

EDITOR'S COMMENTS

Does MIS Have Native Theories?

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Over the last few years, I have heard IS academics remark at conferences and other professional venues that our discipline borrows theories from other disciplines, but does not create its own. I have also seen this notion being articulated in more formal channels as part of a line of argumentation on related topics such as how we can create more impactful theories, etc.

This “no native theories” assertion is seldom accompanied with qualifications or evidence. It is usually in the form of a bald assertion, so much so that one senses that disagreeing with the statement would only amount to an admission of not knowing or understanding our field.

In this editorial, my logical and empirical rebuttal posits that we do create theories. I believe that the “no theories” thesis is one of the “urban” journal myths that we have in our field, such insidious myth-making, in general terms, not being unique to information systems. In my mind, this is similar to the mode of argumentation that IS is not relevant to practice, a thesis that Soon Ang and I attempt to debunk, in part at least, in our *MISQ* editorial in March of 2011 (Straub and Ang 2011). Our main refutation in that situation was that the way in which the rigor–relevance debate is usually framed almost necessitates one coming to the conclusion that we are NOT relevant. As long as this debate is framed as whether IS practitioners read and utilize *MISQ* and its ilk (i.e., “academic” or scholarly journals), no one could ever effectively argue that we are, in all likelihood, relevant. But if the question is re-framed as: (1) are we attacking issues relevant to practice in our scholarly research and (2) is this knowledge being communicated through a wide variety of channels to practice, then there is good evidence that we are, in fact, relevant in (1) topic usefulness. Whether we are relevant in (2) knowledge transfer is unexplored because no one has ever studied the voluminous ways in which academics communicate their research ideas to practice, including teaching practitioners about systems through degrees like MBAs and specialized masters in Information Systems. In short, our argument was that asking practitioners whether they read *MISQ* is not an answer to the relevance question since the audience of academic journals is academics, people who have been educated in research methods and in-depth IS content areas via the scholarly literature. The audience of *MISQ* and its ilk is demonstrably not practitioners who, in almost all cases, have not gone through a rigorous doctoral educational program and, therefore, could appreciate these scientific, scholarly articles.

While it may appear that discussing rigor versus relevance is far afield from the question of whether the IS academic discipline has created “native” theories, I see the underlying framing of the debate to be very similar. Whereas we require a fair amount of empirical evidence to even begin to take seriously most scholarly notions, the bar for asserting that we have no native theories or that IS is not relevant appears to be quite low. In my opinion, unsupported assertions about such important topics is simply not becoming in a discipline that wishes to think of itself as scientific. Moreover, the question is often framed by citing TAM and then pointing out that TAM studies represent a fair proportion of the IS literature (which is empirically true, as it turns out). Therefore, the logic goes, other than TAM, we have no native theories. But is this a truly meaningful framing of this debate?

Had the “no native theories” thesis taken the form of a dialogue on whether IS is a net information source or a net information sink (Polites and Watson 2009), I would have much less raw editorial material from which to draw. This source-sink debate, simply stated, is whether IS is an overall borrower of ideas of other disciplines or a contributor to those disciplines (or both). The

issue was earlier articulated by Baskerville and Myers (2002). What is different about the way this issue is framed is that empirical evidence has been assembled and analyzed on both sides of the question (e.g., Grover et al. 2006a, 2006b; Polites and Watson 2009; Wade et al. 2006a, 2006b). The point is not whether the issue has been decided, but that scientific methods have been brought to bear. As long as we are practicing scientists (and practicing scientists about practice), it is my belief that we should not let unsupported assertions, especially those that broadly characterize our entire field, go blissfully unchallenged.

The “no native theories” hypothesis did not just spring up within the last few years. Nearly a decade ago, then *MISQ* EIC Ron Weber opined that

As a discipline we have a reputation for using and adapting theories developed in other disciplines. Little wonder, that we see few high-quality standalone theory papers in our discipline, in spite of the significant insights that such papers can provide about information systems-related phenomena (Weber 2003a, p. iii).

