

THE IDENTITY CRISIS WITHIN THE IS DISCIPLINE: DEFINING AND COMMUNICATING THE DISCIPLINE'S CORE PROPERTIES¹

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commentary, we begin by discussing why establishing an identity for the IS field is important. We then describe what such an identity may look like by proposing a core set of properties, i.e., concepts and phenomena, that define the IS field. Next, we discuss research by IS scholars that either fails to address this core set of properties (labeled as error of exclusion) or that addresses concepts/phenomena falling outside this core set (labeled as error of inclusion). We conclude by offering suggestions for redirecting IS scholarship toward the concepts and phenomena that we argue define the core of the IS discipline.

Keywords: IS discipline, IT artifact, IT nomological net, errors of exclusion, errors of inclusion

ISRL Categories: IB03, IB04

Abstract

We are concerned that the IS research community is making the discipline's central identity ambiguous by, all too frequently, under-investigating phenomena intimately associated with IT-based systems and over-investigating phenomena distantly associated with IT-based systems. In this

Introduction

The Information Systems (IS) scholarly community, like any new collective, has strived, since its inception in the 1970s, to develop a meaningful, resilient identity within the institutions that comprise its organizational field—namely, the organizational science and information science research communities, business and information science academic institutions, and the various

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organizations, industries, and professional groups that comprise the information technology (IT) industry. Such a community objective is admittedly ambitious, given the high failure rate associated with organizational foundings (Aldrich 1999). Still, we maintain that, after 30 years, insufficient progress has been made in establishing this collective identity. Further, recent events—the collapse of the dot.coms, the “e-ing” of both business and other scholarly disciplines, the recent tightening of the IT job market—seem to have raised anew concerns across the discipline that the viability and unique contributions of the IS discipline are being questioned by influential stakeholders.

IS scholars research and teach a set of diverse topics associated with information technologies, IT infrastructures and IT-enabled business solutions (i.e., information systems), and the *immediate* antecedents and consequences of these information systems (e.g., managing, planning, designing, building, modifying, implementing, supporting, and/or assessing *IT-based systems* that serve, directly or indirectly, practical purposes). The focus of this commentary is not about whether such a diversity of topics is beneficial for the IS field (Benbasat and Weber 1996; Robey 1996). Our concern is more fundamental: We are worried that the IS research community is making the discipline’s central identity even more ambiguous by, all too frequently, under-investigating phenomena intimately associated with IT-based systems and over-investigating phenomena distantly associated with IT-based systems.

In this commentary, we begin by discussing why establishing an identity for the IS field is important. We then describe what such an identity may look like by proposing a core set of properties, i.e., concepts and phenomena, that define the IS field. Next, we discuss research by IS scholars that either fails to address this core set of properties or addresses concepts/phenomena falling outside this core set. We conclude by offering suggestions for redirecting IS scholarship toward the concepts and phenomena that we argue define the IS discipline.

The Need for Establishing an Organizational Identity for IS ■

Albert and Whetten (1985) argue that an organizational identity must satisfy three necessary and sufficient criteria: claimed *central character*, claimed *distinctiveness*, and claimed *temporal continuity*. These criteria indicate that a collective’s identity is based on a set of important, essential core properties that distinguish the collective from others in its environment. While these core properties will inevitably evolve in response to environmental exigencies, shifts in a collective’s identity would exhibit strong path dependency.

Adopting a theoretical lens from institutional and ecological theory (Aldrich 1999),² it is insightful to view IS scholars as a community of nascent entrepreneurs attempting to create a new population, i.e., the IS discipline, within an organizational field populated by other scholarly disciplines or populations. Aldrich argues

Together, founders and members of new organizations create communities of practice, molded by forces that heighten the salience of organizational boundaries. Boundaries become more salient as the contrast between organizational activities and surrounding environments deepen....Only when bounded entities emerge can selection pressures change the organizational composition of populations. (p. 161)

We argue that the primary way in which a scholarly discipline signals its boundaries—and in doing so, its intellectual core—is through the topics that populate discipline-specific research activities.

