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Modular and Collaborative Theorizing: A Move Away from Theoretical Superstars

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ABSTRACT

Theorizing is often described as a rigorous, nebulous, and time-consuming process. In the end, theories are traditionally attributed to one individual or to a small group of individuals. Consider for example Einstein’s Theory of Relativity, Aker’s Social Learning Theory, Davis’ Technology Adoption Model, and Fishbein and Ajzen's Theory of Reasoned Action. Further, expectations of IS theories are quite high and accepted in fewer publication outlets as compared to routine theory testing endeavors, creating extra risk in commencing the theorizing process. The “average” researcher’s involvement in theorizing is often limited to theory testing and incremental theory extension through these testing efforts. This critical polemic proposes that such arrangements are not necessary and may be damaging to the collective creativity of the IS discipline. In this polemic, we identify different configurations for work products and working relationships between researchers to collaboratively develop novel IS theories in a modular and incremental fashion.

Keywords

Theory, theorizing, collaborative theorizing, modular theorizing, agile theorizing.

INTRODUCTION

The information systems (IS) discipline has long sought native IS theories with few successes (Hassan, Mathieson and Lowry, 2019), yet calls for native and novel theories persist. Efforts to improve theory within the IS discipline have often focused on defining what a theory is and what constitutes a good theory or a theoretical contribution (Gregor, 2006; Rivard, 2014; Weber, 2003a; Weber, 2003b; Whetten, 1989). The process of theorizing has often been ignored, yet recently, it has received attention across academic disciplines as an important topic to improve theoretical quality and productivity (Hassan et al., 2019). In line with the movement to improve processes related to theorizing, we propose a new configuration for developing theoretical contributions in the IS discipline.

Theorizing in scientific research has often followed a process in which an individual or a small group of individuals work tirelessly to identify new concepts, relationships, and bounds in which concepts and relationships exist and function. Under this traditional theorizing process, theories are viewed as the intellectual work of superstars, such as Einstein, who may even bring about paradigmatic shifts in academic disciplines (Kuhn, 2012). The IS discipline has been no different. Consider for example Davis’ technology adoption model (TAM) (Davis, 1989). Davis developed TAM in the 80’s and the model has since been empirically tested and incrementally extended thousands of times by many IS researchers. Imagine if even a portion of the collective effort of this large theory testing work had instead been focused on developing new and alternate theoretical perspectives. The theoretical landscape of the IS discipline would likely look very different. It is this possibility that we hope to explore by proposing alternative theorizing configurations within the IS discipline.

In this polemic, we propose that the solitary, superstar theorizing approach that is so common in research practice limits the development of disciplines. Despite the continued calls for native theories, many researchers avoid theorizing efforts to focus instead on theory testing. The unwillingness to engage in theorizing likely exists for many reasons. For example, some researchers simply do not believe in the value of theory (Weber, 2003a). Further, theorizing is often described as a rigorous, nebulous, and time-consuming process (Rivard, 2014; Weber, 2003a). When compared to theory testing, which provides a reasonably detailed template for success, theorizing presents increased risk, particularly to new researchers seeking tenure. Under such conditions, theorizing if often left to those who have the time and fortitude to face the disinsentivize structures that exist within modern scientific disciplines.

We suggest that different configurations for what constitutes a theoretical contribution and collaboration within the IS discipline can improve theorizing efforts. Particularly, we focus on the need to value modular and increment theoretical contributions and to develop a culture that praises collaborative theorizing efforts. Under this proposed configuration,
described in detail later, theories can be built over time by a research community instead of over time by an individual. We believe that relying on the collective genius of the IS discipline will lead to more fruitful theorizing than the more common superstar models of theorizing.

To proceed, we offer a brief review of theory, theorizing, and theoretical contribution; present the concept of modular theorizing and collaborative theorizing; and end with a discussion of the ways in which the concepts can be adopted by the IS discipline to promote collaborative theorizing efforts.

