Communications of the Association for Information Systems

Volume 12 Article 30

October 2003

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ABSTRACT

The "IT artifact" and debates about the core of the IS field received a lot of attention in the last several years. This paper is a response to Benbasat and Zmud's June 2003 *MISQ* paper "*The Identity Crisis within the IS Discipline: Defining and Communicating the Discipline's Core Properties*," which argues that "the IT artifact and its immediate nomological net"[1] constitutes "a natural ensemble of entities, structures, and processes" that "serves to bind together the IS subdisciplines and to communicate the distinctive nature of the IS discipline." This paper starts by examining the meaning of "IT artifact" and concluding that this term is too unclear to serve as a basic concept for delineating the field. Next it examines and disputes aspects of Benbasat and Zmud's prescription for being more faithful to the discipline's core. It suggests that their vision of tighter focus on variables intimately related to the "IT artifact" creates problems and provides few of the benefits of an alternative vision centered on "systems in organizations." This alternative vision provides an understandable umbrella for most existing IS research and treats the discipline's diversity as a strength rather a weakness. It provides a rationale for building on current knowledge and expertise, exploiting the discipline's areas of competitive advantage in academia and business, defusing the IS discipline's identity crisis, and helping increase its long-term contributions to academia, business, and society.

Key words: IS core, systems in organizations, IS discipline, IT artifact, systems in organizations, work system, identity crisis of academic disciplines, nomological net,

[1] For a definition and discussion of nomological net, see http://trochim.human.cornell.edu/ kb/nomonet.htm

I. INTRODUCTION

The "IT artifact" and debates about the core of the IS field received a lot of attention in the last several years, as is clear from the names of recent articles, panels, and editorials:

- *Research Commentary: Desperately Seeking the "IT" in IT Research - A Call to Theorizing the IT Artifact* [Orlikowski and Iacono, 2001][2]
- *Taking the IT Artifact Seriously in IS Research: Theory Development from Multiple Perspectives* [Boland et al. 2002]
- *Information System's Voyage to Self-Discovery: Is the First Stage the Development of a Theory?* [Karahanna et al. 2002]
- *The Identity Crisis within the IS Discipline: Defining and Communicating the Discipline's Core Properties* [Benbasat and Zmud 2003]
- *Still Desperately Seeking the IT Artifact* [Weber 2003]

The main topics in these articles and panels include

- the lack of a recognized core for the IS field,
- the lack of an accepted theory of IS,
- the surprisingly small amount of IS research in which IT-related variables receive attention,
- the question of whether IS research should focus on constructs, variables, and concerns unique to the IS discipline, and
- the possibility that the IS discipline is suffering an identity crisis.

Except for the question of why high status journals focus such a small percentage of their articles on IT-related variables, many of these topics have been discussed without resolution for over 20 years (e.g., see Keen [1980]; Dickson et al [1980]).

This paper combines a response to Benbasat and Zmud's [2003] paper with a discussion and proposal concerning the IS discipline's boundaries and core. The paper is organized in three parts that reflect its title:

Sidestepping the IT Artifact. Slightly reminiscent of the way Beath and Orlikowski [1994] deconstructed IS-user relationships in information engineering, the first section explores various meanings and connotations of *IT artifact*, a term at the heart of Benbasat and Zmud's analysis. In contrast to four relatively simple dictionary definitions of the term artifact, Benbasat and Zmud

> *"conceptualize the IT artifact as the application of IT to enable or support some task(s) embedded within a structure(s) that itself is embedded within a context(s)." (p. 186).*

The four elements of an IT artifact include

- information technology and
- the tasks,

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[2] A separate article, "18 Reasons Why IT-Reliant Work Systems Should Replace 'The IT Artifact' as the Core Subject Matter of the IS Field," [Alter, 2003] was submitted to *CAIS* in May, 2003 (published in October 2003 as Volume 12, article 23) to present an alternative to Orlikowski and Iacono's belief that the IT artifact is the core subject matter of the IS field. Although questioning their view of the core of the field, that article does not dispute the main points of their article or their conclusions. The current article is a response to the June 2003 *MIS Quarterly* article in which Benbasat and Zmud [2003] propose that the IS field should focus more closely on "the IT artifact and its immediate nomological net." Although there is some overlap between these two articles, they were not combined because they respond to different articles, focus on different themes, and cover many non-overlapping topics.

- task structure, and
- task context within which it is used. (p. 188).

This paper uses work system concepts to examine the four elements of business planning, one of two IT artifact examples in Benbasat and Zmud's Table 1 on p. 188. It concludes that the term IT artifact seems to encompass almost anything IT touches or affects directly, and is too unclear to serve as a basic concept for defining the IS field. IT artifact verges on being a synonym for the clearer term *IT-reliant work system*.

Scrapping the IS Silo. Benbasat and Zmud are concerned with

> *"two troubling trends regarding the current conduct of IS research: errors of exclusion of constructs reflecting the core properties of the IS discipline … and errors of inclusion of constructs that lie outside this scope." (p. 186)*

The second part of this paper asks whether their prescription of focusing more tightly on unique IS topics and related variables would be beneficial for the IS discipline or whether it would turn the IS discipline into an ever-shrinking, low-impact academic silo. The second part starts by using a 4 X 12 grid (presented in detail in Appendix II) to position numerous examples of research topics pursued by members of the IS research community. If Benbasat and Zmud's prescription were followed, many of the topics in the grid would be viewed as marginal or outside of the field. A number of questions are discussed briefly to explore some of the implications:

- Who is the customer, IT professionals or business professionals?
- Why should we exclude the interests of many members of the IS community?
- How do IT artifacts differ from non-IT artifacts?
- Why should we focus on second and third order effects?
- Why should we pursue "not invented here" when industry tried to squelch it?
- Why do we believe the real problem is an identity crisis of the IS discipline?

Laying Claim to Systems in Organizations. The final section argues that the IT artifact vision of the IS discipline provides few of the benefits of an alternative that can be called the "systems in organizations" vision. This alternative provides an understandable umbrella for most existing IS research and treats the discipline's diversity as a strength rather a weakness. It provides a rationale for building on current knowledge and expertise, exploiting the discipline's areas of competitive advantage in academia and business, defusing the IS discipline's identity crisis, and helping increase its long-term contributions to academia, business, and society.

II. SIDE-STEPPING THE IT ARTIFACT

The term IT artifact is problematic. For each of four dictionary definitions of the word artifact, Table 1 presents an example that might occur in common usage and an example of what might be an IT artifact according to that definition. It is likely that most business and IT professionals would think of an "IT artifact" as hardware or software, consistent with the first definition.

In contrast to the dictionary definitions of artifact, Orlikowski and Iacono [2001] define IT artifact somewhat opaquely in a parenthetical comment in their first paragraph as

> *"those bundles of material and cultural properties packaged in some socially recognizable form such as hardware and/ or software."*

Table 1: Examples Related to Four Dictionary Definitions of "Artifact"

Definition	**Example**
Something created by humans usually for a practical purpose; *especially*: an object remaining from a particular period [*Merriam Webster Dictionary*]	Typical example: Spoons and bowls found in an archaeological dig. IT artifact example: ENIAC computer, Osborne 1 computer, Pentium 4 chip, inkjet printer, Linux operating system, SAP, and items typically found in a computer museum
Something characteristic of or resulting from a human institution or activity [*Merriam Webster Dictionary]*	Example cited by dictionary: "Self consciousness … turns out to be an artifact of our education system." IT artifact example: Difficulty focusing on classroom discussions may be an artifact of playing so many computer games.
A structure or feature not normally present but visible as a result of an external agent or action [*American Heritage Dictionary, 4th edition]*	Example cited by dictionary: An artifact often found in "an image produced by radiology or electrocardiography" IT artifact example: Excessive structure to presentations may be an artifact of Powerpoint usage.
An inaccurate observation, effect, or result, especially one resulting from the technology used in scientific investigation or from experimental error: [*American Heritage Dictionary, 4th edition]*	Typical example: The bias in the cost of living adjustment was an artifact of the method used. IT artifact example: The inconsistency was an artifact of the coding scheme used in the previous information system.

To support their argument that IT-related variables have not been considered fully in IS research, they discuss five divergent treatments or views of IT artifacts in *ISR* articles over ten years. In a closing section they argue that it is necessary to "stop taking IT artifacts for granted" and that

> *"all IT research will benefit from more careful engagement with the technological artifacts that are at the core of our field."*

They are most sympathetic with the last of five views of the IT artifact, the ensemble view, exemplified by Kling and Scacchi's [1982] concept of 'web models' of computing, according to which IT is "more than tools deployed on the desktop or factory," but rather is

> *"the ensemble or 'web' of equipment, techniques, applications, and people that define a social context, including the history of commitments in making up that web, the infrastructure that supports its development and use, and the social relations and processes that make up the terrain in which people use it." [Orlikowski and Iacono, 2001, p. 122].*

Benbasat and Zmud's conceptualization of the IT artifact is similar to Orlikowski and Iacono's ensemble view. Benbasat and Zmud "conceptualize the IT artifact as the application of IT to enable or support some task(s) embedded within a structure that itself is embedded within a context(s). Here, the

> *"hardware/software design of the IT artifact encapsulates the structures, routines, norms, and values implicit in the rich contexts within which the artifact is embedded." (p. 186)*

In their Table 1 (p.188), Benbasat and Zmud identify the four "elements of the IT artifact" as information technology, task, task structure, and task context. For example, their table shows that

the IT artifact *budget planning* includes not only IT, but also the budget planning tasks enabled or supported by IT and the structure and context within which those tasks occur. It is not clear whether this IT artifact is meant to encompass all of the tasks, task structure, and task context related to budget planning, or whether it is meant to be only the subset of budget planning that IT touches in some direct or not too indirect way.

