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# ON THE APPROPRIATENESS OF THEORY BORROWING IN IS: AN INTERDISCIPLINARY EVALUATION

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## ABSTRACT

This essay discusses whether "stealing" theories from other disciplines should always be avoided or whether there is any appropriate way of using theories developed in other disciplines in an information systems (IS) context. We take a look at the benefits and problems that have arisen in the IS field as a result of theory borrowing and suggest that – when done appropriately – such borrowing may well benefit the field. In the process, we also draw on the marketing and psychology literatures to evaluate the adequacy of theory borrowing in general and derive specific recommendations about what appropriate borrowing could look like. By synthesizing concepts from these literatures, we derive a comprehensive set of recommendations that may improve the process of theory borrowing in the field; thereby moving the discipline forward.

### Keywords

Theory borrowing, Reference disciplines, Anxiety discourse, Diversity

## INTRODUCTION

When being among researchers from other business disciplines, information systems (IS) scholars often face the necessity to justify their field and research. In particular, scholars from other disciplines often indicate that IS researchers do not develop any theory on their own, but much rather simply steal theory from other fields like a "band of gypsies" – and even do so in an inadequate way.

This essay reflects on both the results and the process of theory borrowing in the IS field. By utilizing the knowledge that has been created in some of the IS field's major reference disciplines on the process and adequacy of theory borrowing and by synthesizing this knowledge with IS concepts, we derive a comprehensive set of recommendations for future theory borrowing in IS. We further illustrate how these recommendations could be put into practice and provide examples of extensions IS research has made to major theoretical lenses it borrowed. By making these extensions, IS scholarship contributes back to its reference disciplines. Together, the concepts discussed here may move the IS discipline forward; at the minimum, they provide solid arguments for IS scholars to succinctly justify their field and research.

## IS THEORY BORROWING MEANINGFUL FOR THE IS FIELD?

Since its inception, IS scholarship has heavily "borrowed" theories from other disciplines. Theory borrowing refers to a process in which a theory belonging to a specific social context and being used to explain a specific phenomenon is used in another context to explain a different phenomenon (Murray and Evers, 1989). While the IS field's reliance on theory borrowing is reasonable given that IS research originated from a variety of backgrounds (Swanson and Ramiller, 1993) and consists of a variety of distinct theoretical clusters rather than a single core (Lim, Saldanha, Malladi and Melville, 2009), only some of this borrowing appears appropriate. After the inception of the discipline, IS scholars have been under high pressure for both research productivity and methodological rigor. By relying on theories from other disciplines, they increased either (Benbasat and Weber, 1996).

At the same time, however, this borrowing of theories from other fields led to a scarcity of true IS theories. Of the more than fifty theories used in IS as listed on the AISWorld website (http://www.istheory.yorku.ca/), only four are described as having originated primarily in IS: task closure, task-technology fit, the technology acceptance model, and the unified theory of acceptance and use of technology. Note that these latter theories' roots lie in cognitive psychology. Even if a few more are

claimed, for example Nolan's (1979) stages of growth theory, the number of IS theories is "depressingly" small (Markus and Saunders, 2007, pp. iii-vi).

Aware of this problem, IS scholars often point to Keen (1980) to justify their adoption of theories from other fields, which are often referred to as reference disciplines (R.D.). Yet, this excuse reveals a misinterpretation of Keen's ideals. In fact, his main idea was that IS scholars look at R.D. to benchmark with respect to research quality, not borrowing and tweaking other's theories into IS.

Consider what Keen (1980, pp. 10-11) said: "An R.D. is an established field to which one looks to get an idea of *what good MIS research would look like*, if one could ever do it. (…) A main weakness of MIS is that we have no clear *criteria for evaluating our research*. (…) It is essential then to look at that field (a R.D.) in detail, not necessarily adopting its theories and methods but at least *assessing what they imply for our own work*. (…) Information economics, (…), may be an excellent R.D. for those concerned with theory for MIS, since it demonstrates how to approach the issue of defining information and presents an analytic strategy *for developing and applying theory*. (…) The reference discipline is *only a reference*. Research that is firmly grounded in a given field *may not contribute to our understanding* (…)." (Italic emphasis added). When reading Keen's whole section on R.D., a recurrent theme surfaces: R.D. are a means to evaluate the quality of IS research.