THEORY, THEORETICAL CONTRIBUTION, AND THEORIZING

Theory is a hotly contested concept. Many articles exist to describe what theory is and what theory is not, with differing perspectives (Gregor, 2006; Weber, 2003b; Weick, 1995). However, underlying most perspectives is the idea that theories consist of concepts, claims about concepts and their interrelations, and statements about the boundary conditions under which theories operate. Concepts represent the fundamental and structural building blocks of a theory, but do not constitute theories in and of themselves (Weick, 1995, p. 389). Some examples of concepts include: power, democracy, fear, system use, and information. Concepts can be studied from different ontological perspectives. For example, power can be viewed as an objective reality, as socially constructed through language and symbols, or as resulting from deeply rooted structures (e.g., class structures) that empower some and enslave others (Bradshaw-Camball and Murray, 1991; Jaspersen, Carte, Saunders, Butler, Croes and Zheng, 2002). Claims represent relationships between concepts that in IS research are often presented as propositions in either variance or process theories. Boundary conditions represent the limits of the theory, such as the situations or environments in which concepts exist and those in which they do not, and the conditions that must exist for relationships between concepts to occur. It is upon these basic work products of theorizing that we construct our ideas.

Theoretical Contribution

Just as many conceptualizations of theory exist, so do many perspectives about what constitutes a theoretical contribution in IS research. A discipline’s top journals hold discursive power over the researchers in the discipline (Wall, Stahl and Salam, 2015). As such, we draw attention to some of the core ideas that are often repeated in top management and IS journals about theoretical contribution. The following are some common assertions about what constitutes a theoretical contribution. When considering concepts, good theories are said to be comprehensive, cohesive, and parsimonious, meaning they capture all relevant factors that belong together while eliminating those factors that do not add substantially to understanding (Rivard, 2014; Weber, 2003b; Whetten, 1989). They are said to explain why causal relationships exist by providing logic, counterfactual analyses, mechanistic explanations, or by other means (Gregor, 2006; Rivard, 2014; Whetten, 1989). Theories and their underlying concepts are required to be precise and possess definitional clarity (Rivard, 2014; Weber, 2003b). They are required to consist of enough constructs to identify causal relationships between constructs (Rivard, 2014; Weber, 2003b). They should only be undertaken by those with “profound scholarly knowledge,” such as those who have conducted an extensive review of literature (Rivard, 2014; Webster and Watson, 2002). Theories should be interesting, creative, impactful, and not obvious (Rivard, 2014; Webster and Watson, 2002; Whetten, 1989).

Given these many and varied criteria, it is no wonder that more researchers do not undertake intensive theorizing efforts. Because of these expectations, theoretical articles often take extensive amounts of time to complete. Additionally, they are accepted in fewer outlets and can receive greater scrutiny than theory testing articles (Weber, 2003b; Webster and Watson, 2002). These structures disincentivize theorizing. Structural changes are necessary to reduce the risk of engaging in purely theoretical works if the IS discipline desires more and stronger native theories. We propose some structural changes later in this paper that address some of the elements of the publication process that create unnecessary risk in theorizing.

Theorizing

Recently, researchers have placed greater emphasis on theorizing as a process and practice in place of theory as an object and what constitutes a theoretical contribution. According to Weick, “the process of theorizing consists of activities like abstracting, generalizing, relating, selecting, explaining, synthesizing, and idealizing” (Weick, 1995, p. 389). These activities result in the identification of concepts, relationships, and boundary conditions at different stages of the theorizing process. Only after going through many activities and iterations is a full-fledged theory produced. The act of theorizing can be broken into two major sets of practices, foundational practices and generative practices. Foundational practices are those activities that help a researcher identify the rules that exist within an academic discourse, problems and phenomena within the discourse, useful research paradigms to build upon, and ties to practice (Hassan et al., 2019). Generative practices are those activities that assist researchers in forming and organizing concepts and their interrelations to form theories, such as drawing analogies, employing metaphors, and modeling (Hassan et al., 2019). Early generative efforts may not result in complete
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Theories, but produce work products that later form into the emerging theory. Several theorizing tools have been proposed to assist researchers as they move through the foundational and generative practices, such as disciplined imagination, thickening thin abstractions, contrastive explanations, and borrowing and blending theories (Cornelissen and Durand, 2014).