²While Aldrich’s ideas are primarily couched in the context of for-profit collectives, his ideas are intended to apply to non-profit collectives as well: “I will do the best I can to ground the book in the substance of organizations in all their diversity; rather than write as if the Fortune 500 were the only creatures in the organizational zoo. I focus primarily on businesses, but other kinds of organizations are also covered” (p. 1).

Two related problems confront the members of a new population as they strive to succeed in their environment: they must discover or create effective routines and competencies with regard to this environment, and they must establish ties with elements of the environment that might not understand or acknowledge their existence. Aldrich categorizes the first as a *learning* issue and the second as a *legitimacy* issue. We believe that the IS discipline has made significant progress in resolving the learning issue, as reflected through its methodological and theoretical rigor, its methodological and theoretical diversity, and the respect afforded the discipline's major journals, *MIS Quarterly* and *Information Systems Research*.³ Still, this learning issue will never be resolved fully until a dominant set of standards and designs—for a scholarly field, a coalescence regarding the phenomena about which knowledge is developing—is accepted by the population's members. Without a *dominant design*, population boundaries will be ambiguous and organizational knowledge fleeting (Aldrich 1999). We argue that a dominant design for the IS discipline has yet to be realized.

This lack of consensus regarding a dominant design proves particularly troublesome as the IS discipline strives to resolve the second of Aldrich's problems, the legitimacy issue. Aldrich argues that two types of legitimacy exist: cognitive legitimacy and sociopolitical legitimacy. He defines each as follows (p. 230):

- “*Cognitive legitimacy* refers to the acceptance of a new kind of venture as a *taken for granted* feature of the environment.”
- “*Sociopolitical legitimacy* refers to the acceptance by key stakeholders, the general public, key opinion leaders, and government officials of a new venture as appropriate and right. It has two components: *moral acceptance*, referring to conformity with cultural norms and values, and *regulatory acceptance*, referring to conformity with government rules and regulations.”

³Both journals are included in the list of administrative sciences journals used by the *Financial Post* and *Business Week* to rank business schools.

We believe that the IS discipline has made significant progress regarding sociopolitical legitimacy, as seen via the institutionalization of IT as an integral part of today's organizational and economic contexts, the acknowledgement of the importance of IS by academic accreditation bodies, the presence of IS academic departments and degree programs at most public and private universities, a professional society (Association for Information Systems) able to demonstrate influence within the organizational field, and the aforementioned respect afforded *MIS Quarterly* and *Information Systems Research*. What seems less affirmed, however, is the discipline's cognitive legitimacy. For too many key actors within the discipline's organizational field (e.g., governing bodies, executives from public and private organizations, university and college administrators, and, most importantly, scholars from other disciplines), the core phenomena being explored through IS scholarship—and, hence, the nature of the discipline—remains amorphous.

Because of the interdisciplinary nature of IS research, IS scholars have emerged from varied academic backgrounds: organization science, computer science, information science, engineering, economics, and management science/operations research. As a result, the theories embraced, the methods applied, and the topics addressed by IS scholars are themselves varied, producing the diversity exhibited across the discipline. Like Robey (1996), we accept this breadth in intellectual background. The complex and imposing challenges associated with IT management, development, and use demand interdisciplinary approaches to their resolution. However, topical diversity can, *and has*, become problematic *in the absence of a set of core properties*, or central character, that connotes, in a distinctive manner, the essence of the IS discipline. If influential stakeholders are unable to comprehend the nature, importance, and distinctiveness of the role being served by the IS discipline, these stakeholders are unlikely to acknowledge its legitimacy within the organizational field.

An Identity for the IS Discipline

In fact, a natural ensemble of entities, structures, and processes does exist that serves to bind together the IS subdisciplines and to communicate the distinctive nature of the IS discipline to those in its organizational field—the IT artifact and its *immediate* nomological net.

We conceptualize the IT artifact (see Figure 1) 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). 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. Table 1 illustrates this view of the IT artifact through two examples, one in a business setting and one in a personal setting.