A QUESTIONABLE CONCEPT

The views of the IT artifact by both sets of authors are quite broad, so broad, in fact, that the entire concept of the IT artifact seems questionable. For example, by defining IT artifact as "the application of IT to enable or support some task(s)" and associating it with routines, norms, and values implicit in rich contexts, Benbasat and Zmud seem to imply that hardware and software such as Excel, PDAs, SAP, Pentium chips, encryption algorithms, and Windows XP are not full fledged IT artifacts because they are designed as broadly applicable tools for diverse uses and therefore cannot encapsulate "routines, norms, and values implicit in the rich contexts" within which they are embedded. Furthermore, if an IT artifact necessarily encapsulates those routines, values, and norms, what about the frequent situations in which software is rejected because it doesn't fit, and clearly does not encapsulate and may actually contradict those routines, norms, and values? In these situations, is the software still an IT artifact?

On the other hand, Benbasat and Zmud's nomological net (their Figure 2, p. 187) of "the core properties of the IS discipline" (p. 186) seems to contradict their broad definition of the IT artifact. The nomological net's arrow from IT artifact to usage says that properties of the IT artifact affect its usage. This arrow is meaningful if the IT artifact is an artifact in the simple sense, such as a document, software, or hardware. But with their broad definition of the IT artifact, "the application of IT to enable or support some task," the arrow says that the application of IT affects its usage, which implies there is a subtle difference between application and usage.

The concept of work system is useful in trying to interpret Benbasat and Zmud's definition of IT artifact. Typical business organizations contain work systems that procure materials from suppliers, produce products, deliver products to customers, find customers, create financial reports, hire employees, coordinate work across departments, and perform many other functions. Work systems were mentioned in two articles in the first volume of *MIS Quarterly* in 1977 [Bostrom and Heinen ,1977a, 1977b] and by a number of sociotechnical researchers but do not seem not to be defined carefully.[3]

Definition: A work system can be defined as a system in which human participants and/or machines perform work using information, technology, and other resources to produce products and/or services for internal or external customers.

A rudimentary understanding of a work system requires a basic description of those six underlined elements in the definition plus some understanding of three additional elements:

- the relevant environment,
- infrastructure, and
- strategies.

Information systems, projects, and supply chains are all special cases of work systems. Viewing a web site in work system terms often provides a rich way to think about its usefulness and effectiveness rather than just its appearance or hierarchical structure. An entire organization, firm, or even an industry might be viewed as a work system, although it is more useful to view these as

[3] For other previous uses of the term work system see footnote 2 in Alter [2003]

aggregations of multiple work systems. In systems analysis, individual work systems are often divided into several smaller work systems to simplify the analysis. [Alter 2002]

Although Benbasat and Zmud use budget planning as an example of an IT artifact, it is clearer and more direct to view budget planning as an IT-reliant work system based on the definition of a work system. Almost every important work system in current organizations relies on IT to operate and therefore can be called an IT-reliant work system. For example, most or all of the information systems covered in case studies in MBA classes and all of the strategic information systems cited as exemplars of competitive use of information systems can be viewed as integral parts of IT-reliant work systems.

Table A1 in Appendix I uses the nine work system elements to reorganize the items that Benbasat and Zmud's Table 1 (p. 188) associates with the four elements of the IT artifact budget planning. The table shows that *IT-reliant work system* and *IT artifact* in its broad, non-dictionary sense seem to cover some of the same territory, because the IT artifact includes not only technology, but also aspects of the work practices (task and structure) and environment (structure, context, and possibly strategy). Table A1 is placed in an Appendix because it goes into some detail filling in blanks by showing how Benbasat and Zmud's four elements of an IT artifact do or do not map into the nine elements needed to understand a work system. Table A1 shows that some of the elements needed for even a basic understanding of a specific instance of business planning seem not to be included in the IT artifact. These elements include participants, information, products and services, and customers, and possibly infrastructure and strategy. In particular, the inclusion of the work system elements *participants* and *information* raises the question of whether participants and information should be denoted as elements of an IT artifact. The exclusion of participants and information seems to imply that these essential parts of information systems are not part of an IT artifact, which in turn implies that an information system in its entirety is not an IT artifact (such as business planning), again creating questions about what the term IT artifact really means.

GIVING UP ON THE IT ARTIFACT

Benbasat and Zmud use budget planning as an example because budget planning is a typical situation to which IT is applied in business. If the IS discipline provides genuine value for business and society it must be able to say useful things about budget planning and other system-related situations that business and governmental organizations encounter.

But why should the IS discipline view budget planning as an IT artifact? IT surely isn't the headline that most people would use when thinking about budget planning (or manufacturing, customer service, or sales work) that happens to use IT in some way. Consider the mis-titled *Harvard Business Review* case "The IT System That Couldn't Deliver" [Reimus 1997], which concerns management lapses in developing a new laptop-based tool for life insurance salespeople. A careful reading of the case shows that the system with the main problem is neither the software itself nor the information system being created. Rather, it is a work system of selling insurance that was not improved as hoped. The title of the case refers to an IT system, but the mistakes in the case might not have happened if the CEO, CFO, and CIO understood that the headline was improving the work system of selling insurance, not just developing an IT system or an IT artifact.

The foregoing discussion of the definitions of the IT artifact and of the example of budget planning raises a series of questions about the IT artifact as a concept:

- Is a piece of technology an IT artifact when considered outside of the rich context of its use?
- Can an IT artifact be a general-purpose tool containing no built-in associations with a rich context?

- Does an IT artifact (such as budget planning) include the information it processes or contains? Alternatively, is the information (and its definition, accuracy, and usefulness) totally separate from the IT artifact?
- Does an IT artifact include the task in which it is used? If so, does it also include the situationally relevant tasks or business process steps in which it is not used directly?
- Does an IT artifact include the people who use IT? If so, does it include only their direct use of IT or does it include other aspects of their existence as social actors in the situation (e.g., Lamb and Kling [2003])?
- Does the IT artifact include people who influence the use of IT or are affected by it, but do not use it directly?
- Is an information system an IT artifact?
- Is any system or activity that uses IT (such as budget planning) considered an IT artifact? If so, don't the vast majority of systems and activities in most companies qualify as IT artifacts?
- Based on the above, is the IT artifact a confusing synonym for IT-reliant work system?

Ambiguity about answers to these questions across the various meanings of IT artifact show that this concept is too unclear to be a basic concept upon which theories in the IS discipline are built. On the other hand, the questions themselves are useful for thinking about the nature, core, and boundaries of the IS discipline.

The practical implication is that we should sidestep the IT artifact, remember the questions, and use a different approach for thinking about the essence of the IS discipline. We will start by looking at its boundaries as implied by the breadth of research situations and topics studied by researchers in the IS community. For this discussion an artifact is something created by humans for a practical purpose (the first dictionary definition in Table 1) and the term IT artifact is avoided. Also, in describing the discipline's core and boundaries we ignore self-referential research concerning the past and future of the discipline, classification and ranking of past publications, and the discipline's status in academia.

III. SCRAPPING THE IS SILO

It is possible to describe a discipline by discussing its core or by discussing its breadth. For example, economics is basically about the exchange of goods and services, but it includes a vast array of topics related to micro- and macroeconomics, and covers units of analysis ranging from individual decision makers to the global economic system. Similarly, sociology ranges from ethnographic studies of specific work settings, such as air traffic control centers, through survey-based studies of broad demographic and psychological phenomena across large populations of people.

Benbasat and Zmud focus on the core of the IS field rather than its breadth. Their Figure 2 (p. 187), titled "IT Artifact and Its Immediate Nomological Net," represents their "view of the phenomena studied by IS scholars – and, hence, the set of core properties of the IS discipline." The five topics in the nomological net include the

- IT artifact,
- usage,
- impact,
- IT managerial, methodological, and technological capabilities, and
- IT managerial, methodological, and operational practices.

They believe a vital aspect of the nomological net is that "the constructs involved are *intimately* related to the IT artifact." Consistent with Orlikowski and Iacono [2001] they argue that all too often "elements of this nomological net are seemingly absent from much of IS scholarship." They describe what they see as troubling trends in IS research in the form of errors of exclusion and of

inclusion. Errors of exclusion involve doing research without including the field's core constructs. Errors of inclusion involve doing research that emphasizes constructs outside of the core. They suggest that the distinctiveness of our work and our journals could be increased by focusing on relationships that fall within the nomological net and reducing the degrees of separation between IS constructs and the key constructs in research.

To illustrate the breadth of the IS field rather than just its core, Table A2 (presented and explained in Appendix II) uses a 4 by 12 grid to classify representative situations and topics studied by members of the academic IS community. Although Table A2 makes no assumptions about whether variables related to IT are the primary focus of whatever is being researched, an underlying assumption for all but the bottom row is that IT is present in the situations being discussed.

The 4 columns in Table A2 include:

1. Theory or model related to IT in use or systems in operation
2. Tool in use or system in operation
3. Unplanned adaptation and change
4. Projects and planned change

This dimension represents the degree to which the topic involves changes in IT-reliant work systems[4] in specific settings.

The 12 rows in Table A2 include:

1. Information
2. IT as tool
3. IT as infrastructure
4. IS on computer.
5. IT/ IS in experimental setting
6. IS in operation
7. IT-reliant work system
8. Interorganizational work system
9. Organization
10. Firm
11. Industry
12. Society

This dimension represents the extent to which the topic or situation encompasses a complete work system in an organization. This dimension starts with non-system entities, crosses various system-related situations, and extends through aggregated views such as industries and society. The first category is information, which is often discussed or analyzed without reference to a particular system. Technology appears in the second category (*IT as tool*). IT users come to the foreground in the 5th category (*IT/ IS in experimental setting*). Information systems and their

[4] Recall that information systems, projects, and supply chains are special cases of work systems. An information system is a work system whose work practices are devoted to processing information or data. Similarly, a project is a work system designed to produce a particular product and then go out of existence. A supply chain is a work system that crosses multiple organizations and transfers resources from suppliers to users of those resources.

participants first appear in the real world systems in the 6th category (*IS in an organization*). Work systems that may do things other than processing information appear in the 7th (*IT-reliant work systems*). *Interorganizational systems* appear in the 8th, and the remaining categories extend to aggregated levels such as organizations, firms, industries, and society.