This belief about the lack of native theories is what inspired Dr. Weber’s own 1987 article entitled “Toward a Theory of Artifacts: A Paradigmatic Base for Information Systems Research” in which he argues that the field needs a theory of discrete IT artifacts that have longevity.¹ Here we need to back up briefly and state assumptions about what constitutes proof in such cases. Were we strict Popperians (Popper 1935), we might argue that this one exception disproves the entire “no native theories” proposition. In this case, Dr. Weber’s own theoretical advance (1985) would serve to disprove the essential tenet of the “no native theories” argument. But, as Lakatos (1978) and others have argued, Popper may be too severe in a post-positivist world where no one really believes anymore in a social or psychological determinism. The “critical realism” of Cook and Campbell (1979) suggests strongly that one exception (or even few exceptions) does not disprove the knowledge claim of a thesis, and that we need to come to a statistical understanding of events, much as in quantum mechanics and modern nuclear physics.

So the real issue is whether there is compelling evidence that we are or are not creating new theories. Again, the question cannot be answered in a straight-forward way in that “compelling” is judgmental. Suppose we find two examples of native IS theories? Weighed against the inventory of the dozens and dozens of borrowed theories put forth in http://istheory.byu.edu/wiki/Main_Page,² two would not seem to greatly counter the thesis. How about five? Or ten? What number of native theories would be required in order to change people’s minds that we have been creators as well as imitators/appliers?

Once again, how the argument is framed can greatly affect how we respond intellectually to the question. The advantage, however, to compiling evidence is that the grounding of the argument is not entirely Platonic, as it is when bald assertions (or logic alone) are proffered. Like Aristotle, we might contend that the forms are likely embodied in the empirical evidence and even though we may disagree on the interpretation, we can share an underlying belief in the value of empiricism to address substantive intellectual problems.

My framing of the question is simply that if we see native theories being created on a fairly regular basis throughout the history of the profession, the case that we have “no native theories” is not scientifically viable.

Definition of Theory and Distinction from Theory-Testing

First, what I propose to use as a delimited definition of theory for the purposes of this editorial is Gregor’s Type IV (2006). Whereas I appreciate the varieties of ways in which the concept of theory is being used, Type IV fits best with the context in which the “no native theories” thesis has been advanced. This type covers both explanation and prediction.³

¹This is based in part on his earlier monograph. See Weber (1985).

²Senior editors and creators of this extremely useful website are Scott Schneberger and Michael Wade. It is currently being hosted and managed at Brigham Young University by Anthony Vance and Gove Allen.

³This, of course, makes the approach I am taking here highly conservative. Had the other five types been considered, the number of native theories would almost certainly have gone way up.

Moreover, there is nothing inherent in arguing (i.e., that we have or do not have native theories) that these theories must have been tested. This allows for the two perfectly legitimate classes of native theories that are untested and those that have been tested. Or, for finer distinctions here, we could also list classes of theories that have been lightly tested and those that have been heavily tested. In short, the focus of the editorial is only on the fact of theory creation, not on theory testing, theory influence, or anything else.

Admission of Bounded Rationality in the Offering of Evidence

Editorials are not a good venue for advancing hypotheses and accumulating voluminous evidence that supports such beliefs. I do think it is an appropriate place to challenge “urban myths,” however. So I will proceed to document my argument.

The evidence with which I propose to test the “no native theories” thesis is, on the one hand, my personal knowledge (accumulated quite unconsciously over the years) and, on the other hand, a highly limited information search of a few obvious sources, a search of no more than 1 hour. The so-called “literature review” for what follows being so constrained, it is obvious that it cannot be confused with an exhaustive academic pursuit of the topic. I would contend, though, that a more definitive study would likely find many more native theories with which to counter the “no native theories” thesis. Even so, I am presenting only a portion of the theories that I accumulated through this satisficing exercise. It is simply not a good use of journal space to do more than illustrate some of the interesting native theories that the field of MIS has advanced since its inception.