The IS discipline involves much more, however, than the study of the IT artifact. Specifically, IS scholars and IS practitioners strive to increase their collective understandings of (1) how IT artifacts are conceived, constructed, and implemented, (2) how IT artifacts are used, supported, and evolved, and (3) how IT artifacts impact (and are impacted by) the contexts in which they are embedded. Hence, our view (Figure 2) of the phenomena studied by IS scholars—and, hence, the set of core properties of the IS discipline—includes

- The managerial, methodological, and technological *capabilities* as well as the managerial, methodological, and operational *practices* involved in planning, designing, constructing, and implementing IT artifacts.
- The human behaviors reflected within, and induced through both the (1) planning, designing, constructing, and implementing, and (2) direct and indirect usage of these artifacts.
- The managerial, methodological, and operational practices for directing and facilitating IT artifact *usage* and evolution.

- As a consequence of use, the *impacts* (direct and indirect, intended and unintended) of these artifacts on the humans who directly (and indirectly) interact with them, structures and contexts within which they are embedded, and associated collectives (groups, work units, organizations).

Two aspects of the nomological net shown in Figure 2 are vital. First, the constructs involved are *intimately* related to the IT artifact. For example, IS development team practices involve behaviors lodged deeply within IT development activities rather than reflective of more generic interpersonal or group interactions. Second, as observed from Figure 2, the nomological net accounts for both forward and reverse causation.

All too often, however, elements from this nomological net are seemingly absent from much IS scholarship (Orlikowski and Iacono 2001). Such an observation is not unique, having also been raised, for example, by Massey et al. (2001):

Although IS researchers have rightly concluded that the meaning of technology is socially constructed...our discipline's unique contribution to the broader field of social science requires that we understand technology as well as the organizational and individual issues surrounding its use. If the IS community chooses a future that moves us away from a rigorous understanding of technology itself, then we are choosing wrong. (p. 27)

Our specific concern herein involves two troubling trends regarding the current conduct of IS research: *errors of exclusion* of constructs reflecting the core properties of the IS discipline, i.e., the IT artifact and its immediate nomological net, and *errors of inclusion* of constructs that lie outside this scope.

Errors of Exclusion

Based on an examination of the research articles published in *MIS Quarterly* and *Information Sys-*

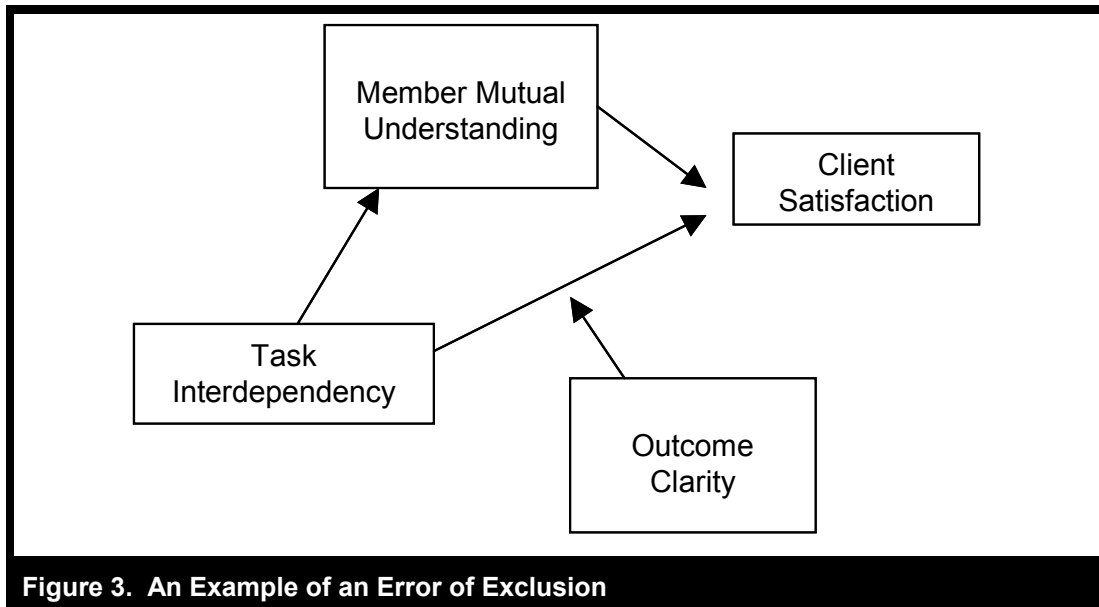
Budget Planning		Gardening Club Internet Presence	
Information Technology	<ul style="list-style-type: none"> • Collaborative budget planning software • Central archive of historical and anticipated expenditures • PCs connected via LAN 	Information Technology	<ul style="list-style-type: none"> • ISP hosting service • E-mail, bulletin board, and message threading software • PCs, browser, and Internet connections
Task	<ul style="list-style-type: none"> • Specification of corporate and divisional budgets • Analysis of budget alternatives that meet corporate and divisional needs 	Task	<ul style="list-style-type: none"> • Point to useful gardening information and product sources • Share gardening practices • Answer gardening problems • Review gardening products
Task Structure	<ul style="list-style-type: none"> • Formal enterprise budget planning process • Institutional budgeting policies, rules, and practices • Corporate and divisional objectives 	Task Structure	<ul style="list-style-type: none"> • Interaction etiquette and rules • Content management processes
Task Context	<ul style="list-style-type: none"> • Enterprise and divisional values and norms • Industry and firm business conditions • Personal agenda and relationships • External and internal jolts 	Task Context	<ul style="list-style-type: none"> • Membership rules • Members interests • Member expertise levels • Membership values and norms • Periodic face-to-face club meetings