Although Table A2 tries to encompass the breadth of the IS discipline, various observers might argue that particular categories along the dimensions or particular situations mentioned in the cells might fit better into other disciplines such as computer science, organizational behavior, operations management, or economics. Table 2 lists five examples from Table A2 and indicates in a sentence why two observers might disagree about whether each of these worthwhile topics is part of the IS field or truly belongs somewhere else. Preferences about which specific situations to include or exclude are too detailed and subjective to pursue here. However, the examples in Table A2 and Table 2 illustrate that the IS field encompasses a broad range of topics and that many of them may not be directly linked to IT artifacts (depending on what the term IT artifact might mean).

Table 2: Topics that Might or Might Not Belong in the IS Field

Example	Location in Table A2	Does this example belong in the IS field?
Measurement of database accuracy	*Row:* Information *Column:* Tool in use or system in operation	A new method for analyzing database accuracy might be totally independent of IT artifacts, but might be of great value in IS practice.
Experiments in conceptual modeling	*Row:* IT/IS in experimental setting *Column:* Theory or model related to IT in use or systems in operation	Experiments related to conceptual modeling could address important questions related to systems analysis and design. However, an experiment in this area might just focus on modeling concepts and might not involve an IT artifact.
Workarounds to accomplish required tasks despite existing systems and methods	*Row:* IT-reliant work system *Column:* Unplanned adaptation and change	Participants in an IT-reliant work system may need to do a variety of workarounds to get their work done. *A priori* there is no particular reason to believe those workarounds are directly related to IT rather than organizational policies, workplace contingencies, or other factors.
Operation of a supply chain	*Row:* Inter-organizational work system *Column:* Tool in use or system in operation	Supply chain applications are extremely important, but the operation of a supply chain involves many activities and issues that are not related to IT artifacts.
Use of real options in IT planning	*Row:* Firm *Column:* Projects and planned change	Real options can be used in IT planning but is not inherently about IT. Some of the issues in starting to use real options may be about the characterization of IT options, but many others will be about the people and politics in the situation.

Assuming that the breadth of Table A2 encompasses the IS field, the table should contain the core of the IS field if an identifiable core actually exists. As is explained in a previous article [Alter, 2003], I believe that the core of the IS field has become IT-reliant work systems (the 7th row in Table A2). Based on the overlaps between the concept of an IT-reliant work system and Benbasat and Zmud's concept of the IT artifact (Table A1 in Appendix I), it is possible, but certainly not obvious, that they would place the core of the field in the same area in Table A2.

The general thrust of Benbasat and Zmud's argument is that the IS discipline would be well served by focusing more tightly on unique IS topics and related variables. They would probably categorize a large number of topics and situations in Table A2 under errors of inclusion due to excessive separation from core concepts. Even in situations in which their core concepts are directly applicable, much previous research would probably be categorized under errors of exclusion because too many of the main variables are not specifically related to IT.

QUESTIONING THE BENEFITS OF TIGHTER FOCUS

Unlike many others who write about the identity crisis in the IS discipline, Benbasat and Zmud provide a prescription for action. The issue at hand is whether this prescription would be beneficial for the IS discipline or whether it would turn the IS discipline into an ever-shrinking, low impact academic silo. We will look at several related questions and will conclude with a prescription that differs drastically from the one they suggest.

Who is the customer, IT professionals or business professionals? On p. 192 Benbasat and Zmud conclude a paragraph as follows: "The less we focus on IS concepts and phenomena in our research, the less likely it is that we contribute to the principal consumer of our research – the IT practice community." This statement is debatable on a number of counts starting with the identity of the customer.

The IT practice community is not the consumer of our research publications. This assertion is clear from the readership of *MIS Quarterly* and other research-oriented IS journals. As stated or implied in numerous rigor vs. relevance discussions (e.g, Davenport and Markus [1999]), the IS academic community is the consumer of academically respectable IS research; publications written to be understandable and usable by practitioners are often viewed as unworthy of credit within the academic community. Consider a comment by Jack Rockart, editor of *MIS Quarterly Executive*, a new journal

> *"aimed at presenting academically sound relevant research to managers, but also to academics who will use it in their teaching as well as a source of research ideas." …. "Every untenured faculty member needs to know what the real rules of gaining tenure are and should not listen to the siren of "relevance", especially if he is on the faculty of one of the "top" schools….. I would urge non-tenured faculty not to submit to MISQE but to aim at MISQ or Information Systems Research." [Koch et al 2002, p. 341]*

The broader question involves the customer for the IS discipline, rather than just its research publications. If the IT practice community is the customer for the IS discipline, and if the customers of business schools include the business community in general and business generalists seeking MBAs in particular, then business schools are largely correct in reducing required offerings related to IT now that IT is part of everyday life for most students and early career professionals. On the other hand, as will be discussed later, the interests of the general business community would be well served by guaranteeing significant coverage of systems in organizations because so many IT-related and non-IT related issues in organizations can be understood and analyzed from a system viewpoint not explored in depth anywhere else in the curriculum.

Why should we exclude the interests of many members of the IS community? Comparison of Table A2 with Benbasat and Zmud's nomological net shows that many of the topics that IS scholars study today are not only distant from the core, but might be considered outside the IS discipline. For example, the first row of Table A2 concerns information or measurement without reference to IT. Although some IS scholars see the basis of the IS discipline in information or measurement or representation (e.g., Keen [1980], Mason and Swanson [1980], Weber [2003]), the nomological net does not mention information. In other words, studies related to the nature of information and measurement, perceptions of information, quality of information, discounting of

information, common flaws in decision-making, and other topics related to information per se but without reference to IT seem distant from the topics in the nomological net. The 2nd, 3rd, and 4th categories, IT as tool, IT as infrastructure, and IS on computer, also contain many topics that are distant from the nomological net, such as design theories related specifically to hardware, software, and documentation, technical performance of automated systems, and development of general purpose software that may have little direct relation to core topics about the usage and impact of information systems in organizations. Much research about IT/IS in experimental settings (the 5th category) also seems distant from the core because "IT managerial, methodological, and operational practices" are often absent from experimental settings and because many of the impacts that might occur in the real world are not relevant to short-lived experimental situations. Nearer the top of the Table A2, the 9th through 12th categories concern aggregations of work systems (organizations, firms, industries, and society). Although some types of impacts related to IT variables can be analyzed at these aggregated levels, in the aggregate the effects related to IT variables are often minor compared to effects of non-IT variables related to people, resources, and the surrounding context.

Topics in the 6th, 7th, and 8th categories (IS in organization, IT-reliant work system, and interorganizational work system) fit most closely with the nomological net because factors related to IT capabilities and practices, properties of the IT in the situation, usage, and impact are present when an IT-reliant system is being modeled, is in operation, or is being modified or built. However, in these situations as in the situations involving entire organizations, firms, industries, and society, many of the variables studied by members of the IS research community are not strictly IT-related variables. Benbasat and Zmud emphasize this distinction through the hypothetical example of a study involving software development groups that focuses on the effects of mutual understanding, task interdependency, and outcome clarity on client satisfaction. Although the situation involves software development, the variables studied might be equally relevant in any project situation regardless of whether the project involves IT. Benbasat and Zmud question viewing this work as research within the IS discipline because

> *"neither the IT artifact nor elements of its immediate nomological net are explicitly present in the research model. …While such a study examines important phenomena (whose research outcome might inform IS research), the study is based firmly in the organizational behavior and group behavior disciplines and not the IS discipline." (pp. 188-189)*

In other words, even a study of software development groups might not qualify as IS research.

It appears that Benbasat and Zmud's criteria for including research in the IS discipline would exclude or marginalize a large percentage of the research actually done by members of the IS community. In many cases this research may focus on the variables that are most important in practice whether or not most of those variables might be called IT-variables. Consider the two exemplars chosen by Baskerville and Myers [2002] to demonstrate that IS can be a reference discipline for other disciplines:

> Example 1: Markus's [1983] study of IT and organizations compared three theories of resistance to IS implementation and concluded that resistance to technological change is not inherently dysfunctional, but rather is labeled as good or bad depending on the vested interests of the people doing the labeling.
>
> Example 2: Research on business process reengineering starting with Davenport and Short [1990].

Neither of these exemplars fits well into the nomological net in Benbasat and Zmud's Figure 2. Furthermore, in neither of these cases is the main message really about IT artifacts. The observations about resistance to change are equally applicable to any significant change regardless of whether IT is involved. The same can be said about reengineering because its main message is about rethinking and redesigning work systems rather than about deploying any

particular IT artifact in any particular way. Thus, although Orlikowski and Iacono [2001] provided convincing evidence supporting Benbasat and Zmud's assertion that the IS research community under-investigates phenomena intimately associated with IT-based systems and over-investigates phenomena distantly associated with IT-based systems, Benbasat and Zmud's view of what does and does not belong in the field may be so tightly drawn as to discourage or marginalize much of the valuable research the IS community actually performs.