Due to the misunderstanding of Keen's ideals, the reliance on theories from R.D. has evolved into a double-edged sword. It initially helped the IS field improving output and rigor, but at the same time led to a deserted landscape of IS theories. Clearly then, there is no one true answer as to whether adopting theories from R.D. is good and meaningful or bad for the IS discipline. However, there undoubtedly are better and worse ways of borrowing theories.

## HOW CAN THEORY BE BORROWED APPROPRIATELY?

Appropriate theory borrowing involves one key term: explicit reflection. Explicit reflection enhances consistency among theory objectives, research philosophy, and social context. It revolves around seven basic elements implied in the use of borrowed theory in IS (Murray and Evers, 1989; Truex, Holmström and Keil, 2006):

1.      To what degree does the theory selected for adaptation fit the phenomenon of interest?

2.      Which theory elements (i.e., theory objectives/proposition, research philosophy, and social context) change as a result of the borrowing process?

3.      To what extent do these changes result in inconsistencies?

4.      What are the consequences of potential inconsistencies?

5.      Exploration of ways to resolve potentially problematic inconsistencies.

6.      Exploration of the possibility that the original theory was also borrowed.

7.      To what degree does the borrowing contribute to cumulative theory (i.e., the degree to which the research goes beyond the already known)?

Theory borrowing that explicitly reflects on these elements can be considered informed and purposeful and will likely benefit IS research. Jones and Karsten's (2008) review article constitutes a good example. The entire article is devoted to explicit reflection on the use of structuration theory in IS research. Jones and Karsten reflect on the fit of structuration theory to IS phenomena, on potential inconsistencies among theory elements and consequences of inconsistencies, and on the implications of the origins of the theory for IS research. Overall, they critically and comprehensively evaluate the theory's potential for IS scholarship. From this explicit reflection, they develop an IS-specific version of the theory. Subsequently, they derive a research agenda for structurational IS research, thereby clearly contributing to cumulative research. Similar contributions can be claimed for adaptive structuration theory (e.g., Bostrom, Gupta and Thomas, 2009; Markus and Silver, 2008).

Wade and Hulland's (2004) review of the resource-based view of the firm (Barney, 1991; Wernerfelt, 1984) is another good example. The authors not only reflect on the theory's fit to IS research, but also make problematic assumptions explicit (i.e., the theory assumes to a substantial extent that resources act in isolation). Wade and Hulland (2004) then develop propositions in light of these assumptions; thereby contributing to cumulative IS research.

By contrast, random and opportunistic theory borrowing will likely have the opposite effect and will increase the likelihood of generating misleading ideas. Far too often, IS scholars have borrowed theory without sufficient reflection on the associated underlying assumptions (Truex et al., 2006), particularly in empirical research. This insufficient reflection may not be surprising since the stringent page limits for empirical IS articles may clearly limit IS scholars' possibilities for explicit

reflection. By contrast, Jones and Karsten (2008) as well as Wade and Hulland (2004) had sufficient journal space available to present the issues involved since they developed conceptual rather than empirical work.

This comparison could reveal the preferred approach to borrowing: reflection on a theory in a full length review article before its adoption in an empirical study. Consistent with this notion, Markus and Saunders (2007) declared adequate borrowing a prime reason for initiating the MISQ Theory and Review department.

**WHERE HAVE IS SCHOLARS MADE SUBSTANTIAL CONTRIBUTIONS TO THEORY AS A RESULT OF BORROWING?**

While IS scholars engage in extensive theory-borrowing from reference disciplines, they also extend the theories they borrow in important and unique ways. IS scholars thereby make substantial theoretical contributions, which should be acknowledged whenever IS research is judged. Consider the following examples of extensions IS scholarship made to key management theories; thereby contributing back to the reference disciplines from which these theories were initially borrowed.

1. Beginning with Mata, Fuerst and Barney's (1995) seminal paper on IT value, IS scholars made ample use of the resource-based view of the firm (RBV) (Barney, 1991; Wernerfelt, 1984). As a result, they offered one particularly noteworthy extension to RBV: the explicit recognition of resource interactions. The process leading up to this extension unfolded as follows. By applying RBV to the study of IT value, IS researchers concluded as early as 1995 that IT investments by themselves are unlikely to provide competitive advantage. According to RBV, resources yield competitive advantage if they are valuable and heterogeneously distributed across competing firms. This competitive advantage can be sustained if the resources are also imperfectly mobile. While some IT capabilities can satisfy these criteria, IT assets generally do not (Mata et al., 1995). As the research stream progressed, IS scholars learned that IT resources (i.e., IT assets and capabilities) have competitive value primarily in leveraging complementary organizational resources (Bharadwaj, 2000; Melville, Kraemer and Gurbaxani, 2004). IS researchers therefore needed a lens to examine the competitive potential of resource interactions. Because the traditional RBV school of thought assumed that resources act in isolation (Wade and Hulland, 2004), it was no longer adequate.