tems Research over the last two years (2001 and 2002), we believe that about one-third offer and/or examine research models that include neither the IT artifact nor at least one of the elements associated with its immediate nomological net (see Figure 2). A variety of topical themes span these articles, including online consumer behavior, trust-building, research methodology, online services delivery, collaboration, decision making, knowledge management, resource allocation, online communities, and supply chain management.

To illustrate what we mean by exclusion, we offer a simplified, hypothetical research model (Figure 3). Here, the study context involves software development groups, the outcome variable

reflects client satisfaction, and the predictor variables are expected to influence the outcome variable as follows:

- The greater the mutual understanding among project team members, the greater the client satisfaction.
- The greater the interdependency of tasks assigned project team members, the greater their mutual understanding.
- The greater the task interdependency, under a low goal clarity condition, the greater the client satisfaction.



- The lower the task interdependency, under a high goal clarity condition, the greater the client satisfaction.

While we are not aware of such a study having been undertaken, it is situated within an IS context, could easily be situated within the IS literature, and is similar in spirit to other studies that have been published in the IS literature.

Note, however, that neither the IT artifact nor elements from its immediate nomological net are explicitly present in this research model. Further, the instrumentation (most of which would be borrowed from reference disciplines) likely to be applied in examining the research model would as well lack explicit linkage with either the IT artifact or elements from its immediate nomological net (except, perhaps, through extensive item rewording, which would then jeopardize the instrumentation's psychometric properties). Finally, a study undertaken to assess the above research model could have involved any project team context, IS-focused or otherwise. In other words, the research model *at its core* is not about the influence of software development team member interaction on software success. Rather, it is about the influence of project team (or group)

member interaction on client (or stakeholder) satisfaction. While such a study examines an 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. Clearly, it is appropriate for an IS scholar to propose and study such a research model, especially as the project-based nature of IT activities has provided IS scholars with keen insights into project-based work. Our concern rises only when the products of such research are positioned (via submission to and publication in a top IS journal) as IS scholarship.

Why is it problematic to publish research excluding the IT artifact and/or elements from its immediate nomological net in IS journals? Because such research makes ambiguous the boundaries of IS scholarship, thus raising questions regarding its distinctiveness—and hence its legitimacy—with respect to related scholarly disciplines. If IS research is no different from that undertaken in more entrenched scholarly disciplines (e.g., marketing, operations management, organizational behavior), why should institutions in the organizational field continue to invest in this new intellectual capability?