How do IT artifacts differ from non-IT artifacts? One might wonder about whether most of the phenomena that apply to the development, adaptation, use, and maintenance of non-IT artifacts as a class (e.g., jet planes and office buildings and automobiles) are substantially different from those related to IT artifacts as a class (e.g., budget planning and ecommerce Web sites and customized PDAs). The previously discussed lack of clarity about the meaning of IT artifact makes it difficult to engage this question directly, but one also might wonder whether it is a trick question. After all, the fastest jets can't stay airborne without computerized controls, the latest office buildings are wired and rely on "intelligent" systems for climate control and security, and new automobiles contain numerous chips. Perhaps all three non-IT artifacts actually qualify as IT artifacts. Furthermore, as mentioned earlier, most of the important work systems (such as budget planning) in today's organizations are IT-reliant, perhaps making them IT artifacts. If airplanes, buildings, cars, and typical organizational systems all might qualify as IT artifacts, it is difficult to say how IT artifacts differ from non-IT artifacts.

A related question concerns the feasibility of separating information systems from the work systems they support without losing most of the richness and meaning in the situation. Forty years ago information systems were a delayed feedback mechanism that told managers what their employees did yesterday and last week. Today, real time information systems are integral parts of work systems. Turn off the information system and the work system can't operate effectively. Ignore the work system and the information system has a technical definition but little meaning. Although it is still possible to tease the information system apart from the rest of the work system by saying that the information system does the processing of information and the rest of the work system does everything else, the long-term question is whether we want to be known as the people who focus solely on the IT-intimate parts of a work system's development, operation, maintenance, and evolution, but aren't really interested in the rest of the story. That seems to be the implication of including IT capabilities and IT practices in the nomological net but not including non-IT capabilities and non-IT practices.

Why should we focus on second and third order effects? Another aspect of including IT capabilities and IT practices in the nomological net but not including non-IT capabilities and non-IT practices, is that the non-IT capabilities and practices may be more important to the IS discipline's audiences. Consider again the example of business planning. For a typical business professional or MBA student, most of the key issues in business planning involve capabilities and practices that are NOT "intimately related to the IT artifact," but are related to non-IT topics such as resource allocation, coordination, leadership, negotiation, the balance of political power, alignment with strategy, organizational precedents, and capacity to implement and maintain initiatives. Every IT professional participating in a project related to budget planning should recognize the importance of those issues in order to build tools that will not be ignored, misused, or sabotaged. In system development projects related to business planning, naiveté or unawareness of these issues might create a negative impact far outweighing any positive impact of deeper knowledge of the IT-intimate variables studied in IS research. In other words, even for IT professionals, incremental awareness and knowledge about variables that are NOT intimately related to the IT artifact might be more valuable than incremental knowledge related to IT-intimate variables. This conclusion contradicts Benbasat and Zmud's previously mentioned statement that

> "*the less we focus on IS concepts and phenomena in our research, the less likely it is that we contribute to the principal consumer of our research – the IT practice community."*

Budget planning is a particular example, but what about ERP, CRM, MIS, DSS, Group Support Systems, ecommerce, virtual teams, system development, system implementation, or any other IT-related situation commonly studied by members of the IS research community? What percentage of the truly important phenomena that are most directly linked to business or system objectives (such as efficiency, effectiveness, quality, responsiveness) could be described as "intimately related to the IT artifact?" Different observers would make different estimates depending on what they think an IT artifact is. Even when the situation involves applications of IT or projects related to IT, my personal opinion based on working in both industry and academia is that non-IT variables typically explain much more of the variance than IT-intimate variables. For example, what if 80%[5] of the explanation of the productivity paradox or IT assimilation gaps [Fichman and Kemerer, 1999] is related to capabilities and practices that directly affect "tasks, task structure, and task context" (three of the four elements of an IT artifact) but are not directly associated with IT? It is possible that the best explanations of such phenomena might be related to the same poor coordination, poor communication, superficial analysis, conflicting agendas, and confusion that undermine organizational initiatives regardless of whether IT is present.

Restricting our focus to IT-intimate variables may be tantamount to saying we care about second and third order effects, but not first order effects that other disciplines have addressed for a long time. If, for example, 80% of the variance for important phenomena is explained by one set of variables and 20% is explained by another set, disdaining the 80% set and pursuing the 20% set seems an unlikely strategy for fostering a discipline's long-term health.

In addition to de-motivating many researchers and limiting the discipline's contribution, focusing on second and third order effects could actually bias some of our "scientific" results. Think of the way the astronomer Ptolemy invented an elaborate model involving epicycles to reduce the error in astronomical charts based on a universe that revolves around the earth. Although the IS discipline started with applications of IT and although IT is typically present in situations of interest in the IS discipline, a view of reality that revolves around IT has built-in flaws. A techno-centric view of the world might make sense for computer science, but a less techno-centric view might lead the IS discipline to produce more valuable research and instruction for our business school, business, and IT audiences.

Why should we pursue "not invented here" when industry tries to squelch it? The tension between the unique contribution of the IS discipline and the turf claims of reference disciplines that provide many of its concepts and research methods has been debated for over 20 years. (Keen [1980], Benbasat and Weber [1996], Khazanchi and Munkvold [2000], Baskerville and Myers [2002]). Following their discussion of errors of inclusion and errors of exclusion, Benbasat and Zmud suggest several criteria that researchers or editors could use for heightening "the distinctiveness of our work and our journals." These criteria include investigation of relationships that fall within the IS nomological net, low degree of separation between IS constructs and key constructs in the research model, and high nomological density of IS constructs within the study's research model. (p. 193) Weber [2003, p. vi] goes a bit further by saying

> *"the identity of a discipline is established through the contributions it makes to theory. The core phenomena of the discipline are circumscribed via the theories "owned" by the discipline that accounts for these phenomena. Disciplinary identity and ownership of theories that other disciplines deem important are linked inextricably. Likewise, the theories owned by a discipline and its core phenomena are linked inextricably."*

In combination, the errors of inclusion and exclusion, degrees of separation, and focus on ownership of theories seem like a slippery slope toward rejection of whatever was "not invented

[5] We use the 80% number for illustrative purposes to make our point. The exact number is a subject for debate. It is my belief that it is large in practice.

here" (NIH). Even businesses with strong brand identities and strong cultures rejected NIH as a drag on creativity and innovation. The history of science and commerce is full of examples of breakthroughs and discoveries based on shameless appropriation and adaptation of ideas developed elsewhere. Even if identity is an important issue, we shouldn't pursue it at the cost of undermining our potential contributions.

Why do we believe the real problem is an identity crisis of the IS discipline? The first phrase of Benbasat and Zmud's title is a key motivator of their article: "The Identity Crisis within the IS Discipline." This identity crisis is not a new topic. At the first ICIS conference over 20 years ago Dickson et al. [1980] used "identity crisis" as a subheading for a paragraph recalling shifting associations with IT, MIS, CBIS, and DSS. That paragraph concludes,

> *"By calling ourselves by various names and titles we do ourselves a disservice. If we do no know who we are, imagine the image we portray to our academic colleagues! Even if we could agree on what we call ourselves, a more serious problem exists: what is it that we're about?"*

As noted in various forums,

> *"the sorts of concerns that we have about identity within the information systems discipline are typical concerns for other disciples."* [Weber 2003] (Also, Adam and Fitzgerald [2000]).

Appendix III illustrates this similarity by listing a series of quotations found through simple Google searches on "identity crisis" plus several other terms. Disciplines that seem to have suffered these identity crises, at least in the eyes of some authors, include sociology, anthropology, political science, public administration, international relations, geography, education, and even marketing. Although a more thorough search effort probably would find additional references to identity crises and related problems in academic disciplines, just the examples in Appendix III are enough to illustrate the academic identity crisis genre. Substitute "discipline X" for whatever discipline is being discussed and the symptoms include newness of the discipline, rapid change, unclear status within academia, a high degree of diversity in research topics and methods, concerns about fragmentation, and unease about being devoured piecemeal by related disciplines. Some authors view these symptoms as a problem that should be solved. Others, such as Robey [1996], argue for a high degree of diversity and the innovation that it encourages.

Regardless of whether our identity crisis continues, which seems likely based on our own history and the history of many other fields, it behooves us to ask whether we have any evidence that an identity crisis is truly the basis of our main difficulties. If our MBA and undergraduate generalist courses are being curtailed, perhaps our problem is that too many of these courses aren't providing enough value, especially at a time when everyone uses IT and its mystery largely disappeared. If practitioners don't read our research publications, perhaps the problem is that the research findings don't help them, and even if the findings could help them they probably wouldn't read publications written for an academic audience. If we have fewer IS majors, the most likely problem is that IS majors don't have as many opportunities as they had several years ago. In other words, the prescription of tightening the discipline's identity through greater focus on IT-related variables might force-fit the IS discipline into a narrow academic silo without addressing its most important problems. We can't control the opportunities available to IS majors in today's economy, but we can consider the possibility of increasing the discipline's value added for all of its constituents.

IV. LAYING CLAIM TO SYSTEMS IN ORGANIZATIONS

The foregoing discussion presented a number of shortcomings of viewing the IS discipline in terms of variables intimately related to the IT artifact. Establishing a tighter focus on those variables would marginalize and to some extent dishonor the research of a substantial fraction of the IS research community. It would establish an IT-centric view of the world that is

counterproductive for describing and understanding real world situations in which IT is applied. It might encourage concentration on second and third order phenomena while leaving the first order phenomena to other disciplines.

An alternative vision for the IS discipline might be called the *systems in organizations* vision. Instead of pursuing the IT artifact vision by circling the wagons around a tightly defended core of variables intimately related to IT artifacts, it provides a way to explain the IS discipline while still including most IS research and welcoming and absorbing valuable concepts and research from other disciplines. This alternative vision recognizes that the IS discipline started with IT applications, but it also reflects the way the discipline changed and evolved over time, and now encompasses a larger, richer set of concerns.

