engineering and identify the core competencies of IS specialists. It should also help in advancing the identity of IS as a discipline among its fragmented membership. Our IS institutions such as AIS, ICIS and ECIS, need such a shared worldview. Moreover, they need to draw on a community that shares meaningful visions and stands for more than a coalition of loosely aligned interest groups.

However, the project of a core BoK needs to be undertaken with some enlightened policies. On the one hand, a grass-roots debate on the contents and structure of a core BoK is likely to further stimulate the intellectual rigor and flexibility of IS as an academic discipline rather than robbing it of its pluralism. Discussing the contents and format of a practically relevant BoK would surface many fundamental issues about methodology and substance. On the other hand, with the creation of a shared BoK comes the worry that the community's efforts might shift from research to institutionalization. Once a certain BoK becomes officially "approved" by the professional institution, the usual bureaucratic dysfunctions are likely to emerge. Powerful interests gain a stake in the status quo and hence criticism and revision of the accepted BoK could begin to suffer from myopic politicization. This would endanger the pluralistic debate about the nature of knowledge and preferred research methods, which has recently stimulated many interesting contributions to the IS literature. The thriving methodological diversity is one of the distinguishing features of IS as a field from Software Engineering which has a more narrow research perspective. The true mark of intellectual penetration and vigorous research is the ability to function with dualistic, contradictory conceptualizations and fragmentary understandings. In contrast, professional bodies view fundamental criticism and dialectical debate as confusing the public and hence as threatening their status and recognition. They are, therefore, often inclined to decide epistemic issues by political fiat, which forces premature closure to what is better left to free and open debates. We hope that most researchers in the field will treat any such moves towards the institutionalization of professionalization with healthy skepticism.³⁵ Whilst in principle it may be possible to define and structure a professional body of knowledge for IS as a whole, we are practically nowhere near achieving it.

So where should we as IS researchers direct our limited resources? We suggest that IS researchers ought to focus their efforts on alternative structures and coding schemes³⁶ for a discipline wide BoK. On the other hand, some community resources should be devoted to exploring the issues of professionalization on a broad scale so that IS as a field will be prepared to contribute and respond to professionalization initiatives in related disciplines. Next, as the core BoK should explicitly identify externally relevant knowledge (but not be limited to such knowledge), we must gain a better understanding of what kind of knowledge

uncertainty is low when members of the field agree on a hierarchy of research problems, when there is a tight control over research goals and minimal local autonomy in the formulation of research problems and significance standards. Conversely, a high strategic task uncertainty is associated with the presence of loosely coupled schools of thought."

³⁵ We note that the AIS appears to have already begun exploring professionalization through its formal participation in professional standards committee meeting in related associations such as ACM and IEEE where there are discussions on-going about an IS specialization. . As long as this serves the purpose of knowledge and experience transfer, this is no doubt fruitful. Sooner or later professionalization is likely to transform itself from its rather inconspicuous existence of today to become one of the key concerns of the field in the future.

³⁶ As suggested earlier, how to code the available knowledge in an action oriented format is far from clear. For example, it still is not clear what the role of cases is versus abstract knowledge in packing knowledge for practice.

might be useful for external stakeholders. It would be a rather myopic view that this will be primarily instrumental knowledge to fix given problems. Applying DiMaggio's (1995) view of theories to knowledge, we see knowledge not only helping to predict and control, but also enlightening. It tells us a story (with a lesson or moral to be learned) and describes the complex world in which we live thereby helping us to find our way just as maps help us to plan a trip. This would permit fairly broad frameworks into the relevant BoK because they serve to organize large bodies of detailed concepts and facts.

Understanding our Organizational Stakeholders: a new research priority?

In contrast to the broad view of knowledge as advocated in this paper, which includes reflection and critique, practitioners often insist that IS researchers should be in constant touch with industry to address the problems truly relevant to them. This attitude can be framed in the following question: "Should practice lead research or research lead practice?" This question tends to put IS researchers on the defensive but this doesn't have to be the case.