That being the case, let us lay out this sampling of our native theories. Before we proceed to this evidence, though, we need to define exactly what is a native theory.

Definition of “Native” and Venues for Publication

Moody et al. (2009) provide a useful distinction between native and imported theories, one that I adopt, in part, here:

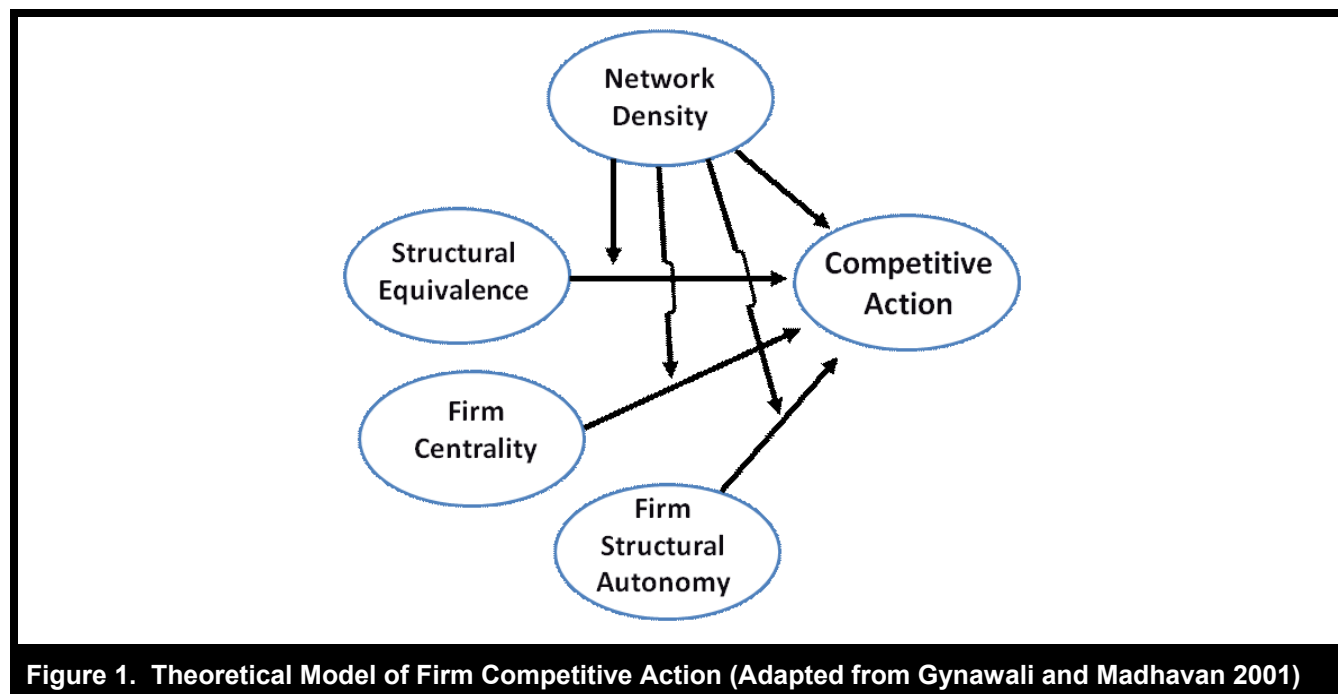
- **A native (indigenous) theory** is a theory specifically developed to describe, explain, predict, or design IS phenomena⁴
- **An imported (exotic, introduced) theory** is a theory borrowed from an **external (reference) discipline** to describe, explain, predict, or design IS phenomena (p. 2, emphasis in original).