The systems in organizations vision overlaps substantially with ideas underlying the sociotechnical approach (Cherns [1976], Bostrom and Heinen [1977a, 1977b], Mumford and Weir [1979], Davis and Taylor [1979], Trist [1980], Pasmore [1985]). Almost 20 years ago, Lynne Markus [1984] used the term *Systems in Organizations* as the main title of a book that applied a sociotechnical approach in attempting to explain why system initiatives designed to foster better performance sometimes generated unanticipated problems and failed to attain their goals. The preface argued that understanding these problems required "a much larger view of the system design problem than one that looks only at the activities of professional system designers." [p. viii] The umbrella term systems in organizations vision, rather than sociotechnical vision, is being proposed, at least for now, to avoid ideological confusions that might divert attention from the overall goal of providing a unified approach for describing and analyzing systems regardless of stakeholder interests. Even though the systems in organizations vision recognizes the existence of multiple priorities, objectives, and measures of performance related to different components and from different stakeholder viewpoints, using the name sociotechnical might encumber this vision with pro-humanist vs. pro-managerialist associations that could reduce its generality and effectiveness.[6]

ASSUMPTIONS SUPPORTING THE ALTERNATIVE VISION

The following assumptions support the belief that the systems in organizations vision could allow us to build on our current expertise and to exploit many areas of genuine competitive advantage in academia and business.

Long-term direction and survival: The IS discipline's long-term health depends on increasing its value added for business, business students, and society. This value added view is basically a Darwinian process [Weber 2003] in which adaptations that maximize the value of any discipline will determine its long-term direction and survival.

Ubiquity of IT-reliant systems in organizations: Today's business and governmental organizations operate through systems. IT-reliant work systems are at the core of our discussions whenever we talk about strategic IS, supply chain, ecommerce, ERP, expert systems, CAD, business intelligence, and other areas in which IT is applied in important ways.

Ubiquity of business problems related to systems: Disappointments and confusion related to developing, implementing, maintaining, and evolving IT-reliant systems affect almost every business professional regardless of whether those individuals believe tools such as spreadsheets and word processing retain any mystery.

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[6] For example, Land (2000) says the "sociotechnical philosophy rests on two perhaps contradictory premises. The first can be called the Humanistic Welfare Paradigm. Sociotechnical methods focus on design of work systems to improve the welfare of employees. The prime aim of redesigning work systems is the improvement of the quality of working life. …… The second can be called the Managerial Paradigm. All change (designed change) is instrumental and serves to improve the performance of the organization."

Competitive advantage: The IS discipline is the only business discipline with competitive advantage related to systems in organizations. We have a long history of attention to the importance of technology and systems in organizations. No other business discipline is seriously concerned with systems in organizations. We have systems analysis methods that are useful and that can be extended in many directions. We have hundreds of case studies and a long history of research concerning systems in organizations. Unlike the situation 20 years ago, we now have a substantial number of research journals that address different aspects of systems in organizations and could continue along their current paths with the current rate of adaptation and improvement rather than drastic changes.

Identity: We can establish an identity as the people who know about systems in organizations, not just the people who know about IT applications. Our frequent use of the terms system, IS, and MIS make it relatively easy to make the claim that our discipline is about systems in organizations, not just IT.

Inclusiveness: The members of the current IS community fit under the umbrella of systems in organizations. Use of this umbrella term allows us to build on all useful IS research that has been done, to pursue diverse streams of important research dealing with different aspects of systems in organizations, and to make an important contribution to the business community and to our generalist undergraduate and MBA students.

Implementation: Erecting and promoting the umbrella of systems in organizations could be comparatively easy because it does not demand a great deal of change. In reality, most past and current IS research is concerned with IT-reliant systems in organizations or their components.

Table 3 extends these assumptions by summarizing the differences between the systems in organizations vision and the IT artifact vision presented by Benbasat and Zmud.

Table 3. Alternative Visions for the Future of the IS Discipline

	"IT Artifact" Vision	**"Systems in Organizations" Vision**
Core subject matter	Development, implementation, evaluation, maintenance, and long-term evolution of IT artifacts, with special attention to IT-related variables	Development, implementation, operation, evaluation, maintenance, and long-term evolution of systems in organizations, including variables and theories from any relevant discipline
Problems faced by the IS discipline	Loss of required courses and majors, lack of focus, unclear identity, low status in academia, fragmentation,	Loss of required courses and majors, insufficient value added for business or academia.
Value proposition for research	Focus on issues related to the IT artifact in order to establish a clear identity for the IS discipline and to encourage IS researchers to focus on topics where they have competitive advantage relative to other researchers	Maximize the value of research by embracing any issues and variables that increase the understanding of systems in organizations. IT is a component of most important systems in organizations.
Value proposition of the IS discipline for business education, business, and society	Create understandings that may improve the development, implementation, maintenance, evaluation, and long-term evolution of IT artifacts used by individuals, businesses, and other business organizations	Create understandings that may improve the development, implementation, operation, evaluation, maintenance, and long-term evolution of systems in organizations. IT is a component of most important systems in organizations.

Competitive advantage within academia	Knowledge related to IT artifacts and their development, implementation, usage, evaluation, maintenance, and long-term evolution	Knowledge related to systems in organizations and their development, implementation, operation, evaluation, maintenance, and long-term evolution. IT is a component of most important systems in organizations.
Importance of the identity crisis of the IS discipline	An important problem that we should address. Fuzziness of core and boundaries of IS discipline and the resulting identity crisis have diminished our status in academia.	Most fields outside the physical sciences have had long-term identity crises. A field whose key issues and concerns remain constant has lost its vibrancy and ability to adapt and grow.
Attitude toward the uniqueness of the IS discipline	Encourages focusing on issues and variables directly relevant to IT artifacts. Prefers concepts developed within the IS discipline	Encourages seeking and absorbing any valuable concepts from any other field. Discourages "not invented here."
Desirability of more research focusing on IT-related variables	Essential because this is the core of the discipline. Also, as Benbasat and Zmud note, highly desirable because research in this area is under-represented.	As Benbasat and Zmud note, highly desirable because research in this area is under-represented. In general, however, techno-centrism should be avoided because it introduces unnecessary biases.
Importance of encouraging research to address the core of the discipline	Important because addressing topics near the core of the discipline helps establish and maintain the discipline's identity	One of many areas of opportunity to increase the understanding of systems in organizations, but research about any individual work system element might also increase this understanding
Measure of whether research addresses the discipline's core topics	Extent to which the variables are closely related to the five topics in Benbasat and Zmud's nomological net	Extent to which the variables in the research are related to multiple elements of IT-reliant systems in organizations
Inclusion of interests of the IS research community	At least half of the research by members of the IS research community is considered outside the IS discipline or far from its core	Most of the research by members of the IS research community is within the IS discipline.

SUBSTANTIVE BENEFITS OF FOCUSING ON SYSTEMS IN ORGANIZATIONS

Moving toward the *systems in organizations* vision would represent both types of "creative acts" that Weber [2003] says are needed "to establish a core for the information systems discipline." First, it would help us "see things or phenomena that are not the focus of other disciplines" or see those things "in new, rich, insightful ways." Second, it would help us establish a "value-add" associated with theories we propose.

Viewing systems in organizations as the core of the IS discipline would create an integrative lens that amplifies the value of concepts and theories from other disciplines (such as psychology, organizational behavior, accounting, computer science, operations management, and marketing) that are primarily related to individual system elements. It would also lead to additional concepts and theory focusing on organizational systems rather than just their individual components. For example, instead of just using or testing concepts or theories of motivation, emphasis on systems in organizations would encourage development of concepts and theories of how motivation and other human factors interact with business process characteristics within operational systems. Similarly, instead of just applying theories of technology usability, emphasis on systems in organizations would encourage testing how and under what circumstances usability-related features interact with characteristics of system participants and of the information and business

process. Additional areas of likely interest include implications of distinctions between the role of technology user and the role of system participant, the relationships between hard and soft information within organizational systems, and a deeper understanding of technology affordances in relation to business processes and individual differences. Viewing the core of the discipline as systems in organizations rather than just IT artifacts would also encourage greater attention to the difference between a workflow view of a business process (focusing on starts and completions of steps), a methods view focusing on formal techniques used within the steps, and an articulation view focusing on the informal coordination and accommodations required to actually do the work within each step.

A likely direction for development of unique concepts and theories involves alignment and balance within these sociotechnical systems and between these sociotechnical systems and their customers. Such concepts and theories might help generate more valuable and nuanced measures of success than "on time, within budget" or "achieving output goal with adequate quality." They might help in calibrating tradeoffs between interests and goals of various stakeholders including system participants, managers, internal and external customers, and the firm as a whole. They might also help in establishing new concepts and theories related to alignment between systems and the organizations they serve. Another possible area involves the choice and evaluation of the system strategies implicitly or explicitly designed into operational systems. For example, a system's degree of internal integration, complexity, rhythm, degree of reliance on human judgment, rapidity of feedback, and treatment of errors and exceptions are all aspects of system strategies that should be understood more fully. A theory of resource balancing within a work system might help in assessing whether a system's configuration represents over-investing in certain components and under-investing in others.

Emphasis on systems in organizations might also open new research areas related to system-related projects and system life cycles. Because a project is a particular type of work system that is intended to produce something and go out of existence, most of the concepts and some of the theories developed for systems in organizations should be equally applicable to projects. Consequently, research about alignment and balance in on-going sociotechnical systems might help in developing a better understanding of alignment and balance within projects. Research in this area might be particularly useful in achieving appropriate balance in resources allocated to software development versus implementation in the organization. Attention to projects as systems might help in developing diagnostic tools that predict problems and suggest corrective approaches.

DESCRIBING THE CORE OF A BROADLY INCLUSIVE FIELD

Assume that the core of the IS discipline concerns the development, implementation, operation, evaluation, maintenance, and long-term evolution of systems in organizations. With this core, IS research would tend to focus on various aspects of one or more IT-reliant work systems. Those work systems might be information systems, projects, or supply chains, or other types of work systems. The participants in the work systems might be business professionals doing non-IT work or IT professionals developing systems or doing other IT work. In other words, this core would encompass the work of IT professionals, but would also make the IS discipline directly relevant to any manager or business professional because today's businesses operate through IT-reliant work systems.