Although these tools are useful and offer helpful explanations about the research process, they are primarily intended for use by individual authors or co-authors working on a research project. Few authors have considered how researchers within a discipline can collaboratively build theory through collective theorizing. Collective theory testing, in which many researchers across multiple studies test the same theory, is common in the IS discipline. The extensive testing of TAM is one such example. One reason that theorizing does not benefit from such widespread collaboration is that the deliverable of a theory is often expected to be “comprehensive” and then becomes an object for theory testing. Thus, a theory is already articulated once a researcher publishes the theoretical article. At that point, other researchers are incentivized to test the theory and contribute incremental extensions rather than identify alternative theoretical explanations.

To develop an environment of collaborative theorizing, new work products related to the theorizing process need to be accepted and encouraged within the discipline. These work products would include some of the theoretical components produced while engaging in foundational and generative practices, such as concepts, relationships, and boundary conditions. Although there are examples of such work products, like discussions of what constitutes “information” and “systems”, these work products are not yet widely accepted or published (Hassan et al., 2019). We now identify configurations for work products and for cross-publication collaboration to incentivize theory development within the IS discipline.

MODULAR AND INCREMENTAL THEORIZING

Drawing from concepts in modern systems analysis and design methodologies, namely Agile methodologies, we call for theorizing in the IS discipline to become more modular and incremental. Currently, the expectations for theoretical work products and the publication process mimic the waterfall approach of development in which a set of steps are followed until a team produces a final product. We argue that this waterfall approach to theorizing creates unnecessary risk, since publication outcomes for theories are often unclear. This environment leaves theorizing to superstars with “profound scholarly knowledge” willing to take the risk of such large undertakings. Further, since theories themselves exist on the same level as reasoned conjectures and are continually disproven, it makes little sense to adopt a rigid waterfall approach to theorizing. Agile methods thrive in environments where outcomes are uncertain, and adaptation is common and necessary. It makes sense then that we morph our theorizing practices, which are full of uncertainty and constantly adapting, to more Agile approaches where work products can be abandoned quickly if they do not produce value or be adapted in new ways to solve emerging problems. Journals already support a wide variety of publication types, such as empirical work products, theoretical work products, and opinions and essays. It is completely feasible to consider theoretical component work products as well.

Modularizing by Concepts

Concepts are the foundation of theories and can be configured and reconfigured in many ways to create new theories (Oswick, Fleming and Hanlon, 2011; Whetten, Felin and King, 2009). Unfortunately, theoretical publications about individual concepts are rarely considered as research contributions in the IS discipline. Instead, the IS discipline has a tendency to borrow complete or partial theories from other disciplines with predefined constructs and relationships that only require contextualization to IS phenomena (Hassan et al., 2019). It is so easy to accept a pre-formed template of constructs that little incentive exists for researchers to consider novel concepts, particularly in a world of “publish or perish.” To fight this tendency, the IS discipline needs a low risk theory publication solution to prompt theoretical exploration of concepts by a wider body of researchers.

Modular concept work products would not need to be as lengthy as or cover the breadth of concepts found in theory testing or full theory articles, which could reduce review cycle times. Concept work products could contain a literature review of a single concept or the formation of a new concept, clear and competing definitions for the concept, different ontological positions for the concept (e.g., realist, constructivist, and radical positions), reasoned conjectures about what other concepts might be related to the focal concept, and/or the potential boundary conditions of the concept. While identifying potential boundary conditions, researchers should also consider different IS contexts and phenomena that relate to the concept and boundary conditions for each context. For example, the concepts of fear and coping behaviors are used in privacy and security research as antecedents to behavior (Nemati, Wall and Chow, 2014; Wall and Buche, 2017; Wall and Warkentin, 2019), but fear and coping behavior could be explored in other problem domains or contexts as well.
Modularizing by Relationship Claims

Claims about relationships between concepts are also crucial to theorizing. Theories consist of many relationships, often stated as propositions. Sometimes there is a fixation in the IS discipline on conducting studies that cover the full nomological network of a borrowed theory (e.g., Boss, Galletta, Lowry, Moody and Polak, 2015) or developing comprehensive theoretical work products (Rivard, 2014; Weber, 2003b; Whetten, 1989). We agree that exploring the full nomology of a theory is important and that comprehensiveness is a desirable trait in theories. However, we do not agree that exploring a full nomology or developing a comprehensive theory is necessary within a single work product. If we desire more participation in theorizing from IS researchers, we need to incentivize lower risk work products that allow for the exploration of fewer relationships.

