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Introduction to the Special Topic Forum: Squeezing Harder Doesn't Always Work: Continuing the Search for Consistency in Innovation Research

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Introduction to the Special Topic Forum

**SQUEEZING HARDER DOESN'T ALWAYS WORK:  
CONTINUING THE SEARCH FOR CONSISTENCY IN  
INNOVATION RESEARCH**

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Organizations, like sponges, must have the capacity to absorb inputs in order to generate outputs. Researchers have developed theories of organizational absorptive capacity; researchers have also developed models of the effective generation of new products. The challenge lies in integrating the two research streams.

Do slack resources lead to greater or less organizational innovation? Does the size of an organization affect innovation? Does the longevity of managers in their jobs have an impact on innovation? Does vertical integration decrease an organization's innovation? We have many answers to these questions, but they often contradict one another. "The most consistent theme found in the organizational innovation literature is that its research results have been *inconsistent*" (Wolfe, 1994: 405).

This inconsistency is certainly not due to a paucity of research in the area. Wolfe reported that in the five years preceding his 1994 review, there were 1,299 published journal articles and 351 dissertations addressing *organizational* innovation. During the same period, there were 6,244 published journal articles and 1,336 dissertations completed on the more general topic of innovation (not necessarily organizational).

What is preventing us from accumulating a consistent body of knowledge? Wolfe (1994) echoed the logic of others (Abrahamson, 1991; Damanpour, 1988, 1991; Poole & Van de Ven, 1989) when he suggested that the problem stems from a lack of clearly "specifying the characteristics of the innovation(s) studied, the stage(s) of the innovation process considered, and the type(s) of organizations included in an investigation" (1994: 424). Characteristics of the innovation include whether it is administrative or technical, radical or incremental, central or peripheral. Stages of the innovation process include awareness, appraisal, adoption, diffusion, and implementation. And types of organizations include public or private, large

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or small, service or manufacturing. Wolfe argued that a clear specification of these organization-level moderators of innovation will lead to more consistent research findings.

The solution to the problem of inconsistent results may not be that simple, however. Damanpour (1991) conducted a meta-analysis of the relationships between organizational innovation and the most frequently studied organizational determinants—mostly structural variables, but also process, resource, and cultural variables. In this study, moderating variables, such as the type of organization, type of innovation, stage of innovation process, and scope of innovation also were considered. The analyses indicated that a number of moderating variables thought to be important, in fact, may not have significant effects. In particular, the type of innovation and the stage of innovation process did not appear to influence the relationship between organizational determinants and innovation. His study suggests that merely pushing harder to specify organization-level moderators is not likely to solve our problem of accumulating masses of inconsistent research results.

To explore an alternative source of our inconsistency problem, I invite you to think of organizations as sponges. They have more or less capacity to absorb new knowledge, not unlike sponges that have differing capacities to absorb a liquid. Depending on their absorptive capacity and on their ability to reconfigure what they have absorbed, organizations also have more or less potential to generate outcomes, not unlike sponges that are limited by the amount and the nature of what they have absorbed. Though not labeling firms as sponges, Cohen and Levinthal (1990) introduced the analogy indirectly in their argument that innovative output is dependent on the prior accumulation of knowledge that enables innovators to assimilate and exploit new knowledge.

The organizational innovation research referred to in the previous paragraphs has focused on the variables that facilitate squeezing the most out of organizations-as-sponges. The work has searched for statistically significant associations among innovation and specialization, functional differentiation, professionalism, participatory work environments, administrative intensity, and slack resources, to name a few of the most common variables (Damanpour, 1991). All of these searches have concentrated on the means to effectively squeeze innovative activity out of organizations, with little regard for the continuous accumulation of knowledge that provides the source of that capability.

How much one can wring out of a sponge, however, depends only secondarily on the various means of squeezing it. It depends more fundamentally on what, how much, and how continuously the sponge has absorbed to begin with. A sponge that has been left to dry out to the point where it can no longer absorb anything new will not generate outputs no matter how effectively one squeezes it.