If a particular research effort focused entirely on a single work system element (such as the participants, the information, or the technology) it might be viewed as belonging in a different discipline, such as organizational behavior, accounting or statistics, or computer science. On the other hand, if the research effort looked at relationships between elements, such as relationships between work practices and properties of participants, information, or technology, it would fit more directly into IS research. It would be a pity if research variables related to IT *per se* were

under-investigated in the aggregate. However, if IT-related phenomena are as valuable to study as phenomena related to other aspects of those systems, the reliance on IT in most systems would imply that IT should be represented in a substantial percentage of the research.

Fate of the nomological net. If IT-reliant work systems were viewed as the core of the IS field, each of the five topics in the nomological net in Figure 2 in Benbasat and Zmud (p. 187) would have a place, but they would be considered in a different light.

- The *IT artifact* would be either the technology itself (the simple view of IT artifact) or the entire IT-reliant work system (the more extensive view of the IT artifact that includes task, structure, and context).
- *Usage* of technology would be viewed as part of the work practices within the work system.
- *Impact* would be measured through before and after observations of the performance of the work system. Use of the nine work system elements would encourage but not require consideration of measures related to properties of multiple work system elements and their interactions.
- The *IT managerial, methodological, and technological capabilities* and *IT managerial, methodological, and operational practices* would be present to varying extents, depending on the role of IT in the issues that are being studied. Regardless of whether the research concerned the creation, operation, maintenance, or improvement of an IT-reliant work system, variables specifically related to IT could play anything from a negligible role to a central role in the research. If IT played no role whatsoever in the research, it is less likely that the research would be undertaken by someone in the IS community.

Degrees of separation from the core. A purpose of the nomological net was to provide a basis for determining whether a particular research project addresses topics distant from central concerns of the IS discipline. Treating IT-reliant work systems as the core of the IS discipline would make it relatively easy to discuss, and possibly even quantify, a particular research effort's distance from the core of the discipline:

- If a research effort encompasses the richness of phenomena involving multiple elements of IT-reliant work systems it is closer to the core.
- If the research effort is not about IT-reliant work systems it is more distant from the core.
- If the research effort focuses exclusively on a particular work system element (such as information or technology), and especially if it focuses on that element without reference to any particular work system(s), it is more distant from the core (which is about systems in organizations, not elements in isolation).
- If the research effort does not mention IT-related variables it is more distant from the core.
- If a research effort focuses on broad aggregations encompassing multiple work systems in different firms, industries, or society as a whole, thereby providing little or no visibility of any particular work system, it is more distant from the core.

Although it might possible to combine those guidelines into a formula that might help journal editors assess the relative centrality of various research publications, efforts in that direction could easily prove counterproductive. The existence of a formula could create incentives that would improperly influence choices of research variables and choices in presenting research results. For example, it might discourage design research because the research product might not be tested in a real work system. It might discourage experimental research because any semblance of a work system usually would be highly artificial. It might discourage theoretical research on topics such as conceptual modeling for similar reasons. It might discourage research about the productivity paradox because the data is not linked to specific work systems. Discouraging potentially valuable research does not seem like a good idea, regardless of whether one views the core of the field as IT artifacts or systems in organizations.

RESPONSES TO LIKELY OBJECTIONS

Just as this paper presented objections to the IT artifact vision, many possible objections can be raised to the systems in organizations vision. The following are brief responses to some of the more likely objections:

Failure to reduce the discipline's diffuseness. Rather than reducing the diffuseness of the field, the systems in organizations vision provides a rationale for including most of the research and researchers currently associated with the field. The field's breadth and inclusiveness would remain comparable to that of most social sciences and professions such as medicine, law, and architecture. Research that most directly addressed the core of the field would look at systems in organizations rather than individual components of systems. As with other social science and professional pursuits, the extent to which a particular research project addressed the core of the field might be useful in deciding which of the field's journals should publish it, but would almost never be a useful indicator of whether the research was important. In fact, some of the research at the field's periphery might be more important than much of the research at its core because the periphery might contain the seeds of the next important developments.

Uncertainty of audience response. The IS discipline's current positioning as a field that combines IT and IT applications is confusing for audiences in academia and industry. The systems in organizations vision might lead to improvements regarding audience perceptions. With the current positioning, many of our colleagues in academia do not appreciate the significance of covering what they see as details of technology that they and many of our students feel competent to use. In many cases we may not convey enough knowledge about the unique nature of IT applications to justify devoting student time and faculty resources in that direction. From a business viewpoint, focusing on IT applications addresses just one part of system problems that increasingly call for truly integrated approaches that ignore artificial boundaries between IT and non-IT variables. The systems in organizations vision might receive a positive audience response because it would establish a plausible claim to a far broader audience than just participants in IT practice. Our audience would be business and IT professionals, both of whom are concerned with systems in organizations. Whether either audience would express more interest in our research would depend mostly on which specific topics are addressed and how the research results are packaged.

Possible bias in a system-centric discipline. If the techno-centric IT artifact vision might generate bias, it is certainly possible that a system-centric approach would generate its own biases. Depending on how enthusiastically it was embraced, the proportion of system-oriented research within the field could increase and the proportion of research directed toward individual system components could decrease. A factor that might reduce any bias in framing or interpreting a research study is explicit recognition of the extent to which a situation under study is a tightly defined work system. For example, budget planning is a looser work system than producing paychecks or processing insurance claims because it involves more uncertainties, is more spread out in time, and is more project-like. Typical Group Support System situations or virtual team situations seem even looser. Consideration of this type of factor might help in avoiding the common mistake of generalizing from one type of information system to another without attending to significant differences in their structure and dynamics.

Problems of abandoning our history. The IS discipline started with IT applications and grew to encompass studies regarding many aspects of IT-reliant work systems and their components. Most of the real world examples we use in teaching involve much more than the use of IT or the processing of information. Whether or not we are ready to admit it, the research associated with the IS discipline already embraced many aspects of IT-reliant work systems. Rather than representing abandonment of our history, movement toward the systems in organizations vision actually reflects a reality that we haven't fully incorporated into our view of ourselves and our work.

V. CONCLUSION

This paper attempted to contribute to the on-going debate about the core and direction of the IS discipline. Although it disputes Benbasat and Zmud's prescription for tightening the IS discipline, it certainly does not disagree with their and Orlikowski and Iacono's concerns that IS research missed opportunities by

> *"under-investigating phenomena intimately associated with IT-based systems and over-investigating phenomena distantly related with IT-based systems."*

This paper's disagreements with Benbasat and Zmud's prescriptions are based on the ambiguity in the concept of IT artifact, the belief that defining the core properties of the IS discipline will not solve our immediate problems and might exacerbate them in the long run, the belief that inadequate value added is a more important problem for the field than its perpetual identity crisis, and the belief that the systems in organizations vision provides a beneficial and practical alternative to the IT artifact vision they favor.

Our status as a field in academia will improve if we can make more plausible claims that every business student needs knowledge that we are especially capable of conveying. Every field includes a fairly wide range of research topics and approaches, but other business fields such as organizational behavior, operations, marketing, economics, finance, and accounting have been more successful in establishing that they convey knowledge essential for every business professional, not just specialists such as accountants, production planners, sales people, or IT professionals. Everyone uses IT, so we don't have a strong claim that business students need our knowledge of IT *per se*. However, IS is the only business discipline that looks seriously at systems in organizations and almost all of these systems rely on IT. Most business professional could benefit from a greater ability to describe, analyze, and design systems in organizations. Viewing ourselves as the people who know about systems in organizations could provide a way to build on our strengths, establish a clearer identity, and achieve the goal of maximizing our long-term contribution to academia, business, and society.

Editor's Note: This article was received on August 11, 2003 and was published on November 24, 2003. The author prepared two revisions over a period of six weeks.

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EDITOR'S NOTE: The following reference list and the reference list at the end of Appendix III contain the addresses of World Wide Web pages. Readers who have the ability to access the Web directly from their computer or are reading the paper on the Web, can gain direct access to these references. Readers are warned, however, that

1. these links existed as of the date of publication but are not guaranteed to be working thereafter.

2. the contents of Web pages may change over time. Where version information is provided in the References, different versions may not contain the information or the conclusions referenced.

3. the authors of the Web pages, not CAIS, are responsible for the accuracy of their content.

4. the author of this article, not CAIS, is responsible for the accuracy of the URL and version information.

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APPENDIX I: USING THE ELEMENTS OF A WORK SYSTEM TO EXPLORE BENBASAT AND ZMUD'S EXAMPLE OF BUDGET PLANNING AS AN IT ARTIFACT

The first column in Table A1 shows the nine elements that are needed for an understanding a work system. The first four are parts of the work system and the other five are typically part of a

basic understanding of a work system in an organization. The second column shows comments about the extent to which each work system element is reflected in Benbasat and Zmud's [2003] description of budget planning as an example of an IT artifact.