First we cannot make our research more relevant for external interests, unless we understand their ways of thinking and doing. It is essentially an ethnographic-hermeneutic issue of interpreting meanings across the dividing lines in modern societies. It is surprising how little emphasis this line of inquiry has received probably because of the fallacious assumptions that our business or economic degrees are sufficient to "read" the needs of our managerial stakeholders (in the case of IS in 3rd and 4th world cultures, this question did receive more attention). By trying to understand how our external stakeholders work and live, we do not unduly cater to them or become dependent on them, but, of course, we cannot understand them unless "they" let us into their forms of life.

There is the possibility that undue influence from industry could result from vested interests or myopic fads shaping short-term industry practices. Thus, in order to make research agendas responsive to practice without becoming controlled by undue influence, we need to distinguish between two types of research questions. *Type one* are timely issues, which are topic-of-the-day research issues. *Type two* are timeless issues which are recurring questions and dilemmas that have emerged over time and continue to be problematic. Undoubtedly, practice is often in a better position to lead research when it comes to type one. It is here, where research on the "appreciation of practice" as earlier discussed is indispensable. Often timeliness is of utmost importance for such research because the half-life of the issues tends to be relatively short. Having papers under review and successive author revisions for 1 to 4 years is simply inappropriate for type one problems. This kind of research also contributes to better understanding the needs of the ultimate "customers" for our research. The premier academic journals primarily deal only with the internal audience of IS researchers. They largely ignore other customers such as different classes of practitioners (including the ideal of the "reflective" practitioner), applied researchers like consultants, researchers in other disciplines, administrators, and students including undergraduates, MBAs, Executive MBAs and PhDs. Reproducing and reflecting the management buzzwords or technological silver bullet of the day do not satisfy the needs of many of these customers. Considering *all* our different customers will require type two IS research.

While *type two research* also depend on studying practices, the time scale is much longer, measured in years rather than months. In fact, these issues have a timeless quality to them. An example might be what has been learnt from different approaches to IS planning or how the role and forms of user participation have changed over time with regard to changes in

methods and tools of ISD, and increased user understanding of IT. Another example of a type two research problem is how to measure IS success as IT capabilities increase. There is a danger that earlier lessons are forgotten and the wheel is reinvented continuously as each of these questions keeps reappearing in slightly different forms. For type two research questions, academia is often in a better position to lead practice. However, an unresolved issue in this context is how we can better stimulate and validate such research. Peer reviewing is extremely difficult here because one cannot judge the quality of this type of applied research easily for several reasons. First, the practicality of research would ultimately have to be established by industry use of the results and these may take years to become visible. Second, this kind of research requires funding over extended periods including dissemination of results over industry-friendly channels and tracking the effects on professional practices. It is likely to be difficult to attract funding for this type of research given that it does not count as new knowledge in the traditional sense, yet would be perceived as being very risky, with uncertain payoffs. Nevertheless, it is one important category contributing to “applicative knowledge” and exists in other disciplines like medicine and civil engineering. If it were to take hold, the resulting interactions would also address the external communication gaps.

It would be unrealistic to believe that the above research priorities have any chance to be considered on a broad scale unless we make some changes to the practices by which research output is filtered for publication and distributed. We take up these two points in sections 6.4 and 6.5.

Required Changes in Institutional Publication Practices

With the previous points in mind we reached the conclusion that IS research needs to advance on two fronts. First it needs to target research on better understanding its external constituencies - who they are, what they want and what they need (which may not be the same). This in turn might then also lead to advancement on the second front, *viz.* providing the motivation and direction required for overcoming its internal deficits of relevance and generalization. To this end some of the academic “conventions of truth construction” would have to change in that the current publication game places insufficient emphasis on providing generalizations and conclusions of broad interest and how they might contribute to the core of a shared BoK reaching beyond specific IS specializations. Only if these issues are addressed effectively will the vigor of IS research yield the benefits that are commensurate with the efforts expended.