To overcome the problem inherent in the traditional RBV, Wade and Hulland (2004) extend the theory by introducing key moderators for the relationship between IT resources and firm performance. These moderators include, among others, organizational and environmental factors. Due to their general nature, these moderators may be used in other management fields as well. Nonetheless, other disciplines might have never extended RBV in this way. As Wade and Hulland point out, the study of resource interactions is particularly pertinent to IS scholarship since – similar to electricity (Carr, 2003) – IT assets by themselves are neither rare nor causally ambiguous.

It deserves mentioning that some would claim the knowledge-based view (KBV) as yet another extension IS scholars made to RBV. In 1996, Conner and Prahalad recognized the centrality of the knowledge resource to organizational success and therefore extended RBV to KBV. However, given that their article was published in Organization Science and that they address the management literature at large with particular emphasis on strategy research, this claim appears unjustified.

2. IS scholars extensively researched the potential of real options for risk mitigation and thereby extended real options theory (ROT) (Amram and Kulatilaka, 1999). More specifically, they examined the potential of options for risk mitigation in general (Fichman, 2004) as well as for the mitigation of specific risk factors (e.g., Benaroch, 2002). By focusing on the latter, IS researchers developed the option-based risk management (OBRiM) framework (Benaroch, 2002; Benaroch, Lichtenstein and Robinson, 2006), which maps specific options to specific project risk factors. For example, OBRiM indicates that the risk inherent in investment complexity can more effectively be mitigated through prototype and outsource options than through project abandonment. OBRiM thus deepens understanding of the value of ROT for project management in general and for risk mitigation in particular. By positing these mappings on the basis of theoretical rationales, OBRiM extends ROT.

So, why is this expansion of the scope of ROT to include a risk mitigation mapping pertinent and unique to IS research? One reason is that IT investments are far riskier than other organizational investments (Dewan, Shi and Gurbaxani, 2007), thereby making risk-mitigation particularly relevant to IT investments[1]. Another reason may lie in the modularity of the IT resource. Because of its inherent modularity, IT is a particularly strong option-enabler. For example, IT investments can easily embed an explore option through the use of a pilot investment (Benaroch, 2002). An explore option involves testing the IT in small scale before the full investment is made. In consequence, ROT lends itself to the study of IS phenomena.

3. The theory of IT-culture conflict (Leidner and Kayworth, 2006) constitutes another extension. It explicitly assumes that culture surfaces when the values held by an IT are in conflict with those held by an individual. The theory thus explicates that

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[1] One reason for the greater riskiness of IT investments could lie in the socio-technical nature of such investments. Because IT can be interpreted flexibly (Orlikowski and Robey, 1991), payoffs to IT investment are difficult to predict.

culture goes largely unnoticed and surfaces only in the event of conflict arising from the interaction between two incompatible cultures. While the broader management literature had long recognized this aspect of culture (Hofstede, 1980), such recognition was merely implicit (Leidner and Kayworth, 2006). In particular, management research did not explicitly examine the forms of conflict through which culture surfaces. Hence, IS research extended cross-cultural management theory through the explicit recognition of conflict and the illumination of one specific form of conflict that leads culture to surface.

The IS field may have been more likely than other management disciplines to make this addition to theory since social interactions with IT may be particularly likely to generate conflict. Consider the users of an IT. As any group that encounters a counterculture, users might experience cultural conflict regarding the adoption of an IT when conflicting values were embedded in the technology by the group responsible for developing or championing it. This aspect indicates that cultural conflict is at least as relevant to IS research as it is to other fields. Yet, in addition to this aspect, any IT itself is in sharp conflict with basic human values in many cultures. Specifically, since IT is inherently risky (Leidner and Kayworth, 2006), the many cultures uncomfortable with uncertainty (Hofstede, 1980) are likely to associate conflict with its use. For instance, Thatcher, Srite, Stepina and Liu (2003) found that persons who avoid uncertainty are unlikely to innovate with new IT. Because these socio-technical interactions that are unique to IS research (Lee, 2001) are particularly likely to generate conflict, the IS field may have been especially pertinent to make this addition to management theory.