We have considerable information about the absorptive capacity of firms, both from an institutional and an organizational perspective. Eco-

conomic and institutional theories of knowledge diffusion across organizations provide a lens for noting the extent to which knowledge becomes available for organizations to absorb (Abrahamson, 1991; Dosi, 1988; Nelson & Winter, 1977). Organizational change and learning theories provide a lens for noting the capacity of organizations and individuals within them to absorb and exploit the available knowledge (Cohen & Levinthal, 1990; Fiol, 1994; Huber, 1991). Combined, these research streams have been used to examine the factors that influence whether organizations-as-sponges have accumulated and processed the knowledge needed to generate innovative activity, regardless of how well they have managed the process of bringing innovations to market.

The problem is not that we do not have information on how and why knowledge is accumulated. The problem is that we have not used this information to clarify why it is that the same squeeze techniques on different sponges may lead to inconsistent results. The research on innovation diffusion and absorption has remained largely separate from studies of organizational determinants of effective new product development.

Table 1 lists research published in a sample of management journals<sup>1</sup> on organizational innovation during the past five years. One camp of research, listed in the left column, has focused on the diffusion of new knowledge across organizations and on the absorptive capacity of organizations to identify, assimilate, and exploit that knowledge. The other camp of research, listed in the right column, has focused on how to most effectively squeeze innovative knowledge from organizations for effective and speedy new product/process development and commercialization.

### **Knowledge Diffusion and Absorption: Filling the Sponge**

The research listed in the upper left quadrant of Table 1 has described the macrolevel processes and institutional factors that affect the scope and rate of diffusion of knowledge across organizations. For example, Abrahamson (1991) discussed the conditions under which groups of firms imitate each other's innovations ("fads" and "fashions"), even when they are inefficient innovations. He ended with the interesting observation that the continuous diffusion, adoption, and subsequent rejection of inefficient fads may be a necessary process from which increasingly efficient innovations can evolve.

In the lower left quadrant of Table 1 is research that has addressed the capacity of organizations to absorb and reconfigure available knowledge. Cohen and Levinthal introduced the concept of "absorptive capacity" as a firm's ability to recognize the value of new and external information and its ability to assimilate and exploit it. They argued that "prior possession of

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<sup>1</sup> The journals included in the sample are the *Academy of Management Review*, *Academy of Management Journal*, *Administrative Science Quarterly*, *Management Science*, *Strategic Management Journal*, *Academy of Management Executive*, *Organization Science*, and *Journal of Management Studies*.

**TABLE 1**  
**Two Camps of Research**

<b>Filling the Sponge: Knowledge Diffusion</b>	<b>Squeezing the Sponge: New Product/Process Development</b>
Shan, Walker, & Kogut, 1994 <i>Small firms' cooperative relations with larger firms.</i>	Brown & Eisenhardt, 1995 <i>Factors affecting the success of new product development.</i>
Zander & Kogut, 1995 <i>Knowledge transfers across manufacturing sites.</i>	Romano, 1990 <i>Product innovation determinants for high- and low-growth firms.</i>
Abrahamson, 1991 <i>Fads and fashions in diffusion of knowledge.</i>	Dougherty, 1992 <i>Interpretive barriers to successful new product development.</i>
Abrahamson & Fombrun, 1994 <i>Macrocultures that stymie knowledge diffusion across firms.</i>	Dougherty, 1990 <i>Cycles of knowledge creation about markets for new products.</i>
Abrahamson & Rosenkopf, 1993 <i>Bandwagons in diffusion of knowledge.</i>	Dougherty & Heller, 1994 <i>Organizational and technical innovation for new product development.</i>

TABLE 1 (continued)