To achieve all of this, the field needs to reform certain institutional practices. First there are content changes some of which can be addressed through special journal issues. We pointed to the need for increasing the amount of research directed at understanding non-IS practitioners and engaging them in a discourse about a realistic set of expectations for what the IS function can and cannot deliver. We also suggested a role of IS research in providing well-articulated arguments to the IS practitioners by which they can state their case to senior management that a thriving IS department is indispensable to organizations along with the other business functions. Perhaps the Texaco case (Hirschheim *et al* 2003) could serve as an example how – through historical case analysis - senior management could be let to reconsider if their expectations for IS departments are realistic or tainted by false assumptions. Second the filtering mechanisms of quality control need to be reconsidered. Our institutional publication practice needs to redefine the concept of “rigor” in research. It should be augmented to include a wide range of scholarly inference and evidence giving on the one hand and tightened on the other to include the linking of detailed models or

hypotheses to more general theory or at least conjectures. This serves the purpose of arriving at expanded categories of knowledge that can communicate across the narrow boundaries of our preferred academic sub-communities. For that purpose all publication venues, in particular the large conferences like AMCIS, ICIS, HICSS, and ECIS and all first tier journals need to provide some visible vehicles (e.g., special sessions, special subsections or issues) for broad syntheses that are interesting and comprehensible to all members of the IS community. Panel discussions have already contributed to this need and tend to be well attended if broadly conceived. What we are suggesting here is the publication of high quality surveys and/or tutorials which everyone in the field can read and understand. In computer science, the journal *ACM Computing Surveys* serves such a purpose. There is, unfortunately, no equivalent in our field although the new section of *MISQ* called *MISQ Review* and *Communications of the AIS* are presently vehicles for this. IS needs more high quality outlets. Additionally, we need more participation in outlets like our online community *ISWorld* to facilitate internal communication amongst ourselves. Vehicles like *ISWorld* could be expanded to include participation of external stakeholders – such as IS practitioners - as well. We also need more historical analyses of the various areas which make up the IS domains. (Actually, the field needs more in-depth historical analyses period.) Moreover, we need to shape the perception of the IS community to truly value such contributions.

In the current situation we seem to have an overabundance of specialty papers for in-group members with the result that the IS community as a whole suffers from serious communication gaps. The current publication culture favoring narrowly focused, highly specialized papers is one of the major impediments to making our research more relevant to practitioners (albeit not the only one, as was pointed out earlier). Specialized research is important because it supplies the building blocks for correcting misconceptions, updating our knowledge and eventually progressing on a broader front, but it has its limitations. To overcome these, we simply must also attempt the difficult and risky, but nevertheless invaluable syntheses that pull together special research results from the various sub-communities into broader analyses of potential interest to practitioner communities. To this end, we have suggested the need for building a broader and practically relevant knowledge base in IS based on defining an action oriented, professional body of knowledge (BoK). Given all of the above, we also need to build new social networks: *Knowledge Creation and Transformation Networks*. They play a special role for disseminating and absorbing the results of the new research community spirit.

Knowledge Creation and Transformation Networks (KCTNs) as a Means of Helping to Overcome the Field's Communication Deficit

We already briefly introduced the notion of KCTNs in section 2 of the paper. Here we return to this notion and suggest why such networks could be critical for overcoming the IS field's internal and external communication deficit. We start by elaborating what KCTNs are.