For example, information privacy and security research shows inconsistent findings in the relationship between behavioral intention and behavior. This has led to a call by some for the inclusion of both behavioral intention and behavior in every study, to the extent that rumors abound that some journals will no longer publish articles that do not explicitly measure both intention and behavior. Such practices are detrimental to the development of research areas. If a researcher is extending the exogenous antecedents of a model that are multiple levels removed from behavior, such rigid norms distract from the research focus. A better approach would be to more closely examine the relationship between intentions and behaviors to theorize about why inconsistent findings exist or to consider alternative concepts to intentions. Such a focused approach would allow researchers to adopt theorizing approaches like mechanistic theorizing to identify the mechanisms that lead from intention to behavior. Similarly, researchers could adopt a contextualized perspective by exploring possible moderators that strengthen or weaken the relationship between intention and behavior. Exploring full nomologies is not always in the best interest of researchers or research subjects who are subjected to endless questioning as nomological networks grow.

Again, modular relationship work products would not need to be as extensive as theory testing or full theory articles, reducing review cycle times. These work products could carefully identify each concept in the relationship and explain in detail why the causal relationship exists through logic, analogy, mechanistic explanation, counterfactual analysis, metaphor, or by some other means. Because the study would be focused on a singular relationship, the authors could take time to consider multiple explanations (e.g., logic, counterfactual analysis, and analogy), something not afforded in existing work products. The modular work product could also identify the different IS contexts and phenomena in which the relationship could be employed with the associated boundary conditions for each context. These work products could be used to develop chains of relationships or to pair relationships by IS context and phenomenon. As new work products are published, multiple researchers can configure and reconfigure relationships in meaningful ways to create new knowledge.

Modularizing by Boundary Conditions

Boundary conditions are another crucial element of theories. Because there is no grand theory of everything, theories are contextualized to certain phenomena and contexts. For example, what works within a large organization may not work within a small organization. Similarly, what works within traditional work environments might not apply to remote work environments. Modular boundary work products could explore, compare, and contrast different phenomena and contexts independent of theory. Although this could be accomplished through concept and relationship work products, dedicated focus on boundary conditions could prove fruitful in certain situations. For example, contrasting contexts could identify conditions that would require the retooling of a borrowed theory or to identify similarities and differences between existing contexts and emerging contexts. Unfortunately in theory testing efforts grounded in theory borrowing, researchers do not always account for boundary conditions, leading to poor fitting explanations (Hassan et al., 2019). By drawing greater attention to boundary conditions in modular work products, those engaged in theory testing can more easily consider the potential theoretical pitfalls that exist within particular and emerging contexts. Boundary work products could be based on literature reviews of studies based on context. A boundary study could explore literature, independent of theory, about remote work contexts, system use contexts, or contexts that exist in different countries. For example, control environments in organizations differ and may lead to different behavioral outcomes (Wall, Palvia and D'Arcy, 2013).

The Application of Modular Theorizing

Although modular theoretical work products could be used to generate more collaborative theory building efforts, modularizing work products can also be used by individual researchers. When developing a theory, researchers may toil for years by themselves and with review teams to develop a viable theoretical product under the current regime. At the end of such painstaking efforts, the researcher only has one work product. Further, given the tendency toward theory borrowing and incremental extension, it is unlikely that further new theoretical ideas will emerge quickly from the newly developed theory. For example, TAM remained a dominant and mostly unchanged theory of adoption for more than a decade, drawing
collective effort away from new ideas. Allowing researchers to build a theory over time while still receiving credit for their incremental and modular work products could provide the incentive necessary to promote more theory development within the IS discipline. It also encourages others to build on these incremental works, which we discuss next.

FACILITATING COLLABORATIVE THEORIZING

The IS discipline has grown substantially over the past several decades. Yet, most research efforts continue to focus on theory borrowing or on the retesting of old IS theories (e.g., TAM). The IS discipline has proven that IS researchers are capable of working together as a collective, such as in the massive efforts to test and extend TAM. This same strength could be harnessed to develop IS theories, but incentive structures must be in place to drive researchers toward the collective goal of developing native IS theories. Editors comments by themselves have failed to move the discipline in the desired direction. This polemic has explored the concept of modular theorizing to lessen risk and increase reward for theoretical work products. As journals embrace modular theorizing, the discipline will need tools to facilitate collaboration.