We emphasize that our intention is neither to discourage IS scholars from pursuing research that excludes the constructs and phenomena depicted in Figure 2 nor to discourage non-IS scholars from publishing appropriately focused research in IS journals. IS scholars have much to contribute to scholarship, regardless of the core issues involved (e.g., service delivery, trust among members of a collaborative group, customer or supplier relationships, organizational learning). Such contributions can prove valuable in reinforcing the *individual reputations* of IS scholars and in enhancing the *collective reputation* of the IS discipline. However, such research should not be positioned as IS research. Instead, it should be submitted to scholarly journals whose readership includes the communities of scholars most readily associated with the (non-IS) phenomena being investigated. Moreover, when non-IS scholars publish research on IS phenomena in IS journals, they bring new theories, methodologies, and insights to enrich the study of these phenomena and serve to enhance the legitimacy of these IS journals and, hence, of the IS discipline.

Errors of Inclusion

We are also concerned with the issue of inclusion—namely, when IS research models involve the examination of constructs best left to scholars in other disciplines. Even when the IT artifact and/or other elements associated with its immediate nomological net are included in such research models, the significant causal distance that tends to separate the IS and non-IS constructs produces extensive theoretical ambiguity regarding if and how the IS constructs influence or are influenced by the non-IS constructs.

Because e-commerce is a current area of major interest to IS scholars, we will illustrate the error of inclusion using an example from this field of study. E-commerce has a multidisciplinary focus, with marketing being one of the major disciplines that IS academics have relied upon to study online purchasing behavior. Indeed, marketing researchers have done more than IS researchers to study online consumer behavior. This leads to an

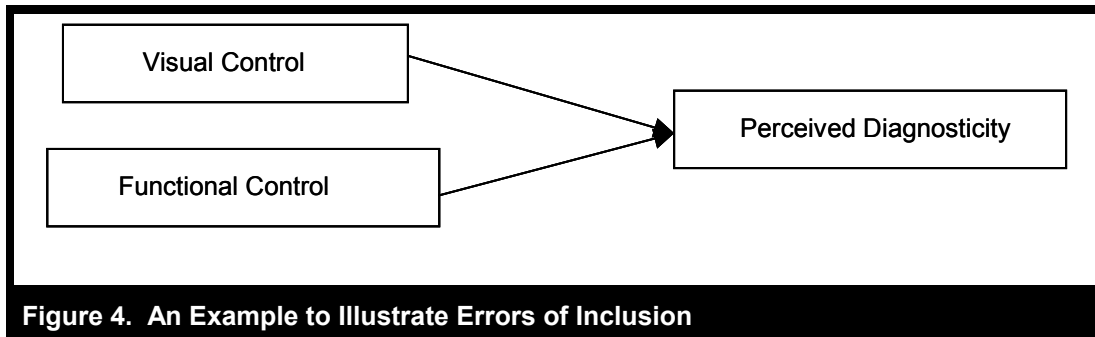
important question: What should be the nature of the contributions made by IS scholarship to e-commerce research? Or, to put it differently, what is the nature of the specific expertise held by IS scholars that distinguishes our e-commerce research from that undertaken by scholars from other disciplines?

As an example, consider the research model shown in Figure 4 that was used in an examination of how IT could provide a customer with a virtual product experience, i.e., an experience enabling the customer to better appreciate the product's qualities when the product is being purchased through an online channel and, hence, cannot be experienced directly (Jiang and Benbasat 2002).

In Figure 4, the two types of control represent the IT treatments. Visual control, enabled by software such as QUICKTIME or FLASH, allows a customer to manipulate a product image via mouse and keyboard, e.g., move, rotate, and zoom a product so as to view it from different angles and distances. Functional control, supported by software such as SHOCKWAVE, allows a customer to explore a product's functionality via mouse and keyboard. Perceived diagnosticity, the dependent variable, is defined as the extent to which the consumer believes the shopping experience is helpful in evaluating the product (Kempf and Smith 1998).

When this study is presented in research workshops, two questions are often raised. The first is: Why isn't there a construct representing buying behavior in the model? After all, isn't IT being used here in order to improve the likelihood of a sale? An off-the-cuff answer is that the interest of the researchers lies primarily with how the IT manipulations have been able to (positively) influence customers' perceived understanding of the online product and that this objective, alone, is a worthwhile goal. (Note that this research model has *one degree of separation*⁴ between the IT variables and the consequent variable.)