Klein and Lyytinen (2003) developed the concept of KCTNs by generalizing Baskerville and Myers' (2002) definition of "knowledge creation networks" and adding the notion of transformation. Because the latter paper focuses on the impact of reference disciplines within the IS field they limited their definition to the interactions of scholars between different disciplines:

Rather than conceptualizing the process of knowledge creation as unidirectional (being part of a food chain with IS at one end), we can conceptualize this process as multidirectional. IS scholars along with scholars in other fields can be seen as part of

many knowledge creation networks throughout the world. The focus then shifts to the linkages between the networks. (Baskerville and Myers 2002, p.7)

Baskerville and Myers see knowledge creation networks as operating among reference disciplines. As such, they are primarily of importance for achieving relevance in academic communities, what we have termed 'internal relevance.' This is certainly valuable, but too limited for overcoming the external communication deficit. KCTNs, on the other hand, are broader and span many different communities including IS stakeholders outside of academia. For example, they would include consultants, part time faculty, textbook writers, industry researchers and management. In general, they include all who give feedback to the research process in various ways, thus becoming part of the knowledge 'food chain,' manufacturing the broader knowledge ecology of IS. Practitioners play a major role in this food chain. Examples of transformations in such networks include: repackaging knowledge when teaching courses for students, writing textbooks, drafting questionnaires, and learning from the feedback of different academic and practitioner audiences. Additionally, those participating in field studies or in industry seminars conducted by researchers can significantly affect knowledge transformation. Luftman and Brier (1999), for example, identified alignment enablers and inhibitors from seminar participants. A key aspect of KCTNs is that knowledge produced by some researcher can become relevant to a researcher in another community even though this was unintended by the original researcher. In such a case, the knowledge affects another community and is regarded as a relevant knowledge contribution. This is an aspect of the 'communities of practice' notion and reflects how knowledge is created and legitimized within such communities (Latour 1987; Seely-Brown and Duguid 2000; Carlisle 2002).

If such a view of knowledge creation and exchange is adopted, then we need to abandon how the field currently conceives of research knowledge transmission as a linear, direct link between academia and practitioners. Complex interdependence, circularity, feedback, emergence and other knowledge transformation mechanisms abound when we start examining how IS research knowledge is circulated through different constituencies. We need to investigate empirically how the knowledge translation among these various sub-communities really works along with the resulting "genealogy" of research contributions. For example, even though we often observe that many IS innovations were first conceived in practice, their refinement, generalization and transfer is often a complex social interaction process between multiple communities, in which the IS research community plays a critical role. This type of view assigns a different and but equally useful role for IS academics, which we could term 'scientific hermeneutics': IS scholars act like Hermes—the go-between of the Gods – in understanding, representing and translating some specific forms of knowledge and skills in specific organizational contexts to other constituencies. Academics are often good at abstracting and generalizing ideas that are first put into practice in a limited way but which need of further refinement (*cf.* early database development is a good example). Academic debate is often able to transform a new idea or tools originally conceived in practice into a package of abstract principles and logic, which expands its potential. The academic interpretation then feeds back to the practitioner community, often via consulting firms screening the academic discussion, for the next round of collective learning. Interpreted in this sense, IS research could be proud of what it has done even though its role may have so far been too subtle and needs better showcasing, which in turn could strengthen it further. (For a case example for a well-functioning KCTN in a specific region that greatly benefited from it, see Oinas-Kukkonen *et al.* 2003.) KCTNs could include recurring IS academic-practitioner conferences that are designed to increase the significance of communications between the two groups. There are enough persons of good will in each community to

ensure the success of such an endeavor. This is the sort of bridging that professional societies, in their most enlightened actions, could and should sponsor.

In the future, we need to better understand the factors that nurture relevancy and the ways in which IS research knowledge is circulated within KCTNs. We need to understand what incentives and efforts are needed to produce research that is relevant as well as what incentives can be used to improve IS scholars participation in effective knowledge transformation networks. We must also re-examine what time periods are used to assess the impacts of knowledge transfer processes and changes in recipients' behaviors. We suspect that there is an unrealistic expectation of how quickly knowledge is adopted. Lastly, we should distinguish between intended and unintended transfers, e.g., leaks, serendipity, etc.

Summary and Preview

Table 1 summarizes our five action items and recommendations to help implement them.

