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Contributing to Rigorous and Forward Thinking Explanatory Theory

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Editorial Note [†]

Contributing to Rigorous and Forward Thinking Explanatory Theory

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Abstract

In this essay we propose ways to improve the rigor and originality of forward looking theory in the IS field. This is accomplished by proposing a set of guidelines outlining how prospective authors should prepare their manuscripts or approach their research problems so as to enhance theory. We note in particular the potential negative effect of relying too much on reference disciplines in IS theory development and call for strategies that lead to bolder and more original theory.

[†] **JAIS Editorial Notes** are essays, commentaries or reviews written primarily by the JAIS editorial board members typically through invitation although some unsolicited submissions may also be considered. These editorial notes are expected to be short, to the point commentaries reflecting the editorial board's views about publishing theory. They may provide guidelines for the journal's potential authors or provide a forum for debate about JAIS publishing and reviewing practices. More specifically, such commentaries will offer thoughts about the journal's review policies and practices, how issues of theory development and testing should be addressed in JAIS submissions, reports on JAIS editorial practices and performance, and general notes on the disciplinary policies and norms within the IS field. The editorial notes will also include studies on referencing practices, impact factor measures or reviewer sampling techniques in the IS field. Each published editorial note is reviewed by two JAIS editorial board members and they thus convey a "semi-official" view of the editorial board on the matter. Some of these notes will emerge from presentations at JAIS theory or related workshops, while others surface from consolidating critical discussions among JAIS editorial board members on issues that matter in publishing strong IS theory.

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Contributing to Rigorous and Forward Thinking Explanatory Theory

“Good theory is difficult to produce, and unlike pornography, we may not even recognize it when we see it” (Maanen et al. 2007).

We are often asked, as the editors of the Journal of the Association for the Information Systems (JAIS), how we assess submitted papers in terms of their expected contribution to theory. As JAIS “particularly welcomes contributions that provide theoretical insights that advance our understanding of information systems and information technology in organizations and society,” it is imperative that we have some guidelines about what “new theoretical insights” advance our field by making forward looking and rigorously developed theoretical claims.

The purpose of this editorial essay is to offer some guidelines about what we mean by both “rigorously developed” and “forward looking” theoretical insights in the field of information systems (IS) in the context of *explanatory theory*. By explanatory theory we refer to Gregor’s (2006) type IV theories for explanation and prediction. These are attempts to build justified and valid knowledge claims that seek to explain causally *why* something occurred by means of an outcome, criterion, or dependent variable in the context of specific conditions that are captured as a set of antecedent variables denoted as independent or mediating variables. Currently, such theoretical models are represented in a majority of manuscripts submitted to JAIS. We emphasize also that prospective authors will benefit from examining other available literature on the topic (see e.g., Bacharach 1990, Gregor 2006, Weick 1989, 1995, Whetten 2002)

We emphasize, however, that the form of theorizing addressed in this essay is only one approach to rigorous and forward thinking theory. Naturally, JAIS welcomes other forms of theory. These include Gregor’s theories for analyzing and describing (I) (e.g. interpretive theorizing), theories for design and action (V) (constructive or design theories), and theories for revelation and criticism (different forms of critical theory) (see e.g., Alvesson and Deetz 2000, DiMaggio 1995).

In the following, we put forward essential criteria typically used in assessing submissions to JAIS in terms of their theoretical contribution for explanation. At the same time, we suggest strategies that hopefully will help prospective authors to prepare theory-based manuscripts that have a better chance of surviving the rigor and scrutiny of the review process. Our essay is based largely on our presentations and discussions that ensued in a JAIS theory writing workshop in December 2007 in Montreal. Such workshops have become one critical element in the JAIS editorial board’s attempts to improve theory and related writing skills within the IS community.

The essay is organized as follows. We first discuss some misconceptions and common mistakes in theory development by noticing what strong theories are not. Second, we discuss how to increase the rigor and cogency in the theory articulation. Third, we discuss how prospective authors can work toward increasing the originality and the forward thinking in their theory development. We end up by noting that articulating theory needs to be viewed as a community process, not as a way to fixate as specific theoretical viewpoints.