⁴This term was used originally by psychologist Stanley Milgram.



Usually, the questioner is not satisfied with the above response. Another answer is that there are a number of factors that might intervene between understanding a product and buying it, such as the consumer having a need for the product or having the monetary resources to buy the produce. Understanding a product does not mean that one will necessarily buy it. Another, usually more accepted, argument is that because one's understanding of a product might lead to a positive, neutral, or negative reaction to the product, the evaluation and hence the purchase behavior is indeterminate. (Note that including mediating variables and a purchase behavior produces a research model with multiple degrees of separation between the IT variables and the consequent variable, i.e., purchase behavior.)

The second question that is often raised is: Why hasn't the study investigated *all* the factors that could potentially influence diagnosticity? Indeed, a number of other factors—in addition to *direct product experience* as simulated or effected by IT—are potentially salient, such as a customer's *a priori* familiarity with the product in question. While this second question is likely to be of great interest to marketing scholars, our view is that it is of far less interest to IS scholars. The research objective for the study represented by the research model in Figure 4 was to examine the contribution of IT to online product understanding, not to study the total set of factors that might have such an influence. There are, of course, other IS-related factors, such as a customer's expertise with or comfort in using the IT in question, that certainly could be added to this research model.

The non-IS factors associated with a customer's product understanding have already been studied in the marketing literature, are in the domain of marketing, and are better left to scholars in marketing—scholars with more expertise in such matters.

Our view, therefore, is that we should not increase this research model's complexity by including more marketing constructs in either measuring all potential influences on diagnosticity or measuring the influence of diagnosticity on other customer behaviors. Could we do so if we wanted? Probably, but at the cost of a more complex study and the burden of investing time in learning the theories and measures of another discipline, with little to be gained for the IS field by so doing.

There are adverse consequences to both increasing the degrees of separation in models being investigated or decreasing the ratio of IT-related constructs to total number of constructs in a research model. First, it takes focus away from our primary goal, which is to theorize about and study the enabling role of IT (and associated IT activities). Second, we spend a significant amount of energy in making marginal additions to the theories that we have borrowed, rather than thinking about original contributions to the IS field. Consider the direction that IT adoption studies have taken over the last decade. A large number of papers have been preoccupied with minor improvements to the theory of reasoned action and other technology adoption models. Instead, our focus should be on how to best design IT artifacts and IS systems to increase their

compatibility, usefulness, and ease of use or on how to best manage and support IT or IT-enabled business initiatives. Interestingly, this is what we used to do in experimental studies in the 1970s and 1980s, e.g., the studies on decision support systems (DSS). It is possible that the current emphasis with theories from other disciplines has distracted the IS research community from developing its own theories. Third, IS faculty allegiance develops in these other disciplines, rather than the IS discipline. Last, 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.

Two types of criticisms⁵ may legitimately be raised to our errors of inclusion arguments. First, who is responsible for integrating the findings and models from different fields to provide a larger picture? Here we have no objections to IS researchers integrating their models with those already developed in non-IS fields to inform the IS audience of the wider context enveloping a phenomenon.

Second, might there not be an under-specification problem that could lead to several concerns? We agree that under-specification can prove problematic:

- It is possible to overlook non-IT variables that have important interactive, or moderating, effects with the independent variables of the study. In the virtual product experience study mentioned above, it is likely that the nature of the product will have a moderating effect on the impact of the IT-related variables of visual and functional control. If the product is one that can be described mainly by quantitative attributes—such as weight, size, and durability—then we would expect that visual and functional control to have less impact on diagnosticity than if the product needs to be experienced to be evaluated, i.e., to enable

the customer to acquire a richer feel for the product's appearance and/or functionality. As a consequence, omitting variables that characterize a product's essential nature will likely lead to research outcomes that fail to fully reveal the benefits of an IT-enabled, virtual product experience.

