

## S Y M P O S I U M

# Exploring the Problem-Finding and Problem-Solving Approach for Designing Organizations

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## Executive Overview

An emerging problem-finding and problem-solving approach suggests that management's ability to discover problems to solve, opportunities to seize, and challenges to respond to is vital to organizations. This paper explores the extent to which the problem-finding and problem-solving approach can provide a foundation for joining the capabilities, dynamic capabilities, and governance perspectives as a way to help scholars and practitioners to coherently design organizations from the perspective of design science. The problem-finding and problem-solving approach offers a unit of analysis and a set of behavioral assumptions that enable us to address open questions within the extant literature and to propose new questions in management research.

Three perspectives in the management field are often used to explain superior firm performance. First, the resources and capabilities perspective (Barney, 1991; Winter, 1988)—which the current paper will refer to in combination as the capabilities perspective—maintains that firms possessing superior resources and capabilities can achieve higher economic performance. Second, the dynamic capabilities perspective (Teece, 2007; Teece, Pisano, & Shuen, 1997) suggests that a firm's ability to adapt to the changing environment is a source for creating, capturing, and sustaining value. Third, the governance perspective in organizational economics (Klein, Crawford, & Alchian, 1978; Williamson, 1985) maintains that higher economic performance can be achieved by investing in co-specialized assets that generate economic value, and by governing them (e.g., make versus buy) in an economizing way (Nickerson & Silverman, 2003; Oxley,

1997). Although these three perspectives are drawn upon to explain organizational performance differences, they historically have not been joined in a way to help scholars and practitioners coherently design organizations from the perspective of design science (Simon, 1996; Van Aken, 2005). In the best case, each perspective makes explanations and predictions largely independent of the other perspectives, and, in the worst case, scholars writing from one perspective dismiss the validity of the other perspectives (Conner & Prahalad, 1996; Foss, 1996; Ghoshal & Moran, 1996).

Recent developments from all three perspectives focus on knowledge as an overarching construct that may provide a cornerstone for joining these perspectives for purposes of designing organizations. For instance, capabilities research maintains that the advantage of transferring knowledge within the firm determines organizational bound-

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aries (Conner & Prahalad, 1996; Demsetz, 1988; Kogut & Zander, 1992). Dynamic capabilities research emphasizes the importance of knowledge assets and learning for understanding firm performance differences (Teece et al., 1997; Zollo & Winter, 2002). Governance research submits that properly designed governance mechanisms are antecedents of knowledge creation and capability development because they not only can encourage specialized investments, but also can facilitate knowledge transfer among and within firms (Foss, 2007; Foss & Michailova, 2009; Mayer & Nickerson, 2005). While some maintain that these three perspectives are at least complementary (Mahoney, 2001; Poppo & Zenger, 1998), they still lack a set of shared constructs and operational definitions to help generate new value for theory and practice so that in combination they can contribute to solving practical managerial problems.

The current paper explores one possibility for advancing organizational design by joining the capabilities, dynamic capabilities, and governance perspectives: creating what we call the *problem-finding and problem-solving* perspective. Consistent with the notion of a more practical approach to organizational design, this perspective employs the problem as the basic unit of analysis (Nickerson, Silverman, & Zenger, 2007) and emphasizes four activities: (1) *problem finding, framing, and formulating*; (2) *problem solving*; (3) *solution implementation*; and (4) *operating implemented solutions*. The problem-finding and problem-solving approach considers all four activities as necessary for creating and capturing value, the overarching goal of strategic management. For instance, problem finding, framing, and formulating are critical to the performance and survival of an organization because these activities influence whether or not, in what direction, and for whom an organization creates new value (Ackoff, 1978; Churchman, 1971). Problem solving, especially when problems are complex and unstructured, is a necessary step for creating value and appropriating returns from innovation (Newell & Simon, 1972). Solution implementation involves leading change in an organization to introduce new people, processes, and physical as well as intangible assets. A solu-

tion operates on process inputs and delivers outputs that attract revenues and economic rents. Some solutions may be better than others, which has implications for how much value is created and which firms can capture value and survive.