While I think this definition of native theories is reasonable, I would like to underline their point that a native theory must in some fashion be IS-specific, perhaps even including the IS artifact among its key variables. Granted that there has been significant debate over the role of the IT artifact in MIS studies,⁵ one could hardly contend that a theory is native to IS unless the theory fit IT phenomenon in one or more special ways. I do not think this means that a theory cannot apply equally well to other disciplines (focusing on their own unique dimensions). But it does mean that we should look to how uniquely the theory base applies to IS.

Given this definition of native theories, where would one expect to find theories of this variety published? The Academy of Management has long felt that the area is important enough to dedicate an entire journal (a very well-cited journal at that) to theory creation. An example from the *Academy of Management Review* shows the kind of theoretical exposition that takes place. In 2001, Gynawali and Madhavan set forth a theory of competitive dynamics based on the reasoning of social network analysis (SNA). Figure 1 shows the primary components of the theory and the basic causal model. Whereas the theory is not essentially an IS theory, it is readily applicable to digital networks that support supply chains, B2B, or reseller networks. Were it to be adapted with little change to information systems, it would likely be considered a “borrowed” theory since none of the primary constructs require a unique application of IT artifacts. If the theory were reformulated so that its reasoning followed the SNA assumptions, it is possible that it could be considered a native theory with specially constructed IS variables and with a logic that would be embedded in the way certain information systems work.

⁴As noted earlier, I am focusing on Gregor’s Type IV theories.

⁵See Alter (2003); Benbasat and Zmud (2003); Deans (2003); DeSanctis (2003); Dufner, (2003); El-Sawy (2003); Guthrie (2003); Holland (2003); Iivari (2003); McCubbrey (2003); Myers (2003); Orlikoski and Iacono (2001); Power (2003); Robey (2003); Westland (2003); Whinston and Geng (2004); Wu and Saunders (2003).



While the MIS field is not blessed with a journal dedicated solely to the articulation of theories (many of which are undoubtedly “new” and “idiosyncratic” theories), we have venues that do specifically encourage this kind of work. The *Journal of the Association for Information Systems (JAIS)* is the readiest example. This, one of our newest journals, holds a theory development workshop every year at ICIS to help authors develop theories, and there are many examples of successful published papers setting forth new theories.⁶ It is certainly worth noting that *MISQ* also has a long-standing section entitled “Theory and Review,” a section that specializes in theory creation and development.⁷

A major emphasis of *MISQ*-TR is to support the development of theory that (1) addresses issues and concerns unique to IS theory and practice and (2) promotes further empirical research and practical developments (p. 1)

Nevertheless, in the examples assembled below, we have numerous cases of theoretical exposition in books and in journals other than *JAIS* and *MISQ*. We can explore next whether these qualify as native theories.

A Sampling of Native Theories

At long last, do we have native theories or not? I believe that we actually have a fair number of these (so characterized), some more or less prominent. I allude to a wide variety of these below.⁸ Some appeared in books and monographs whereas many others saw their first dissemination in journals.

⁶I allude to one of these below.

⁷See <http://misq.org/categories> and click on “Objectives of the *MISQ* Theory and Review Department” (part of “Instructions for Authors” section on the main page).

⁸I would be remiss if I did not caution the reader once again that this assemblage of native theories is not the result of a careful scientific investigation. It is mostly based on acquaintance and recall, with a dash of “Googling.” Given the bounded rationality of the author, it is very likely that a systematic study of native theories would unveil many, many more. For me, this is even more suggestive in that these come mostly from the “top of the head” and then were selected for illustrative purposes in this editorial. (But where there is smoke, there is very often fire.)

The Early Years of Theory-Building in MIS: 1966–1974

The articulation of native IS theories goes back to the beginnings of the field. Langefors (1966, 1974) articulates numerous theoretical propositions that express the specialized nature of computing systems. He was honored for these and other contributions with one of the first LEO awards from AIS.