What theories are not

The challenge of developing theory — continued theorizing — for an aspiring student of IS is often like attempting to cross an ocean when one has barely learned to swim. The field lacks great traditions and good examples of strong theorizing. It is an applied field, that changes quickly and in which, consequently, theory needs are constantly shifting. In addition, it sits at the intersection of technical and social perspectives and spans multiple levels of analysis that create daunting challenges to building theories that are elegant, simple, generalizable, and credible.

Because of these and other reasons, theorizing has remained challenging despite the constant plea within the community to develop indigenous theory. The challenge has remained despite several scholars’ genuine attempts to develop galleries of theories and their anatomies (Gregor 2006) and the desire to compose new forms of theory that apply to the IS field (Hevner et al. 2004). Why is this? Is

it because we still do not have a consistent understanding of what strong theory looks like? Or is it because we have placed theory on such a pedestal that it is almost unattainable? Regardless of the reason, we often observe aspiring authors propose something in their manuscript as a theory when it is not.

Because developing rigorous and forward looking theory is messy and difficult, authors seek to address the challenge with a set of simpler solutions (Sutton and Staw 1995) that are necessary steps moving toward a theory (Weick 1995). Authors often eagerly review extensive literature – much of it drawing upon existing theories in the reference disciplines — and many times, the reviewers still ask for more. But enlisting a large number of references remains only a first necessary step in theory development, as literature review is mainly about labeling theoretical knowledge that may or may not apply. It is not theory – until it is woven into a logical story that explains the “why” behind observed connections in the proposed elements of the theory (and world) (Sutton and Staw 1995). Another trap authors often fall into is to motivate propositions by referring to previous empirical findings rather than articulating a strong theoretical logic. This is brute empiricism and mechanistic replication at its worst, and at best it leads to marginal extensions to prior empirical findings. Third, many authors list a large number of hypotheses – in the hope that breadth will compensate for lack of depth in their theory. But a large number of hypotheses alone is not typically a trademark of strong theory. Strong theory demands deeper analysis of why and how the propositions connect as a whole. This is best provided by elegant explanations that appear intuitively clear and simple when well exposed. Further, advances in empirical methodologies have driven us to describe complex empirical situations as elaborate sets of statistical correlations by connecting them through (often intricate) functional networks. Yet, our improved ability to draw complex diagrams and leverage the power of advanced statistical packages to test associated relationships does not add to theory, per se. The essence of theorizing is not discovering significant correlations, but finding a deeper explanation. It is often the “why” behind the ascribed relationships that is bereft of deeper thinking. And if none of these approaches engender confidence for the final “theory,” the authors (many times at the editor’s proposal) often choose to title the paper something like “toward a theory,” or “a model of,” or “a framework for,” hedging on whether he or she has gone far enough.

Overcoming these challenges does not imply that there is one single best form to advance theory. Like good music or wine, strong explanatory theories come in many forms and genres that fit with the specific situations in which the prospective researchers are engulfed. Movement toward stronger theory can include: proposing a new simpler, more accurate, or more generalizable theory; revealing or identifying a new set of phenomena and their connections; challenging, extending, or clarifying existing theory; integrating diverse strands of thought so as to identify new concepts and relationships; developing a compelling argument for the need of a new theory; or positioning established theoretical claims into a new context. No matter what the chosen form is, each theoretical argument needs to address critical requirements of conceptual rigor and forward looking insight.

How to increase the rigor in developing theory

All strong theory writing involves four important and integrated elements: motivation, boundaries, constructs, and propositions/knowledge claims. Each one of them is cogently formulated in a strong theory contribution. We next formulate guidelines about what to do and what not to do in formulating a strong theoretical piece in relation to these four elements.

Motivation

At the beginning of a manuscript that involves significant theory development, it is useful for the authors to clearly state the objective of the theory they are proposing. This helps to frame the expectations of readers. This also allows readers to assess whether the paper has managed to accomplish what it sets out to achieve. Beyond stating the objective, authors should highlight the value of the proposed theory in terms of how it can benefit practice. For example, readers can be told how such a theory can help organizations to improve their performance. Authors should also emphasize how the theory can help to advance explanations about a specific phenomenon over and above what is already known in the literature. For example, readers can be told how such a theory

can help to account for conflicting empirical observations that have been reported earlier. It is important to explicitly recognize the intellectual underpinnings of the perspective taken. For example, a paper that is behaviorally oriented is bound to have a basis that is radically different from one that is design oriented. However, regardless of the perspective, the basic need to appropriately motivate the work is paramount.