The problem-finding and problem-solving approach focuses on understanding the problem characteristics and the corresponding impediments derived from human interactions concerning the activities of problem formulation, problem solving, and solution implementation. Methodologically, this approach comparatively evaluates the costs and competencies of alternative governance mechanisms for overcoming impediments to enable more comprehensive problem formulations, more efficient discovery of valuable solutions, and more effective implementation of solutions, which is consistent with design science's objective of developing knowledge that can be used by professionals to design solutions to their field's problems (Van Aken, 2005).

An effective joining of capabilities, dynamic capabilities, and governance perspectives must satisfy at least three conditions. First, it must incorporate the units of analysis from the capabilities, dynamic capabilities, and governance perspectives, and it must explain how these different units can be encompassed within some other unit. Second, it must adopt behavioral assumptions that embrace the premises of the various perspectives. Third, it must create new value, preferably for both theory and practice (Heiman, Nickerson, & Zenger, 2009).

In response, we evaluate the extent to which these three conditions are satisfied by the problem-finding and problem-solving approach. Within this approach the problem is the unit of analysis, which differs from the units found in the three perspectives. While different, the problem as the unit of analysis encompasses resources and routines, dynamic capabilities, and transactions in a useful way. This approach also adopts opportunism and a broad form of bounded rationality as its behavioral assumptions. By broad form of bounded rationality we mean that the problem-finding and problem-solving approach adopts not only the definition of bounded rationality as "*intendedly* rational, but only *boundedly* so" (Simon, 1997,

p. 88) but also broadens the standard definition to incorporate cognitive, emotional, and social biases (Augier & Sarasvathy, 2004; Lyles & Thomas, 1988). The problem-finding and problem-solving approach thus adopts a superset of behavioral assumptions that includes the assumptions of all three perspectives. In so doing, the problem-finding and problem-solving approach satisfies the first and second conditions for providing a foundation for effectively joining the capabilities, dynamic capabilities, and governance perspectives.

The key and remaining condition is whether joining capabilities, dynamic capabilities, and governance perspectives creates value. We submit that this approach can create value along at least two dimensions. First, the problem-finding and problem-solving approach offers several definitions and insights that can resolve the often-claimed tautology of the capabilities literature, introduce a taxonomy of dynamic capabilities that reduces confusion of the concept, and generate insights about the antecedents of which transactions a firm engages in along with the content of these transactions. Second, this approach also stimulates several questions of interest to management theory and practice. For example, the problem-finding and problem-solving approach calls attention to formulating strategic problems, opportunities, and challenges. This approach offers a potentially new avenue for exploring how the “right” capabilities can be identified *ex ante*. The problem-finding and problem-solving approach enables a better understanding of which dynamic capabilities should be activated in responding to a changing environment, and it suggests a new way to think about how firms can create and capture value. Accordingly, we conclude that not only does the problem-finding and problem-solving approach hold promise for effectively joining the capabilities, dynamic capabilities, and governance perspectives but also for creating new value for both management theory and practice by advancing design science with respect to strategically designing organizations.

This paper proceeds by briefly reviewing key aspects of the literature on capabilities, dynamic capabilities, and governance as well as by identi-

fying some of the criticisms leveled at each literature. It then presents a background for the problem-finding and problem-solving approach. We then evaluate the extent to which this approach’s unit of analysis and behavioral assumptions provide a foundation for effectively joining these three perspectives. Based on the conclusion that the problem-finding and problem-solving approach can provide such a foundation, we explore the value that joining these three perspectives might create by discussing criticisms of the three perspectives that can be resolved, and by introducing a set of new questions that the problem-finding and problem-solving approach calls to our attention. This paper discusses several future research directions that would build upon research to date to further explore the problem-finding and problem-solving approach.