Table 1: Summary of Action Items and the Recommendations to Support Them	
IS Action Items	Recommendations
Change research priorities	<ol style="list-style-type: none"> 1. translate specific jargons into more widely understood terms 2. broaden how we conceive of generalizations 3. move from middle-range hypotheses or conjectures to the building of broad theories that span multiple systems of hypotheses or conjectures as building blocks
Develop a discipline wide core BoK	<ol style="list-style-type: none"> 1. engage the conceptual, epistemic and practical issues of specifying a core body of knowledge that is widely shared 2. maintain discussion on controversial knowledge
Understand our Organizational Stakeholders	<ol style="list-style-type: none"> 1. distinguish between two types of research questions: <i>Type one</i> are timely, topic-of-the-day research issues, and <i>type two</i> are timeless, recurring questions and dilemmas that have emerged over years and continue to be problematic 2. let industry lead research in the former, and let research lead industry in the latter
Change Institutional Publication Practices	reform institutional practices so as to (1.) redefine rigor; (2.) encourage papers that offer histories and provide syntheses; (3.) support the development of scholarly tutorials
Develop Knowledge Creation and Transformation Networks	<ol style="list-style-type: none"> 1. build KCTNs that connect IS with reference disciplines, industry and the public sphere of society 2. recognize that both the producers and recipients of research results must expand efforts to communicate new research, the first to make it comprehensible and the latter to interpret and absorb the new knowledge 3. allow for long term evaluation of the potential usefulness of research results

Before concluding this paper, we would be remiss if we did not take advantage of this opportunity to offer some thoughts on the possible direction the field could take. Whilst we have primarily focused on the communication deficit within the internal community, and secondarily, looked at the deficit associated with the external community; we have bounded our analysis at the organizational level. Yet, this leaves out the wider domain of society. In our concluding thoughts, we wish to address this missed external stakeholder group, and speculate on a possible new frontier for the field: Where IS is the information media of the future.

A Possible New Frontier: IS – The Future Information Media?

With the emergence of the Internet, IS entered the arena of a public information media. Eventually it might on par with - if not superior to - print, radio, and TV. Consider the introduction to Dahlberg, (2001):

The Internet's two-way, decentralized communications are seen by many commentators as providing the means by which to extend informal political deliberations. Indeed, a cursory examination of the thousands of diverse conversations taking place everyday online and open to anyone with Internet access seems to indicate the expansion on a global scale of the loose webs of rational-critical discourse that constitute what is known as the public sphere³⁷. However, some commentators argue that online discourse is not presently fulfilling its deliberative potential.

The symptoms why IT in its current form cannot fulfill its “deliberative potential” are not difficult to discern. Most websites are developed to support purposive rational actions: to facilitate the buying and selling of products. It inundates the casual browser with advertising that is often manipulative, offensive and intrusive, while at the same time collecting personal information which is subsequently used for spamming. Few resources appear to be devoted to building cyber forum prototypes that have the potential for becoming institutions supporting “rational-critical discourse” and informative debates among large numbers of participants as had been the case in the 18th and 19th century when democracies and free enterprise became established in most parts of the Western hemisphere. An informed public opinion that cannot be ignored or easily manipulated by the leaders of government and big business is an essential prerequisite for the continued strength of Western democracies. Such an informed public depends on the social institutions of a ‘public sphere’ which in recent times has substantially deteriorated.

Today, the public sphere in the political realm consists of the institutional interactions of the public press, political parties, and parliament with its ancillary participants like lobbyists. Within the public sphere, opinions emerge and form a tension-charged social environment in which official government authority and publicity confront each other (adapted from Habermas, 1989, p. 73). Important prerequisites of a public sphere is that citizens address each other as an audience, that forums exist where audiences can meet, and that an identity has been created in which any citizen is entitled to an informed opinion on matters of general

³⁷ Proponents of the idea that cyberspace may, under the right social conditions, offer a renewed public sphere include Aikens (1997), Fernback (1997), Hauben and Hauben (1997), Kellner (1999), Moore (1999), Noveck (1999), Rheingold (1993), and Slevin (2000).

concern, and the citizen has the right of expressing his opinion. The public sphere concerns itself not only with politics but all matters of general interest which are the principal domains of publicity. These include the economy, the arts, scholarship, the sciences, education, and matters of law and morality.