Table A1: Representation of Benbasat and Zmud's Budget Planning Example as a Work System

Elements of a work system	**Comment about what is Included or Excluded from the Description of Budget Planning in Table 1, p. 188**
Work practices[7]	The terms *task* and task structure in Table 1, p. 188 correspond to the work system element work practices. The two phrases listed under the IT artifact element task in Table 1, p. 188 might be expanded into five or ten steps of a business process or might be treated as the names of two separate work systems, each of which might be analyzed separately. The first two phrases listed under task structure, "formal enterprise budget planning process" and "institutional budgeting policies, rules, and practices," would be part of the business process description within the work practices.
Participants	Although mentioned only indirectly in Table 1 through "personal agendas and relationships" that are part of the task context, participants are an integral part of almost every work system and special case such as information systems or projects. The term IT artifact brings the connotation that participants might not be included because people typically would not think of themselves as being part of an IT artifact. However, if people perform some of the work in an information system and if the information system is an IT artifact, the participants should be considered part of the artifact. It is necessary to include work system participants rather than just IT *users* in order to understand an IT artifact's "task, task structure, and task context." This is explained in Lamb and Kling's *MIS Quarterly* article "Reconceptualizing Users as Social Actors in Information Systems Research." [2003], whose abstract says, "despite pervasive ICT use, social actors are not primarily users of ICTs. Most people who use ICT applications utilize multiple applications, in various roles, and as part of their efforts to produce goods and services while interacting with a variety of other people, and often in multiple social contexts. Moreover, the socially thin user construct limits our understanding of information selection, manipulation, communication, and exchange within complex social contexts."
Information	The work system element information is not mentioned as one of the four elements of an IT artifact, although the "central archive of historical and anticipated expenditures" listed as part of information technology in Table 1 seems to refer to both technology and information. The archive might use a particular database technology, but to understand the situation fully it is necessary to identify the information that is important, regardless of whether that information resides in a database. For example, although historical and anticipated expenditures might be stored in a database, other relevant information includes project proposals, budget requests, sales forecasts, and economic conditions that might or might not appear in a database. Table 1, p. 188 lists "corporate and divisional objectives" as part of task structure. In work system terms these objectives would be viewed as part of the information in the work system rather than *task structure* because the objectives might change from month to month without changing anything about the structure of the budgeting system.

[7] The term "work practices" replaces the term "business process" that appeared in the work system framework in Alter [2002]. The reason for switching to the more general term work practices was to cover both business processes (prescribed sequences of interrelated steps) and other activities that occur within work systems but are not well described as business processes. Such activities include various types of communication, non-systemized decision making, sensemaking, improvisation, articulation work, workarounds, and exception handling.

Technology	The work system element technology corresponds to the "collaborative budget planning software" mentioned in Table 1 under information technology. Both the "PCs connected via LAN" and the whatever database software is used to store the archive of historical and anticipated expenditures might be included under the work system element technology because they are visible tools for the people doing the planning work; alternatively, they might be listed under infrastructure because they are shared with other work systems. (The analyst would decide which view is more meaningful for purposes of the analysis.)
Products and services	Even a basic understanding of a work system is not complete without considering the products and services it produces and the various *customers* for those products and services. The budget planning work system exists in order to produce a corporate budget. Other products of that IT-reliant work system include documentation of the budget, verbal agreements, and greater understanding of the rationale for the budget.
Customers	The customers of budget planning include the department managers whose budgets are being determined and other managers and stakeholders who may be affected directly by the outcome or may have some other stake in it. Some but not all of the customers are also *participants* in the work system.
Environment	The work system element environment corresponds to *task context*, the fourth element in Table 1, p. 188. Environment may be somewhat broader than task context because it includes the organizational, cultural, competitive, technical, and regulatory environment within which the work system operates.
Infrastructure	Infrastructure is resources shared across different work systems and typically owned and managed outside of those work systems. This may include human, informational, and technical infrastructure. As mentioned above, the PCs, LAN, and database software mentioned in Table 1 (p. 188) under information technology might be considered part of technical *infrastructure* or might be considered part of the *technology* within the work system.
Strategies	Both corporate and work system strategies are relevant to the budgeting work system because strategies designed into the work system should be consistent with corporate strategies. For example, if the corporation has a strategy of extremely rapid response to external conditions, then the budgeting system should operate consistent with that strategy.

APPENDIX II: EXPLORING THE BREADTH OF THE IS DISCIPLINE

To illustrate the breadth of the IS field rather than just its core, Table A2 uses a 4 by 12 grid to classify representative situations and topics studied by members of the academic IS community. Although Table A2 makes no assumptions about whether variables related to IT are the primary focus of whatever is being researched, an underlying assumption for all but the bottom row is that IT is present in the situations being discussed.

The horizontal dimension represents the degree to which the topic involves changes in IT-reliant work systems in specific settings. (Recall that information systems, projects, and supply chains are special cases of work systems (Section II). This dimension starts with IT-related models or theories that might be developed or studied without reference to any particular real world situation. Next come relatively static situations in which IT is being used in operational settings. Further to the right are situations in which an artifact is being built or a system is changing. The specific categories of topics and situations along this dimension include:

- **Theory or model related to IT in use or systems in operation**: Theoretical research and model building include non-empirical research about theories or models that might be related to IT or its use in organizations.
- **Artifact in use or system in operation**: In research about the use of an artifact or the operation of an IT-reliant work system, the state of the artifact or system may change in the situations studied (e.g., a Web site may go down), but the basic form or configuration of the artifact or system does not change during these situations.

- **Unplanned adaptation and change**: In these situations the form or configuration of an artifact or an IT-reliant work system changes through adaptations, workarounds, and experimentation, but without the allocation of significant resources to a planned change project.
- **Projects and planned change**: In these situations projects attempt to create or modify artifacts or IT-reliant work systems.

The vertical dimension represents the extent to which the topic or situation encompasses a complete work system in an organization. This dimension starts with non-system entities because only information appears in the first category (information) and technology first appears on the second category (IT as tool). Users first appear in the 5th category (IS in experimental setting). Information and participants first appear in the real world systems in the 6th (IS in operation). Work systems that may do things other than processing information appear in the 7th (IT-reliant work systems), interorganizational systems appear in the 8th, and the remaining categories extend to aggregations of work systems such as organizations, firms, industries, and society. The specific categories of research topics and situations include:

- **Information**: Information is fundamental to information systems, but important aspects of information can be researched without reference to formal information systems. Information-related topics that the IS discipline might cover include the data in a database, the metadata defining a database, the entity-relationship diagrams identifying the entity types and attributes included in a system, the requirements for an information system, the computerized and non-computerized information and knowledge that is important in a system in an organization.
- **IT as tool:** Information technology can also be researched without reference to formal information systems. Research related to IT as tool involves the potential or actual creation, modification, or use of hardware, software, or documentation that typical users will view as playing a direct and visible role in performing value added work in a particular situation. Examples include a model used to calculate insurance premiums according to a new theory of risk taking or CAD software that incorporates a new aspect of design theory.
- **IT as infrastructure**: Refers to the potential or actual creation, modification, or use of IT infrastructure that is shared across multiple work systems and that may be hidden from a user.[8]
- **IS on computer**: Refers to the potential or actual creation, modification, or operation of the computerized components of complete information systems (rather than specific IT tools) that contain domain specific concepts but may or may not be customized to a particular situation. Implementation in an organization is beyond this level's scope.
- **IT/IS in experimental setting**: Use of IT or of an information system in an artificial situation that attempts to represent or test some aspect of usage in real world situations. This category introduces the concept of user because the experiment involves use of IT or IS by a person.
- **IS in operation**: Refers to the creation, modification, and operation of an information system, a particular type of work system whose business process is limited to processing information and therefore performs no material tasks. (Information systems are restricted to capturing, transmitting, storing, retrieving, manipulating, and displaying information.) By the definition of a work system, an information system includes a business process, participants, information, and technology.
- **IT-reliant work system**: Refers to the creation, modification, or operation of a work system that relies on IT but may also support or perform activities related to material things, decision making, communication, and thinking. Most important systems in organizations are IT-reliant work systems.

[8] Whether a particular unit of IT belongs on the tool or infrastructure level in a particular situation depends on the extent to which its existence, the affordances it provides, and the details of its use will be directly evident to work system participants rather being largely hidden or invisible to them.

- **Interorganizational work system**: Refers to the creation, modification, or operation of work systems whose participants work in different firms. A supply chain is an example.
- **Organization**: Concerns the role of IS/IT in the creation, modification, activities, or results of an organization. An organization is a combination of multiple work systems coordinated to accomplish goals that these work systems cannot accomplish individually.
- **Firm:** Concerns the role of IS/IT in the creation, modification, activities, or results of an entire firm. A firm is a combination of multiple organizations coordinated to accomplish goals that these organizations cannot accomplish individually.
- **Industry:** Refers to IS/IT activities or results analyzed or aggregated across multiple firms engaged in a particular form of commerce or commerce related to a category of goods.
- **Society:** Refers to operation, evolution, or impacts of IS/IT in relation to an aspect of an entire society.