In motivating a theory paper, it is important that the authors avoid engaging in lengthy, general, and tangential discussion. Good theory papers are neither surveys nor tutorials. In a broad discussion, readers cannot easily grasp the objective and value of the proposed theory, and may lead to mistaken expectation. Also, general, lengthy, and tangential discussions at the beginning of a theory paper add little value because this discussion cannot be made consistent with the more focused theoretical materials that will follow in the subsequent sections of the paper.

Theory Boundaries

There are no general theories about everything. Therefore setting up early on and explicitly recognizing the boundaries of the theory and its underlying assumptions are critical in cogent theory development. This helps address what types of questions the theory being articulated *does not* answer, and under what conditions the theory is expected to be valid in its knowledge claims. Therefore, authors need be clear what knowledge claims belong to the scope of the theory and what claims do not. The decisions about theory are defined by the unit of analysis, the level and nature of constructs included in the theory, and the nature and direction of connections that are articulated in the theory. All these need to be stated clearly in the formulation of the theoretical perspective associated with the theory. This also helps authors manage the review process more effectively and resist reviewers' attempts to "bloat" their theory based on their own views of what literatures are relevant for this theory writing exercise.

Constructs

Good theory rests in clear, insightful, and powerful concepts. For any paper advancing theory, it is essential for the authors to define all key constructs completely, carefully, and clearly, and adhere to these definitions consistently throughout the paper. The constructs define critical categories and their relationships with the studied domain and, thus, provide a basis to make credible knowledge claims about the domain. Constructs can be organized in terms of states, events, or processes, and they offer a way to explain why certain events or states lead to other states or events. Constructs can be derived from other theories, from the professional literature, or by induction from empirical data. Their source of origin and their nature and scope need to be clearly defined in the manuscript.

Often, when complex or original constructs are being formulated, authors face the challenge of how to convey the meaning of each construct being defined. Here it is advisable to use examples or metaphors to facilitate readers' understanding. Such examples also help carry out first thought experiments about the plausibility of the proposed constructs. Only theoretical materials that are relevant (with respect to the key constructs) should be included in the paper. Authors should avoid loading the manuscript with less pertinent theoretical materials just to make the paper look "rich" or to show "good readership." Such materials typically just confuse readers. As authors target the theory paper at JAIS, it is recommended to select, at the carefully chosen level of accuracy, a sufficient proportion of constructs that reflect IT artifacts and their manifestations or information-related properties involved in the study domain. This helps reviewers and editors to understand the manuscript's contribution to IS theory and how it fits with the mission of JAIS. If such constructs are not defined, the authors need to provide reasons why they were excluded from the theory and how it still contributes to our understanding of the IS phenomena.

In presenting the key constructs, authors should avoid adopting mechanistically theoretical materials from other disciplines, often called reference disciplines, without reconciling them. Adopting successful concepts directly from some reference disciplines does not make them more legitimate for the study of IS. Moreover, constructs adopted from several disciplines will not necessarily be compatible, because the constructs may have been formulated based on a different set of

assumptions, or for different levels of analysis. At the same time it is not appropriate to ignore related theoretical efforts, while formulating the constructs and revealing their connections. Ignoring related efforts does not help to raise the level of theoretical contribution. On the contrary, the researchers have the responsibility to locate their contribution to the ongoing efforts of other scholars within the same or related fields. The fact that IS is an applied field offers researchers a rich array of opportunities to position their work to highlight key aspects that are being addressed.

Propositions/knowledge claims

Theories are generalized propositions about the world that we are attending to, or specific and revealing knowledge claims about a unique phenomenon. Both draw upon formulated key constructs and help make coherent claims about the phenomena under study. Therefore, propositions and knowledge claims associated with theory need to consistently apply the proposed constructs. When presenting the propositions, it is sometimes useful to include a figure that depicts an overview of the set of propositions and how they mobilize different constructs. This helps readers to visualize how the propositions relate to each other and fit into the proposed theory as a whole. This also helps the authors to better determine the scope of the theory building endeavor and communicate this to the reviewers and readers.