Identifying Modules to Produce Theory

One downfall of the modular theorizing approach is that concepts, relationships, and boundary work products are created by individuals or teams in isolation and must then be configured. Thus, finding related work products could becomecumbersome and problematic. As it stands, finding relevant studies is already difficult. Collections of research are spread across multiple publishers and platforms. These difficulties could be more apparent under a modular theorizing approach, where the concepts and relationships from a single study are broadcast across multiple studies. Although this is problematic, it draws attention to problems in publication and research processes that need to be resolved anyway. Such efforts are already underway; consider the case of open access journals. Alternatively, better IS products with stronger classification algorithms could assist researchers in finding work products. Tagging work products by concept, relationship, and context, and boundary conditions could help. In the interim, it might be best to locate most modular theorizing products within a small set of journals, as special issues, or in a new journal dedicated solely to modular work products. To start the modular theorizing process on strong foundations, a top journal or a new journal with the support of powerful sponsors within the IS discipline would be needed. To function, the modular work products would need to be treated as quality contributions.

Specialization in Academic Disciplines

The IS discipline has been dominated by discourse about the importance of theory and about the importance of empiricism (Rivard, 2014; Stahl, 2014; Weber, 2003b). These discourses create an environment where researchers are expected to be both good theorists and good empiricists. In doing so, we stretch researchers thin. Not every IS researcher enjoys or thrives at both theory building and testing. Some researchers prefer theorizing, while others prefer theory testing. Yet, incentive structures define most researchers as theory borrowers and contextualized testers. By altering incentive structures, the IS discipline can allow those who thrive on theorizing to develop theoretical work products while also receiving credit toward tenure and promotion, and permit those who thrive on empiricism to test the theoretical products created by theorists. Such an arrangement also allows empiricists to collect and analyze data without concern for theory. Data is a valuable product for theorizing. Theorists could then interpret the findings of empiricists into theoretical models grounded in data for further testing by empiricists. Academic disciplines are incomplete without individuals to create and test theories. However, it is not necessary or requisite that everyone be expert in both theory generation and theory testing. Much can be gained by adopting new configurations that alter work incentive structures.

DISCUSSION

In this polemic, we have explored problems relating to theorizing in the IS discipline. Several factors create risk in engaging in theoretical efforts. First, expectations for theoretical products are intense. Second, because of intense expectations, theorizing takes much time and effort. Third, the rewards for theorizing are low, because years of effort lead to a single publication if any. Conversely, with theory testing, a carefully designed data set can be used across multiple studies. Last, the rewards for theorizing are uncertain because few publication outlets value pure theory articles and expectations are high even when outlets do accept theoretical work.

To incentivize theorizing, we have proposed alterations to acceptable research products and collaboration norms. By developing respected publication outlets for modular theoretical work products, individual researchers and researchers across the IS discipline can build theories incrementally while receiving benefits for doing so over extended periods of time. Under existing conditions, theory development already takes more time to do well than other research work products. Thus,
extending theoretical work products over time will not drastically alter the discipline’s theoretical productivity. Further, if the discipline can truly incentivize more collaborative theorizing efforts, theory building productivity will increase substantially.

We call for research outlets to consider the adoption of new forms of research work products. While researchers should be allowed to develop theories as superstars, the disciplines could benefit greatly from work products that are modular and incremental in nature to open theorizing to a larger body of researchers. These work products can focus on concepts, relationships, and boundary conditions to provide others with the chance to configure and reconfigure ideas into new and meaningful theories. To start the change, special issues could be dedicated to the individual exploration of the discipline’s most important concepts and relationships. The recent MISQ special issue on next-generation information systems theories leans in this direction. The special issue allows researchers to focus on micro elements of theories (i.e., concepts). However, micro elements of theory are only one of many contributions to be considered for the special issue. Dedicated special issues to core theoretical concepts and relationships could be an ideal way to test the value of the proposed structural changes.

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