<i>Knowledge Absorption</i>	<i>Speed of Product Development</i>
Cohen & Levinthal, 1990 <i>Firms' capacity to assimilate and exploit new knowledge.</i>	Schoonhoven, Eisenhardt, & Lyman, 1990 <i>Factors leading to firms developing and shipping new products more quickly.</i>
von Hippel, 1994 <i>Stickiness of information needed for problem solving.</i>	Ettlie, 1995 <i>Development speed through product and process design integration.</i>
Swanson, 1994 <i>Role of information systems in organizational innovations.</i>	Eisenhardt & Tabrizi, 1995 <i>Strategies for accelerating new product development.</i>
Ettlie & Reza, 1992 <i>Methods for capturing value from process innovations.</i>	Adler, Mandelbaum, Nguyen, & Schweter, 1995 <i>Process modeling for concurrent projects with competing demands.</i>
MacCrimmon & Wagner, 1994 <i>Computer-based idea generation to enhance creativity.</i>	Liberatore & Stylianou, 1995 <i>Expert support systems for speedier project evaluations.</i>
Henderson & Clark, 1990 <i>Product knowledge embedded in culture and information-processing systems.</i>	Brown & Karagozolu, 1993 <i>Approaches for accelerating product development cycles.</i>
Sonder & Moenhardt, 1992 <i>Interfunctional information transfers for uncertainty reduction.</i>	Banbury & Mitchell, 1995 <i>Importance of incumbent moving first in incremental product innovations.</i>

relevant knowledge and skill is what gives rise to creativity, permitting the sorts of associations and linkages that may never have been considered before" (1990: 130).

In this issue, the first four papers fall in the left column of Table 1. Greenwood and Hinings provide a useful introductory overview that encompasses both the macrolevel institutional forces determining knowledge diffusion and the absorptive capacity of organizations to assimilate that knowledge. The authors discuss the interplay of external institutional pressures and internal dynamics of interpretation, adoption, and rejection within individual organizations. Their stated aim is to better understand the incidence and pacing of radical organizational change. Within the framework I have described, their paper sets the stage for understanding the interactions of institutional and organizational dynamics in determining an organization's absorptive capacity.

The next three papers in this issue also address the processes by which organizations and their members assimilate new knowledge. Klein and Sorra argue that effective absorption of new knowledge or innovations is a function of the strength of an organization's climate for implementation of that innovation and the fit of that innovation to targeted users' values. Ultimate effectiveness is achieved by gaining members' appropriate and committed use of an innovation, in the words of Cohen and Levinthal, by the "ability to recognize [its] value . . . , assimilate it, and apply it to commercial ends" (1990: 128).

In a similar vein, but with an emphasis on the cognitive aspects of knowledge assimilation, Glynn argues that intelligence underlies an organization's capacity for renewal and change. She describes intelligence as that which enables an entity to learn, remember, and process information. The article suggests that an organization's level and types of intelligence determine its cognitive agility to combine existing knowledge in new and different ways.

Finally, Ford's paper in this issue illustrates how intentional action and evolutionary processes that legitimate action interact to facilitate creativity and innovation. He draws from psychology and sociology to situate the individual within the larger context and describes the influence of sense making, motivation, ability, and knowledge in bringing about creativity. His work suggests that creativity depends on individual motivation to engage in novel interpretations of existing knowledge. Each of these first four papers enhances our understanding of the processes by which organizations assimilate, recombine, and exploit knowledge for innovation.

### **New Product/Process Development: Squeezing the Sponge**

The body of research listed in the right column of Table 1 has focused on organizational factors that determine the efficiency and effectiveness of bringing innovations to external markets. In the upper right quadrant is research that has addressed the determinants of effectiveness of product



development processes in general. For example, Dougherty and her colleagues (e.g., Dougherty, 1990) have described the departmental thought worlds and organizational product routines that inhibit the successful development and launch of new products.

In the lower right quadrant is research that has been used to specifically consider the determinants of accelerated new product development cycles. Some of these researchers have focused on the importance of and the need for speedy product innovation (e.g., Banbury & Mitchell, 1995). Other researchers have examined the internal processes by which new product development can be accelerated (e.g., Brown & Karagozoglu, 1993).

In this issue, Kessler and Chakrabarti follow this tradition by examining the external factors that determine when innovation speed is important, the internal factors that account for differences in speed, and the effects on outcomes such as cost and quality. The study includes external forces—determinants of the need for speed—but does not place the study in the context of the prior capacity building of organizations to actually bring about the innovative processes.