Authors should be mindful that, typically, most valuable theoretical propositions are those that are not too complex but generate insights that go against current beliefs and, thus, are forward looking. We, unfortunately, often see propositions that state the obvious, or reiterate empirical facts. These add little value to the theory and should be avoided. Propositions that are too complex or convoluted confuse and discourage others from using the proposed theory, or validating it. To facilitate subsequent research efforts based on the proposed theory, the authors are advised to provide guidance regarding how to test the propositions, and thus, how the knowledge claims are at the end justified. For example, the authors can discuss various (objective or perceptual) ways to operationalize the key constructs and their benefits and drawbacks.

When deciding what propositions to include (or exclude) in formulating the scope of the theory, the authors should not focus on breadth at the expense of depth. The more the merrier does not apply here. Readers need to understand the logic behind *all* the propositions as a whole. Without such understanding, they are unlikely to adopt and find the proposed theory credible. Having fewer propositions allows the authors to spend enough time to develop cogent theoretical argument that underlies and connects them. It is also important to specify propositions in unambiguous ways. Relationships and the direction among constructs (whether positive or negative) need to be explicitly stated within causal models, whereas in other forms of theoretical developments the chain of argument needs to be complete, coherent, and understandable.

How to generate forward looking insights

Glick et al. (2007) recently characterized Organization Science as a low paradigm field where disagreements about the key research questions and methods dominate. This leads to divergent reviews, low acceptance rates, low citation counts, dispersion of talent, and high exit rates. These are all characteristics shared by the IS field, too. This is the case, despite the fact that all top journals in our field promote strong theory. Perhaps an infusion of innovative thinking and generating fresh ways to look at the world information systems could help here. Above, we called such thinking “formulating forward looking theoretical insights.” But where does such thinking come from? To answer that question, we might look at how we typically think about theory development in our field in order to understand where, in most cases, such thinking does not come from. The preferred route to strong theory in the IS field has been to adopt theories from “reference” disciplines — an idea that Peter Keen famously coined in the first ICIS in 1980. Though his original intention was obviously to emphasize the need to pursue rigor at a similar level and to avoid reinventing the wheel, the idea of theories and disciplines that are “referenced” in the IS research has had many negative and unintended consequences. In many cases the term is interpreted to mean “referencing” the content of those theories —and then inferring from them some incremental knowledge claims in a new IS context. The fact that these theories are available to be referenced is often thus assumed to make

them automatically legitimate in our theoretical work. Because of this (mis) conception, IS scholars often rather mechanistically adapt reference theories to an IS context. This happens by sprinkling into the research model additional constructs about the "IT artifact" and then refining the associated instruments with IT-related sugar. Authors then go on to test/validate these adapted theories with data obtained by this preordained instrumentation. If (and when) successful, they then go on to incrementally refine and expand these theories and instrumentation. This process resides in the comfort zone of many IS researchers, as it offers a structured and low risk, and yet legitimate and manageable way for theorizing. Unfortunately, this tends also to be the best way to survive the ruthless scrutiny of reviewers who seek to avoid type I errors in accepted manuscripts, and go happily with the current theoretical beliefs that in most instances wipe out innovative theory. In short, reference theories tend to undermine original and bold theorizing in our research context.

But where is the "spark" of innovation and "passion" in this sequence? It is difficult to conceive how such process could offer rich opportunities for "blue sea" theorizing. Typically each stage in the process of theorizing is constrained by the previous one and will provide increasingly narrow opportunities for the next. The name of the game is conformity to the received theoretical insights and the search for coherence. However, the challenge in forward looking theorizing is for authors, editors, and reviewers to break these incremental cycles of theory building and promote truly innovative theorizing. This is a challenge especially within low paradigm fields that have little consensus and motivation to engage in bold theorizing, as most theorizing comes from without, based on the legitimacy of the "reference" discipline.