### Literature Review

Each of the three perspectives is well represented in the literature. We review the highlights here.

### Organizational Capabilities Perspective

The capabilities and resource-based view, which we classify here as part of the same broad “capabilities” perspective, uses routines and resources as the units of analysis. Routines are defined as “behavior that is learned, highly patterned, repetitive or quasi-repetitive, founded in part in tacit knowledge” (Winter, 2003, p. 991). For instance, decision rules and standard operating procedures are two typical examples of routines (Cyert & March, 1963). Based on this definition of routines, Winter defines “an organizational capability [as] a high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organization’s management a set of decision options for producing significant outputs of a particular type” (2003, p. 991). Therefore, capabilities research treats organizational capabilities as a subset of organizational routines that can generate performance benefits to firms. The firm is modeled as having specific organizational capabilities and decision rules. Over time, these organizational capabilities and decision rules are modified because of both deliberate problem-

solving efforts and random events (Nelson & Winter, 1982; Zollo & Winter, 2002), which can be referred to as dynamic capabilities and are discussed in the next section.

Resources are defined as specific physical, human, and organizational assets that can be used to implement value-creating strategies (Barney, 1986; Wernerfelt, 1984). Although some research has made distinctions between capabilities and resources (Amit & Schoemaker, 1993; Makadok, 2001), other research treats them as two types of resources (Barney, 1986, 1991). Relatedly, Miller and Shamsie (1996) distinguish between property-based and knowledge-based resources. Some research has also viewed a resource as a stock variable of investment and a capability as a flow of the services whose effectiveness is made possible by such resource stocks (Dierickx & Cool, 1989; Mahoney, 1995) where capabilities can be valuable on their own or enhance the value of other resources as complementary assets (Clougherty & Moliterno, 2010; Teece, 1986; Tripsas, 1997). Extant research remains imprecise in defining capabilities versus resources because of these differing distinctions.

Both capabilities and resource-based research, following Cyert and March (1963) and Nelson and Winter (1982), rely on the behavioral assumption of bounded rationality, in which an individual intends to be rational but is only limitedly so (Simon, 1997). The human mind is limited in its capacity to acquire, accumulate, and apply large numbers of knowledge sets (Simon, 1993). Nelson and Winter (1982) adopt individual *skills* as the analogue for organizational capabilities to highlight another vital assumption: the existence and impact of tacit knowledge. Along with the assumption that at least some knowledge remains tacit, bounded rationality provides a theoretical foundation to resource-based and capabilities research for explaining not only why firms can have unique capabilities but also why firm performance can be heterogeneous (Barney, 1991; Nelson & Winter, 1982). Subsequent research, which builds on Penrose (1959), maintains that the heterogeneity of the productive services (i.e., capabilities) available from its resources gives each firm its unique character (Hoopes & Madsen,

2008; Leiblein & Madsen, 2009). Hitt and Ireland (1985) empirically examine the relationship between corporate distinctive competencies and firm-level economic performance and find that superior organizational routines in one or more of the firm's value-chain functions may enable the firm to generate economic rents from a resource advantage. Moreover, because they are path dependent, these routines and unique capabilities can inhibit imitations from competitors (Argyres & Liebeskind, 1999; Dierickx & Cool, 1989; Zhao, Anand, & Mitchell, 2004). Bounded rationality and tacit knowledge also have been used to maintain that firms should vertically integrate their core competencies (Argyres, 1996; Prahalad & Hamel, 1990).