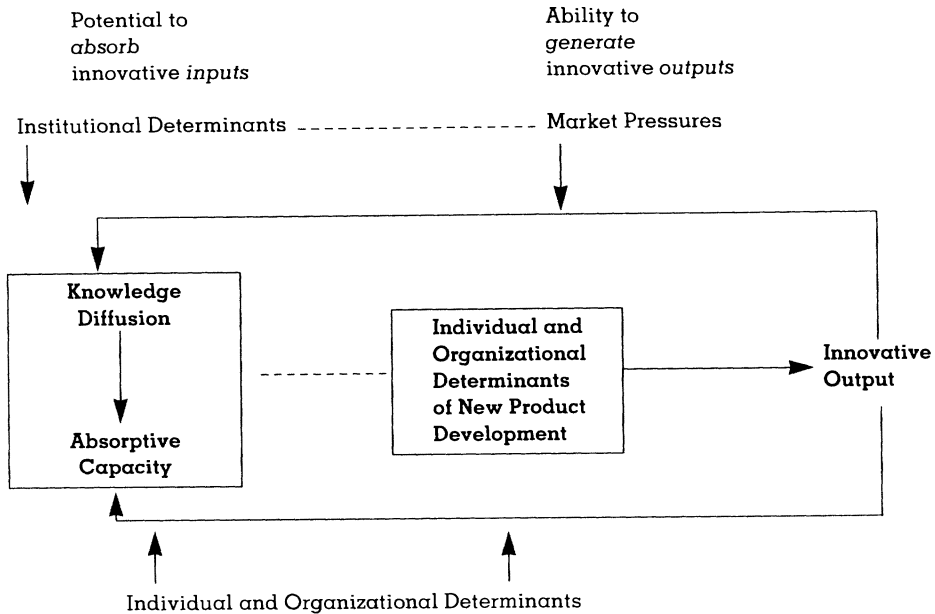
### **You Can't Squeeze Out More Than You've Got**

The division of research depicted in the left and right columns of Table 1 prevents us from detecting the potentially significant effects of macrolevel knowledge diffusion and organization-level absorptive capacity on particular organizational innovations. For example, Kessler and Chakrabarti (in this issue) describe numerous strategic orientation and staffing- and structuring-related factors that may influence the speed of new product introduction. To what extent does the existence of such factors depend on prior accumulated knowledge and experience that is not directly related to any particular innovation?

Figure 1 summarizes the separation of the camps of research on innovation. It depicts research on knowledge diffusion as focusing primarily at the institutional and market levels of analysis and research on knowledge absorption as focusing at the level of the firm. The emphasis of both is on the potential of organizations to *absorb* new knowledge, to add to their accumulated store of knowledge. A separate box in Figure 1 describes research that focuses primarily on the ability of organizations to effectively *generate* innovative outputs. Though there is some attention in this research to market factors, this relates to pressures that drive the demand for speed, or other attributes of the innovation. The authors of this latter body of research have largely ignored the influence of institutional and market factors in determining the continuous accumulation and recombinations of knowledge that enable innovative activity to occur in the first place. The feedback loops in Figure 1 suggest yet another important link between the research camps: Innovative output influences the potential for continuing the diffusion and recombinations of knowledge for future innovations.



**FIGURE 1**  
**A Map of Innovation Research**



The last article in this issue, by Poulder and St. John, is a great example of the needed intersection of the two camps of research. The study describes the characteristics of hot spots, geographic clusters of firms competing in the same industry and having similar resource requirements. The article describes the processes of hot spot formation, growth, and decline. The authors argue that cognitive homogeneity initially leads to increased diffusion and absorption of new knowledge among these firms, stimulating innovations; however, over time the same homogeneity leads to collective biases and distorted information processing, causing innovation to decline.

Both the first and the last articles in this issue (Greenwood & Hinings; Poulder & St. John) describe what can happen if the feedback loops depicted in Figure 1 become overly self-contained and self-reinforcing. Under such tightly-coupled conditions, the capacity of organizations-as-sponges to absorb and recombine innovative inputs is likely to shrink. If this occurs, the internal structures, processes, and other organizational determinants of new product generation that research deems important will have minimal impact. Simply squeezing harder when the sponge is dry will not generate the results we expect. To understand the determinants of organizational innovation, we need to be sensitive to the effects of the broader institutional/market context that is the source of knowledge that accumulates; we also need to pay attention to the ability of organizations to continuously build stores of knowledge and recombine them in novel

ways. I hope this collection of papers on the Management of Innovation will stimulate us to more systematically address these issues in our future studies.

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