But here lies the rub: One of the key tenets of social theorists is that modernization has led to “cultural impoverishment” which is equivalent to “loss of meaning, which is one of the principal obstacles for “the emergence of critical consciousness and action” (White 1988, p. 121; Habermas 1987, pp. 140 and pp. 383). In order to see how this has deteriorated the public sphere, we must compare its current state and functioning to its earlier, much more powerful state and decisive influence.

Originally, it was through the emergence of the institutions of a public sphere at the beginning of the 18th century, that democratic “opinion” in the Western world toppled the power of authoritarian monarchs and the intellectually stifling dogmatism of the churches (*cf.* the detailed analysis in Habermas 1989). Contrary to today, the public sphere had much influence on the life of a nation. Via the interactions between scholars, artists, aristocrats and leading citizens in the salons and coffeehouses of the 18th century,³⁸ public opinion eventually brought about the general recognition of the human rights of free inquiry, free speech and free peaceful assembly – the prerequisites for an independent press, which became the most important institution of the public sphere. This happened first in Great Britain where censorship was eliminated in 1695 and the *Times* was founded in 1785. Eventually it spread to France and Germany. Everywhere, subordinate subjects turned into autonomous subjects emancipated from the tutelage of state and church through the enlightenment of their reason in public discourse. Such informed subjects could no longer be treated simply as receivers of regulations from above, but had to be respected as critics and potential opponents.

Unfortunately, in the modern world, through the “scientization of politics” (*cf.* Habermas 1974, 1989), big government and big industry turned enlightened subjects into manipulated citizens. This became possible through fundamental changes in the public sphere that robbed science of its liberating force for the public and turned the press along with the other mass media into instruments of “distorted communication” (*cf.* the detailed historical analysis in Habermas 1989). This came about through the increasing isolation of science, law and the arts from the public so that they became almost exclusively the domain of full time professionals. Many members of the public sphere including journalists and politicians, no longer have the time and necessary education to absorb the key insights from the principal domains of publicity and to examine their potential social and political impacts.³⁹

³⁸ The Marquise de Rembouillet (1588-1665) held the first salon on the site of the current Louvre in Paris. Salons mostly took place in large private home which provided a forum where artists, intellectuals and aristocrats could meet for intellectual pursuits in the arts and literature. Salons then spread to England and to Germany in the form of table societies (Tischgesellschaften) and literary clubs. Particularly in England the salons and coffee houses soon took up matters formerly reserved almost exclusively for government, i.e. economics and politics, to the point that the political parties of the Whigs and Tories found it necessary to get involved in the English salons (*cf.* Habermas 1989). The modern usage of “salon” might be related to the fact that from the very origins of the salons, women played a much more significant role in them than in official politics.

³⁹ With the term “scientization of politics” (“Verwissenschaftlichung der Politik”), Habermas (1974, p. 120-140) refers to a change in the relationship between professional and scientific specialists and politicians. Originally, scientific experts were to provide political decision makers with the principal alternatives from which politically legitimized authority would make informed choices. With the advance of the so-called decision making technologies (models and other complex information processing methods), the choices themselves became mostly predetermined. The values and biases entering the scientific processes of decisions support methods are removed from critical articulation and reflection to the point that they may not even be perceived by the scientists

The question then is: does the Internet have the potential to counteract if not reverse this dangerous trend. The many experimental cyber communities that do engage in serious debates and the many individualized discourses of email list servers clearly demonstrate that the potential for deliberative, communicative functions of IT does, indeed, exist. Heng and Moor (2003) review a number of examples of such communities. We suggest that the deeper reasons why such serious communicative functions of the Internet have not yet materialized on a larger scale stem from the fact that one-sided values have driven most IT development. This has led to the emphasizing of purposive rational effectiveness and efficiency over supporting rational communication.