- When the outcome variable is IT-related, such as is the case in a study aiming to understand the organizational factors that promote successful strategic IT planning, it is certainly important to fully understand all the influences that result in successful strategic IT planning.
- When the research objective is to understand the relative importance of IS variables *vis-à-vis* non-IS variables, then the inclusion of non-IS variables is certainly necessary. An example of such a study, in the e-commerce context, would be one desiring to determine if trust in the merchant was a more influential determinant of purchase behavior than the attractiveness of the merchant's Web site.

Concluding Comments

The central argument in this commentary is that the problems of exclusion and inclusion hamper efforts toward developing and reinforcing a central identity for the IS discipline. What are the reasons for this state of affairs? Is it a consequence of borrowing too much from reference disciplines, a strategy we adopted in the early 1980s to achieve legitimacy (Benbasat and Weber 1996)? It might be so, because heavy reliance on theories that neither have a basis in IT-related behaviors nor are founded on IT-related constructs would naturally distract us from reaching agreement regarding the core set of phenomena associated with IS scholarship. This would then cause us to gravitate toward investigating constructs, and associated phenomena, that lie in others' domains. We see no problems in adopting theories from reference disciplines, as long as we either apply them in investigating a phenomenon included within our offered delineation of the IS

⁵We thank one of the anonymous reviewers for bringing up these issues.

discipline (see Figure 2) or adapt them to reflect a unique IT or IS component. For example, the quality-effort tradeoff model in behavioral decision theory could be adapted to include the cognitive cost reduction effected by IT (a DSS) on the effort side of the equation to predict the behaviors that would ensue in computer-supported decision-making (Todd and Benbasat 1999).

A few simple rules of thumb (or questions) that IS researchers and IS editors might pose to heighten the distinctiveness of our work and our journals are the following:

- Does a study investigate the relationships that fall within the IS *nomological net*—that is, investigate relationships involving one or more of the constructs included in Figure 2?
- How many *degrees of separation* are there between the IS constructs and the key consequent construct(s) in a study's research model—that is, how far *outside* the boundaries of the nomological net shown in Figure 2 are the primary constructs being investigated? (Here, by primary constructs we refer to those constructs associated with a study's principal scholarly contribution.)
- What is the *nomological density* of the IS constructs in a study's research model—that is, do relationships involving only IS constructs represent a majority of the relationships in a research model? To measure nomological density, count the number of two-way relationships among the constructs in the research model that fall within the nomological net (i.e., those relationships that exist between constructs in Figure 2), then divide this total by the total number of two-way relationships in the research model.⁶

⁶As a simple example, consider an expansion of the model shown in Figure 4. Assume that the model represents the following relationships: Diagnosticity (extent to which consumers believe the shopping experience is helpful to evaluate a product) is influenced by visual and functional control (namely, the IT capability that allows a customer to understand the form and functionality of the online product better). In turn, diagnosticity together with

Further, IS researchers should avoid treating IT artifacts or IS systems either as a "black box" or as being synonymous with a more generic entity (e.g., innovation, investment, or Internet). Instead, the IS aspects of the phenomena being examined should be brought to the forefront to make clear the unique, specific contributions of IS scholarship. Finally, in our research questions and research models, we should focus on delineating the contribution being made (or to be made) in enhancing our understanding of IS phenomena. We should neither focus our research on variables outside the nomological net nor exclusively on intermediate-level variables, such as ease of use, usefulness, or behavioral intentions, without clarifying the IS nuances involved. Instead, we should identify the contribution being made either at a global level (such as a group support system or a virtual development team) or, preferably, at a finer level of analysis (e.g., mechanisms for labor replacement, for cognitive enhancement, for relationship enhancement, for ease of searching). We believe that the above suggestions, if followed, would enable substantial progress to be made in clarifying the nature of IS scholarship and, hence, the identity of the IS discipline.

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the reputation of the online merchant influences the customer's willingness to shop online. In this example, the relationships between visual control/functional control and diagnosticity fall within the nomological net shown in Figure 2. The relationships between diagnosticity/reputation and willingness to shop online do not. Thus, two of the four, or 50 percent, of the relationships in this model fall within the nomological net.

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