4. Perhaps most noteworthy, IS scholarship has taken the lead in moving innovation research forward (Fichman, 2000). IS researchers added numerous factors such as top management support and centralization to the study of innovations (Fichman, 2000). More importantly, in recognition that IT innovations are distinct from other innovations by degree of complexity, IS researchers extended the classical diffusion of innovations theory (DOI) to better reflect the nature of highly complex innovations such as IT. Two such extensions are particularly worth mentioning: the explicit study of two-part adoption decisions as well as knowledge barriers (Fichman, 2000).

The explicit study of two-part adoption decisions resulted from the recognition that the complexity inherent in IT may lead to ambiguity in determining the rate of diffusion of an innovation. The question arose of at what point an organization had truly adopted an innovation. By explicitly outlining the adoption process as being composed of two parts, organizational and individual adoption, IS research reduced the ambiguity inherent in determining the rate of diffusion of complex innovations. Specifically, Cooper and Zmud (1990) indicated that the adoption of innovations progresses through six stages, where the first three stages are more reflective of organizational adoption and the subsequent stages are more reflective of individual adoption. This stages-of-diffusion model greatly enhanced the specificity with which the diffusion of an innovation could be determined. For example, rather than finding that – on average – an innovation's diffusion has progressed "far beyond initial acquisition", IS scholars could now specify that innovation diffusion has reached the stage of "routinization" (i.e., routine use of the technology by individuals). Also due to the complexity inherent in IT innovations, IS scholars added the explicit recognition of knowledge barriers to innovation research. For example, Ravichandran (2005) found that inter-organizational knowledge sharing increases innovation diffusion through the reduction of knowledge gaps.

These two complexity-related extensions may have been more likely to originate from the IS field than from other management disciplines. Because IT can be interpreted flexibly (Orlikowski and Robey, 1991) and often includes vast amounts of functionality (Jasperson, Carter and Zmud, 2005), it is more complex than many other technological innovations. Therefore, IT lends itself to the study of two-part adoption decisions. While IT use can be organizationally mandated to some extent, adoption decisions by individuals play a major role in determining deep use. IT furthermore lends itself to the study of knowledge barriers. While all technological innovation requires organizational learning to some extent, the complexity inherent in much IT places particularly high demands on organizational knowledge and skills (Fichman, 2000; Orlikowski and Robey, 1991). This is perhaps evidenced by the fact that IT functionality is often underutilized (Jasperson et al., 2005).

Swanson (1994) made a perhaps even greater extension to organizational innovation research. He extended the dual-core model of organizational innovation (Daft, 1978) to incorporate a third element – the functional IS core. The IS core constitutes more than just any element that could have been included; it serves a special role. Because of the high level of plasticity inherent in IT for informational layering and organizational connecting in general, the IS core serves as the natural linkage between the two traditional cores – business support and core processes.

The IS core thus enables a previously not explicitly considered concept in innovation research: innovation spawning. This concept indicates that more strategic innovations such as KM strongly spawn less strategic ones like the acquisition of basic IT infrastructure. Likewise, less strategic innovations still spawn more strategic ones, although to a weaker extent. The extension of the dual-core model along with the concept of innovation spawning was especially likely to originate in IS since IT more than other innovations links core and support processes, thereby enabling spawning effects. By contrast, if these processes were not linked to a substantial extent, innovation spawning would not be conceivable since its very nature demands the linkage.

**CONCLUSION**

Let us conclude with indicating that IS scholars do not need to condemn their theory-borrowing mentality. In fact, theory borrowing from more established disciplines is important for relatively new interdisciplinary fields, such as IS (Murray and Evers, 1989). Further, inadequate borrowing is under no circumstances unique to IS. Consider early consumer behaviorists, who have borrowed many of their theories from psychology, often in a random and opportunistic way. For example, they misborrowed Freudian psychoanalytic theory; a theory that was originally developed to help disturbed patients was used to explain the behaviors of typical consumers, indicating a clear mismatch in theory objectives. However, although marketing in general has continued to borrow many of its concepts from other disciplines, it has evolved into a legitimate field (Murray and Evers, 1989). Accordingly, initial misborrowing might simply be part of a learning process, where a field has to develop the skill of appropriate adaptation of theories over time.

**ACKNOWLEDGMENTS**

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