Davis (1974) and later Davis and Olson (1985) set forth a model of information, information content, and communication that, one could argue, has many of the elements of a socio-technical theory of information systems. The technical elements in the model are based, in part, on Shannon and Weaver's (1949) mathematical theory of communication. Davis and Olson add the social constructs of effectiveness of systems in motivating human action and the semantic level of accuracy of computerized communication. In these books, they certainly give ample credit to the many scholars who have advanced the case that information is produced not only by machines, but the creators of those machines and all of the formal and informal processes that human beings use to create information. In that their model has implied constructs (presumably with minor modifications such as the quality/quantity of systems, etc.) and relationships between these elements, it is at the very least a primordial or pre-science theory in a Kuhnian sense.⁹ Socio-technical systems found its expression as a theory (perhaps best stated as an implicit theory) in the early years of the appearance of *MISQ*. The Bostrom and Heinen articles (1977a, 1977b) were landmarks in this development, an intellectual innovation launched in Europe through the work of authors such as Enid Mumford and her colleagues (Mumford 1972; Mumford and Banks 1967; Hedberg and Mumford 1975).¹⁰

Works by Ein-Dor and Segev, Weber, and Daft and Lengel in the Late 1970s to Middle 1980s

In their 1978 book entitled *A Paradigm for Management Information Systems*, Ein-Dor and Segev set forth a paradigm for the further development of theories in IS. This is quite specific to information systems and offers connections between characteristics of IS and the environment and desirable outcomes like voluntary use. The paradigm includes macro level constructs like (1) environment: extraorganizational, organizational; (2) structure: operational characteristics; (3) behaviors: executives, users, implementors; and (4) procedures: plans, strategies, projects. The paradigm is empirically derived and yields a set of testable propositions.

I alluded above to Weber's theory of discrete IT artifacts, which posits a dependent variable of longevity. Weber's work was being disseminated in the mid and late 1980s, a period when the technology acceptance model (TAM) was being introduced to the MIS field.

I would also venture at this point to assert that Daft and Lengel's media richness theory is a native IT theory since it heavily relies on characteristics of IT such as email, voice-mail, and fax to serve as media-lean counterpoints to richer media like face-to-face and telephone (Daft and Lengel 1984m 1985; Daft, Lengel and Trevino, 1987).¹¹

TAM in the Late 1980s (and Thereafter)

One cannot discuss native theories in IS without discussing TAM. Based on Davis' 1986 MIT dissertation, TAM founds its first expositions in *MISQ* (Davis 1989) and *Management Science* (Davis, Bagozzi, and Warshaw 1989). Some might contend that TAM is not an MIS theory in that it is based, in its earliest expressions, on the theory of reasoned action (TRA) and, later, on the

⁹Kuhn's *The Structure of Scientific Revolutions* (1970) was, perhaps, the most influential book of the 20th century on the history of science. He talks about disciplines in prescientific mode, and such disciplines would seem to be similar to what Banville and Landry (1989) argue is the state of the MIS discipline in that era (i.e., a "fragmented adhocracy"). The field of MIS has very probably advanced to a polycentric form since 1989, according to the analyses of Taylor et al. (2010).

¹⁰The resurgence of interest in this topic has taken the form of work on the concept of "sociomateriality." In fact, *MISQ* has on its books a special issue dedicated to this topic and we could well see new native theories emerging from this effort.

¹¹I need to mention the work of Ron Rice (and Associates) in 1984 as precursors of the theories of Daft, Lengel, and others. Once again, in Rice and Associates (1984) there are numerous theories, at least implicit, about the dynamics of users interacting with the new computer-mediated media.

theory of planned behavior (TPB). I would argue that TRA and TPB are very general and molar-level theories in that it is necessary to use these theories to empirically derive the meso-level constructs that are required to test the domain-relevant theory (some might even call TRA and TPB theoretical frameworks rather than theories). In the case of TAM, TRA argues that beliefs lead to attitudes, to intentions, and finally to behavior. What Davis did was to derive IS-specific cognitive beliefs perceived usefulness (of a specified application) and perceived ease-of-use (of a specified application) from the generic framework of TRA through his empiricism. So, at best, one might argue that TRA is a theory-generator, and that from this generator come native meso-level theories across the social science disciplines. These native theories see cognition (beliefs) as leading to changes in attitude and eventually behavior in human beings, but the theory is contextualized to such an extent that it cannot be separated from inherent characteristics of its application domains.