So what are some of the ways in which innovative theorizing can be promoted and recognized in our field? First, authors and reviewers need to understand that innovative theorizing comes in different forms and needs to be formulated and assessed differently in different contexts. In its simplest form, new theorizing may be expected because new data and instrumentation is available that calls for explanations of phenomena not previously observed. Such theoretical advances follow the increased depth at which we can observe or penetrate new domains, produce new data, or analyze them more richly. For example, extensive, longitudinal online consumer data can offer new possibilities for theorizing about IT-related consumer behaviors. Secondly new innovative theorizing emerges often from a bold introduction of new constructs and/or relationships within an established theoretical domain. Such constructs may be located at the same level of analysis, but often they cut across multiple levels, or even reverse the direction of causality. For example, in their garbage-can theory, Cohen et al. (1972) claimed that organizational solutions are not explained by the problems, but the problems are due to the availability of stable solutions. Third, novel theoretical positions and formulations emerge when scholars position themselves differently in the conceptual field and seek new tradeoffs among the theory's accuracy, generalizability, and simplicity. For example, IS scholars can derive a more accurate and complex set of constructs to characterize IT and IT use than is typical in economics (proxy view) or computer science (tool or computation view). This allows them to explain more accurately mechanisms that produce observed IT impacts like process improvements or improved worker productivity. The application of these diverse views in a specific context is what gives our field an edge. IS scholars can also search for new positions epistemologically or ontologically in relation to the phenomena they are studying. What was earlier seen as a concrete and hard fact can be, instead, observed as symbolic, negotiated, and malleable. Finally, scholars can play with multiple theoretical narratives instead of just following one causal story. What was earlier recognized as a causal form and functional explanation can, in contrast, be formulated in a narrative that connects chains of indeterminate events and complex interactions. All these movements offer ways in which the current straitjackets of reference discipline-based incremental theorizing can be relaxed and new forms of IS theory can emerge. Typically, such new openings emerge when IS scholars become aware and are sensitive to the tensions between the data and theory, within and between theories, and among data, theory, and assumptions. For example, when existing observations fail to align with the existing theories or we have no strong theories at all, rich opportunities for forward looking theorizing emerge. Forward looking theory will surface when IS scholars and reviewers are cognizant of such tensions and seek to address them in creative ways instead of fleeing from them by starting from the "reference" disciplines.

While there are no guaranteed heuristics that will yield innovative theory, there are several occasions and steps in the research process that can promote more innovative theory building. The first one for authors is to engage in disciplined imagination and carry out constant thought experiments and scenarios (Weick 1989, 1995). Authors' second step is to look for new data (like in freakenomics) and detect new and conflicting patterns in data looking for explanations. Scholars should search for multi-level data and longitudinal data, as they offer richer patterns for theorizing, and analyze outliers, or try to understand why the null hypothesis was not rejected. Third, scholars should focus on what surprises them, instead of what confirms their current beliefs. Authors should also seek contradictions in their explanations, or what surprises practitioners. They should constantly look for and seize serendipity in data access. Fourth, authors should change their assumptions about the data and theory. For example, a researcher can assume that all data points are unique instead of assuming (as usual) that they are homogeneous. Fifth, authors should extensively read outside the field to find analogies and to build up new narrative forms. They can especially seek to build higher abstractions or different abstractions.

Conclusions

Our answers to the questions of conceptual rigor and forward thinking in theory building are inevitably incomplete and maybe even unsatisfying. However, we hope that they offer some hints about how to approach theorizing while preparing manuscripts that are more rigorous and innovative theoretically. At the same time, we recognize that building simultaneously rigorous and innovative theory in each manuscript is too difficult a goal to achieve. Often bold, though incomplete, steps toward the goals stated above are enough in one article. Our hope is that this essay will increase awareness about what rigorous and forward thinking theorizing means, both in writing it and reviewing it. We emphasize the processual nature of theorizing in our scholarly endeavors. We should not focus on theories as things that can be closed, finished, and polished through our disciplinary practices and then placed on a pedestal. This is a status attributed to a theory that is too lofty and dangerous. Any theoretical move carries with it a danger of becoming black-boxed through labeling which will over time reify it into a fixed set of relationships and ideas. Such "things" are then thrown around as labels to justify good theory when they, in fact, hide sloppy thinking. Theories, in our sense, should be understood as sets of credible, persuasive, penetrating ideas about IT in the human enterprise shared by a community that undergo constant reshaping, positioning, and movement due to the emergence of new ideas, new phenomena, and new data. No theory in our field should be seen closed and unavailable for white-boxing and questioning.

Further, our guidelines should not be read as a fixed set of rules that can be mechanistically used as a checklist to guarantee that each submitted manuscript meets a certain level of "theory." In contrast, by laying out these ideas, we want to improve the cogency and originality of the theoretical argument around IS that is embedded in future submissions. Our field can thrive only as a joint effort of good theorizers, strong modelers, and detailed and careful empiricists. The modelers can incrementalize, the empiricists can validate and test....and the theorizers can, well, hopefully come up with more innovative theory.

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