Table A2: Typical Examples of Topics and Situations Often Associated with the IS Discipline

	Theory or model related to IT in use or systems in operation	**Artifact in use or system in operation**	**Unplanned adaptation and change**	**Projects and planned change**
Society	• Theoretical understandings of privacy	• Medical records system's impact on society • Extent of the digital divide	• Diffusion of new technology in society • Effects of infusing IT in grade school education	• Analysis of potential impacts of alternative medical records systems on society
Industry	• Theoretical link between industry characteristics and IT usage	• Productivity paradox • Inter-industry comparisons of IT-intensiveness	• Diffusion of new technology across an industry	• Industry-wide impact of standardization on SAP or XML
Firm	• Theory of alignment between business and IT • Theory of real options • Theory of converting IT investments to IT assets	• Contribution of IT to firm's flexibility and profitability • Centralization vs. decentralization effects of IT usage	• Diffusion of technology across a firm • Workarounds undermine corporate initiatives that use IT to establish greater standardization	• Reengineering as a corporate initiative • Achieving alignment between business and IT • Use of real options in actual planning
Organization	• Concept of the "intelligent organization" • Modeling organizations as information processing entities	• Perceptions of the success of systems in organizations • Impact of IT on organizational	• Diffusion of technology • Assimilation gaps • Adaptation of technology as it diffuses	• Impact of organizational culture on choice/ implementation of IT • Windows of opportunity for achieving change

Inter-organizational work system	• Theory of execution monitoring in a supply chain • Model of supply chain replenishment strategies	• Operation of a supply chain • Determinants of efficiency in a supply chain • Effectiveness of B2B ecommerce	• Importance of workarounds by suppliers and buyers in keeping supply chains operating.	• Process of determining XML standards among supply chain partners.
IT-reliant work system	• Theory of tradeoffs among inconsistent system objectives • Theory of virtual teams • Simulation of IT-enabled work systems	• Case studies of strategic systems in organizations • Virtual teams in real settings • Effectiveness of management information systems	• Small changes that make the work systems more effective • Workarounds to accomplish required tasks despite existing systems and methods	• Reengineering of work systems • Change management related to work systems • Implementations combining IT change and other changes
IS in organization	• Theories of information systems, coordination, or computer-mediated communication • Taxonomy of data errors in systems	• Supplier specific aspects of ecommerce • Strategic information system in operation • Human-computer interaction in real settings	• Small IS changes that make the IS more effective • Workarounds to accomplish tasks despite interference from information systems	• Initiation of new IS projects • Development or acquisition of software • Testing • Implementation in the organization
IT/IS in experimental setting	• Experiments in decision making • Experiments in conceptual modeling	• Human-computer interaction or virtual teams in experimental settings	• Experiments related to workarounds, adaptations	• Experiments related to IS development and implementation
IS on computer	• Modeling the technical performance of information systems	• Technical performance of information systems in practice	• Maintenance of hardware and software	• Practices related to internal design and technical testing of program suites
IT as infrastructure	• Alternative models and theories of infrastructure	• Use and impact of technical infrastructure	• Adaptations and evolution of technical infrastructure	• Acquisition or development of technical infrastructure
IT as tool	• Theory of human computer interaction • Design criteria for Web sites • Theory of Web site aesthetics	• Use of email, spreadsheets, and other general purpose software • Use of programming tools and languages	• Degrees of freedom built into tools to promote adaptations • Adaptations and workarounds in using programming tools or languages	• Development of programs used as tools • Determination of requirements for commercial software products

Information	• Theory of conceptual modeling • Theories related to measurement • Information theory • Communication theory	• Usage of information in practice • Measurement of database accuracy • Determinants of ability to interpret information	• Adaptations and workarounds when existing information is inadequate	• Quality of requirements produced during IS development • Understandability of conceptual models produced during development

APPENDIX III. IDENTITY CRISES IN OTHER FIELDS

Discipline	Quotation or Title of Article, with the Identity Crisis in Bold
Sociology	"Sociology is a discipline ever in search of its 'self'. Adding to this tension is the recognition that the sociologist's object of study is amorphous and ill-defined … sociology acquired had no independent identity of its own but remains a 'residual category', invariably tagged on to a 'big brother' partner – whether economics, anthropology, politics or social work. … many sociologists believe that there is a tension built into the practice of sociology (and not only Indian sociology), an **identity crisis** that is not shared by other social science disciplines, and it is this tension that compels sociologists to perennially engage in reinventing their bicycles." [Uberoi 2000] A number of articles related to the identity crisis of sociology cited: "American Sociology Since the Seventies: The Emerging **Identity Crisis** in the Discipline." [Crane and Small. l992]
Anthropology	"What is the domain of anthropology? This 'study of man' has confronted librarians with its unsettling ability to be both everywhere and nowhere. It is a chameleon discipline which may at one moment don the garments of philosophy while theorizing on the grandiose and in the next disappear under the calico cloak of the quotidian. … [Choi's] research contests the definition of anthropology as the 'holistic study of man.' The results of her citation analysis show that the sub-disciplines of anthropology are becoming increasingly isolated from each other. … Choi presents a troubling picture of fragmentation in a field undergoing what may be called an **identity crisis**." …. "As we have seen, the field of anthropology has always had an identity problem." [Michalski 1999] Also, "Anthropology's **identity crisis**: The politics of public image" [Shore 1996], cited in "Social Anthro-What? - The image and identity of Social Anthropology" [Mandal et al]
Political science	"There can be little doubt that the discipline of political science has turned inward in recent decades. This inward turn might be explained in numerous ways. We might interpret it in terms of an unwillingness on the part of political scientists to produce research relevant to prevailing social and political problems.… I want to discuss how the discipline's scientific **identity crisis** … has resulted in the current state of the discipline in which political scientists "talk" only to other political scientists and then only to those who "speak" their language. [Duvall 1998]
Public administration	'Consequently, the study of 'Public Administration" is also thought to lack a simple, singular definition of its scope. Rather, it is thought that there are many different, sometimes competing, definitions of its subject matter. As these different definitions remain relatively autonomous, the resulting confusion is held to constitute an '**identity crisis**' … Some even suggest that such a crisis is "Public Administration's" identity." [Abel and Sementelli, 2002] "Metaphorically, an optimistic view of this "**identity crisis**" would stress the idea that such conditions arise during periods of adolescence -- thus holding out the promise of a productive future once such youthful anxieties are overcome. But our identity problem has proven more resistant and enduring. …'**Identity crisis**' has been one of several labels used to characterize the field's problems. I could just as conveniently called it an "intellectual crisis," a 'paradigmatic quandary,' or a 'shifting' among 'competing visions.'" [Dubnick, 1999]

International relations	" … any crisis of realism became also an **identity crisis** of the discipline. … Realism fulfilled an important paradigmatic function for the establishment of the discipline of IR. [international relations] It offered a demarcation criterion to set such a discipline apart from political science, law and history. Such criteria are important, since IR has been in a systematic **identity crisis** ever since its inception. The systematic **identity crisis** results from the fact that there is nothing on the level of method or subject-matter which is unique to IR. [Guzzini 2001]
Geography	"The Marxist viewpoint of Eliot Hurst (who rejects all subject boundaries) is clear in a provocatively-titled chapter "Geography has neither existence nor future" …he goes on (p.93) to argue that *Geography is going through another **identity crisis**... The current crisis is merely the latest manifestation of what Bartels [1982] has identified as geography's hidden 'self-contempt'.* Whilst it is perhaps dangerous to point to the emergence of such opinions as evidence of intellectual rigour …. it does not necessarily indicate a lack of self-definition; rather it suggests great diversity." [Goodman 1985]
American studies	"Despite its youth American Studies has several histories. Accounts of its aims have varied greatly. In some parts of the world, especially in universities in the United States since the mid 1950s, the field seems perpetually in an **identity crisis**. Scholars are both eager to be counted part of the field and loath to define it. Many of the field's leaders have treated the mere mention of "method" as if it were a threat to intellectual liberty. Humanists, who increasingly dominate the field in the U.S., particularly worry about the prospect of creeping "methodolatry" [Horwitz 2002]
Marketing	"Given the recent turbulent changes that have swept through higher education, it is appropriate to say that our discipline is in a severe **identity crisis**. … With tremendous public and political criticism mounting against institutions of higher learning, marketing academe's individual scholars and institutions must send the strongest message possible to both the academic and practitioner communities as to what has really been accomplished." [Ford et al, 2001] Earlier citation to the **identity crisis** in marketing: Bartels, R. The **identity crisis** in marketing. Journal of Marketing, 38 , October 1974, 73-76.
Education	Will the University of the next century be a learning factory or a place of enlightenment? This `**identity crisis**' is currently causing much conflict and confusion. For most of this century at least the university had a major role in the establishment and support of a `professional class' based on the Human Capital Theory of Adam Smith …" [McKey 1997] Also, "The **Identity crisis** of Educational Planning." [Levin 1981]
Comparative education	"If at present comparative education is suffering from an **identity crisis**, one reason may be its eclecticism. When anthropologists, sociologists, economists, political scientists, historians, and philosophers can all make some claim to expertise in the field, it becomes extremely difficult to identify its limits with respect to both method and data. There is no consensus about the area of discourse over which comparative educators properly may range." [Noah and Eckstein, 1969]
Library education	"This problem of theory versus practice has caused an **identity crisis** in library education. A member of the ALA Committee on Accreditation noted that very few of the library schools visited …. were able to articulate their mission, goals and objectives. ….. blamed this lack of cohesive vision for the weakening of library schools. They say that 'library schools lost turf battles when educators could not effectively explain, for example, how and why their course offerings did not overlap with business or computer science curricula.'" [Kehl 2000]
Ecological economics	"Ecological economics clearly has an **identity crisis** … That this is still the case a decade on is a little strange. My advice would be to live with multiple agendas and purposes – celebrate them even – but articulate them clearly. Ecological economics is young – ten years as an intellectual field or as an institution is not sufficient for sensible judgment. Ecological economics should not yet have to decide what it wants to be when it grows up. Enjoy the diversity in theory, method, language and intent while you can, before the enterprise ossifies and you have to create another one." [Dovers 2000]

Journalism and communication studies	"Journalism and communication studies wrestle with an ongoing **identity crisis** within the academy: Beyond the debate over professionalism versus liberal education, our field is confronted with an opportunity to move from the peripheral position it has held on many college campuses to assume a key role at the core of the academic mission." [Pease 1993]
Competitive intelligence	"Competitive intelligence is no longer a young discipline. On turning 18 … the competitive intelligence field is well past childhood. So why is it still in an **identity crisis**? Why do some academics and consultants, members of SCIP's board, and distinguished Fellow-award winners continue the debate what makes a CI professional? [Gilad and Herring 2003]
International logistics	"… identity [of international logistics] has not been clearly established, providing a state of confusion in academic circles. … A definition of logistics management that encompasses the international dimension … attempts to clarify the **identity crisis** of the logistics discipline. The proposed definition addresses the issues while providing grounds for positive scientific studies in the field while at the same time leaving the normative orientation open." [Hurtado, 1999]

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Communications of the Association for Information Systems

ISSN: 1529-3181