This observation is somewhat surprising given that the communicative functions of IT have been highly touted since the inception of the computer (e.g., Hedberg 1975; Sackman 1967) and it is part and parcel of the American credo that public information distribution should be governed by policies that serve the better good of all. Historically, the values that were supposed to be advanced in public policies governing information technology from print to radio and TV, were those associated with the notion of a free press, i.e., freedom of inquiry, expression of the greatest diversity of opinion, and universal access. From the press they were transferred to other media as that played a similar role as communication technology advanced: radio, TV and to some extent the telephone. *A fortiori* they should have also been extended to the new IT. Yet, as was previously noted that has not happened so far. IT mostly serves specific interest groups, for example the management of corporations and owners of the communications industry. In order to keep the discussion within reasonable bounds, in this paper we refrained from raising the thorny issue of how our society uses information technology and what values should govern such use. At the level of individuals and organizations, the traditional values of a free press link to what we called the communicative function of IS⁴⁰. Once extended to the new information media, they will raise fundamental challenges to the role of IT in modern democracies. To meet these challenges, the communicative function of IS will have to assume a higher moral priority than its purposive rational function, at least in principle if not in practice as has been the case with the older information and communication technologies.

If we look upon IS (as systems) as the newest and maybe in the near future most powerful 'kid on the block' of the public information and communication arena, then we as IS

themselves. At that point, the instrumental values of applied science and its bias to ignore what is not measurable, function as an ideology to sell the politics of the elites as the inevitable outcome of the application of the scientific method to the current problems of society. The voices of those without access to the industrial-scientific decision making apparatus are dismissed as irrelevant and have little chance to be taken seriously. This is the core of the so-called "technocratic decision model." The alternative is a pluralistic decision model of deliberative democracy that depends on the interactions of an informed public sphere with the officialdom of elected governments and their scientific staff cadres.

⁴⁰ To make this link explicit, requires the introduction of several constructs from discourse theory. These include the notions of why, in each communicative act oriented towards mutual understanding, all parties involved have to assume that they mean what they say or write (sincerity), that they express themselves in ways comprehensible to their audience (intelligibility), and that the claims they make can be supported by good reasons. It also would require distinguishing different types of discourses (theoretical, moral, aesthetic) and their different truth claims (such as truth of propositions, technical efficacy, legitimacy of norms of action, adequacy of standards for good taste). Finally, the character of the arguments would have to be sketched that are effective to redeem the different truth claims associated with different types of discourses. An introduction to these issues can be found in Howe (2000, pp. 18-62) and White (1988, pp. 90-127, chapter 5, "Modernity, rationalization and contemporary capitalism" and White (1995) pp. 3-16. For a fuller treatment of the link between discourse theory and democracy see Chambers (1995, pp. 233-259), and Moon (1995, p. 143-164); and for a critical treatment of Habermas' two models of deliberative democracy, see Scheuerman (1999, p. 153-177) and Poster (1999).

researchers need to ask, how well IS (as a field) is prepared for this role (keeping in mind that IS makes up only a part of the IT industry)? In this paper we made the point that IS as a field might be in crisis and a field in crisis is going to find it very difficult to deal with new challenges such as these. We concluded that IS as a field needs to address its internal problems first so that it can better perform its external social roles whatever they maybe. They will continue to include its current immediate external stakeholder's interests who appear mostly concerned with efficiency and effectiveness. But a new communicative function for IS as societal systems is in the wings. We believe that for the IS discipline to prosper, will require it to meet the challenge of broadening its purposive rational value base to include that which is needed for taking on the larger societal issues. In so doing, the field will also become better equipped to handle the current pressures of immediate relevancy for all its stakeholders. Indeed, it is interesting to consider that the future of the field may well lie in the forgotten discussions of the late 60s and early 70s where scholars theorized about how the new information technology would impact society. So our future may well lie – at least in part – on rejuvenating the past.

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