The later development of TAM has proceeded along the lines of extending the theory with additional theoretical variables and, ultimately, with a meta-analysis that combined all of the past variables into a unified model. The UTAUT model (Venkatesh et al. 2003) is heralded as a new theory, but it may be subject to Weber's (1987) charge¹² that "disciplines rarely progress by playing combinatorics with variable sets" (p. 6). In any case, UTAUT certainly stands as another native theory in many people's minds.

One could argue, as do Benbasat and Barki (2007), that TAM (and by extension UTAUT) studies have not embodied the IT artifact to the extent that they should, but the pointedness of TAM's independent variables of perceived usefulness (of a new IT) and perceived ease-of-use (of a specific IT artifact) makes them clearly specific to evaluations of information systems and not to other forms of technology or processes.

Theoretical Expositions in the Early 1990s

DeLone and Mclean's information success model¹³ published in *Information Systems Research* in 1992 is the most highly cited article in the IS literature since 1990 (Karuga et al. 2007), and deservedly so. The theoretical model essentially proposes two stages to how information systems are first developed (a production model) and then later utilized for organizational benefits. In that the theoretical linkages in the model have been tested many times over the decades, the influence of the theory on the field is pervasive.

In his 1990 *Academy of Management Review* article, Huber advanced a theory of advanced information technologies that put forth theoretical propositions linking the accessibility of advanced IT and its use to changes in organizational design, intelligence, and decision making. His theory development was deductive in its assumptions, resulting from an extensive investigation of the voluminous management literature directly or indirectly related to this topic. The precociousness of this theory was revealed in many people's minds by the way in which the dominant IT of that era, email, flattened organizational structures (i.e., organizational design).

The Modern Era: Pre- and Post-Millennium Native Theories

For purposes of illustration and parsimony, I will speak of only seven native theories since 1992.¹⁴ One of these I had a hand in myself. In 1998, Elena Karahanna and I posited that when engaged in tasks, knowledge workers make conscious choices amongst media (a major portion of which are computer-mediated), and that it is characteristics of these media that drives choice and subsequent productivity. We tentatively advanced a theory of task closure whereby choice of a media that matches respondent availability to media that complete rather than fragment overall tasks. If one makes a poor choice, it leads to what we today are calling technostress (Ayyagari et al. 2011) and other ill effects.

¹² Weber bases his argument, in part, on Kuhn's logic (1970), p. 15.

¹³The theory was updated by the same authors in 2003.

¹⁴These are not arranged in strict chronological order, but the general ordering is by ascending year. There were at least ten other native theories since the late 1990s that I simply did not have time to discuss. I allude to a few of these later. My regrets go to those authors whose work I could not adumbrate here.

Clemons et al. (1993) responded to the commercialization of the Internet in e-Commerce with what they call “the move to the middle” hypothesis. This work has all the elements of theory-building in that their main constructs are highly specific to IT and the Internet revolution, namely Internet-based coordination costs and transaction costs. This theory argues that the Internet lowers coordination costs without lowering transaction costs and that this will ultimately lead to significantly higher levels of outsourcing and more firm vertical dis-integration. While their logic is based on long-standing economic theory, I believe they have created a native theory in that it is completely dependent on Internet-based constructs. The outcome variables are not specialized to information systems, but the critical independent variables are. In that the theory predicts the movement to widespread outsourcing (see also Friedman 2005), I think it has compelling internal logic that makes it a worthy addition to my listing of native theories.

DeSanctis and Poole’s adaptive structuration theory (1994) is derived from Giddens’ work, but I see it as a native theory in that its antecedents are highly specific to information systems and its outcomes likewise describe what occurs only in information systems. As they developed the theory, DeSanctis and Poole remained true to Giddens’ underlying framework, but specialize the theory to “modalities of structuration” that are idiosyncratic to the information system domain. The basic reasoning of the theory is wholly that of how information systems work. System designers embed their own intentions (spirit) into the functioning of the systems, but that users “adapt” these to their own needs (appropriations) and thus use the system in unintended ways. These kind of workarounds result in new ways to use systems which designers respond to in subsequent redesigns.

Another theory that is almost undeniably a native IS theory is task–technology fit theory by Goodhue and Thompson (1995). Their underlying argument is that users, depending on the relevant tasks at hand, make conscious choices of best-fitting technologies before they use systems. There is a history of empirical articles testing this theory and one of its offshoots, individual differences–technology fit.

In 2002 in *Information Systems Research*, Wheeler articulated a theory of net-enabled innovation cycles. His basic tenet is that in the modern era, it is increasingly likely that corporate strategy will be driven by IT strategy rather than the inverse. Firms that are on the lagging edge of technological change could easily be lost in the backwaters of their industry. Wheeler’s model proposes how this strategizing takes place in the most effective, far-seeing firms. The accompanying article by Zahra and George (2002) shows how this theory can be even more specialized to IS by considering other aspects of dynamic capabilities theory.

The *MISQ* Best Paper of the Year in 2008 was a media synchronicity theory (MST) put forward by Dennis, Fuller, and Valacich. Like the Straub and Karahanna and Goodhue and Thompson theories discussed above, this is also a fit theory. In this case, features of the IT artifact, namely its synchronous or asynchronous qualities, match up with tasks to produce better communications. MST promises to lead to interesting studies of instrumentality in the workplace that go well beyond TAM.

Most recently, Saunders et al.’s virtual space and place theory (2011) focuses on the virtual worlds that will surely emerge as computing power continues to increase exponentially. In keeping with Hubbel’s view that space is created as matter expands (in contradistinction to the views of Aristotle and Newton in absolute space), they argue that control over directionality in 3-D space is most critical for users of virtual worlds. Systems that recognize this and create such capabilities for users will succeed. Those that do not will mangle.

Conclusion

My intention in this editorial was not to embark on a comprehensive literature review and analysis of native theories. Even Moody et al. (2009), who address this topic more deeply than anyone else I discovered in my very thin literature scan, do not attempt to methodically survey the literature but rather to determine which native theories have been most influential. Not surprisingly, in their view, these are TAM and the IS success model.

My argument is quite straight-forward. Given the regularity of the appearance of native theories in our literature since 1966, we have every reason to trust that we have a healthy, hardy number of native theories in information systems.¹⁵ This seems to me to be fairly indisputable. Whether these represent a sizable proportion of the overall theories we employ, an influential proportion, an emergent proportion, or a trivial proportion are still open to question. No doubt, a thorough literature review exercising a rigorous definitional standard of native theory with a careful assessment could shed light on such outstanding issues.

An ancillary question might be whether we are testing these native theories. Are we different from other business subdisciplines in this regard? A lot of extremely interesting research could be performed on such scientometric questions, and knowing more about this could advance the profession by telling us more about how scientific disciplines similar to our own create knowledge and how they transfer it within the discipline and to practice (Straub 2006).

Unsupported assertions are unhelpful and not truly scientific. Supported assertions are the very essence of what we do. In my opinion, therefore, high quality research in this vein should be very welcome because it could yield insights into how the IS field is evolving.

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¹⁵My apologies to those who have advanced very interesting native theories that there is simply not enough time to describe in more detail here. Among these, just as "for instances," would be Beaudry and Pinsonneault's coping model of user adaptation (2005) and Walden and Browne's sequential adoption theory (2009), the latter paper winning *Journal of the AIS's* Best Paper of the Year. Also included would be Mennecke et al.'s embedded social presence theory (2011), which recently appeared in *Decision Science*. The list of native IS theories goes on and on.

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