While resource/capabilities research has grown rapidly over the past 20 years, it nonetheless has faced criticism. For instance, the resource-based view has been criticized as being tautological in that competitive advantage is based on valuable resources but the economic value of the resources is based on competitive advantage (Priem & Butler, 2001). While recognizing "valuable" as a key attribute of the resources, the capabilities perspective tends not to theoretically and empirically connect its analysis to the source of economic valuation, namely, the utility and choice of consumers, which ultimately determines the value created by resources (Adner & Zemsky, 2006). Another challenge is that while capabilities research claims that generating and sustaining performance advantages requires identifying the resources and capabilities that are valuable, rare, inimitable, and non-substitutable—the so-called VRIN criteria (Barney, 1991)—little insight in this literature is offered predicting how these resources and capabilities are identified *ex ante* to determine firm heterogeneity and sustained competitive advantage. In general, the theory has currency in explaining some aspects of organizations and performance, but designing solutions for practical application is currently difficult (Priem & Butler, 2001).

### **Dynamic Capabilities Perspective**

A specific type of organizational capability, *the capability to cope with change*, has attracted much



research attention during the past two decades. Firms need to master their ability to change and learn to adjust their resources and capabilities to respond to the ever-changing environment. Teece and colleagues (1997) propose the notion of “dynamic capabilities” to capture the conception of the capability to change. The unit of analysis is therefore dynamic capabilities in different business contexts. Teece et al. define a dynamic capability as “a firm’s ability to integrate, build, and reconfigure internal and external competences” (1997, p. 516), and suggest that dynamic capabilities are a source of persistent performance differences among firms in rapidly changing environments. Extant research has proposed various types of dynamic capabilities. For example, Kogut and Zander (1992) consider “combinative capabilities,” and Henderson and Cockburn (1994) focus on “architectural competence” (see also Eisenhardt & Martin, 2000).

Although various types of dynamic capabilities are identified, there is little theory about how to design and build a dynamic capability. Zollo and Winter (2002) propose a theory to explore the means to create dynamic capabilities, defined as “a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines *in pursuit of improved effectiveness*” (emphasis added; 2002, p. 340). This definition describes a dynamic capability as aimed to improve the effectiveness of a firm and thus is neutral about whether dynamic capabilities can lead to sustainable competitive advantage (Easterby-Smith, Lyles, & Peteraf, 2009).

Unlike tacit routines employed by a capabilities perspective, deliberate learning mechanisms such as explicit knowledge articulation and codification activities are emphasized as complementary means through which firms build their capabilities. Zollo and Winter (2002) explore the relative effectiveness of explicit and tacit learning mechanisms on building dynamic capabilities by identifying task features that influence the relative importance of explicit and tacit learning mechanisms, namely, a task’s *frequency*, degree of *novelty*, and degree of *causal ambiguity* in the action–performance links. For instance, the higher

the novelty of task experiences, the higher the likelihood that explicit learning mechanisms will have relatively stronger effectiveness in developing dynamic capabilities than will tacit accumulation of past experiences. In sum, while Zollo and Winter (2002) suggest that learning mechanisms are the means to develop dynamic capabilities, they do not inform managers why and when a particular dynamic capability should be adopted when facing an environmental change.

The various definitions reviewed above describe a dynamic capability as either a capability to change or a routine to learn. The definitions make understanding and operationalization of the core construct difficult. Eisenhardt and Martin attempt to resolve the definitional issue by focusing on organizational processes and defining dynamic capabilities as “a set of specific and identifiable processes such as new product development, strategic decision making, and allying . . . by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die” (2000, pp. 1105 and 1107). This definition avoids the tautology of defining the value of a dynamic capability in terms of its effects on firm performance. However, Eisenhardt and Martin’s (2000) treatment of dynamic capabilities departs sharply from the usage in Teece and colleagues (1997) by maintaining that there are multiple paths to the same dynamic capability and that capabilities have far greater substitutability across firms than the traditional resource/capabilities approach posits.

The view of dynamic capabilities as having multiple paths and as being substitutable across firms makes competitive advantage or performance differences among firms temporary. Eisenhardt and Martin (2000) suggest that dynamic capabilities cannot be a source of sustainable competitive advantage because they are imitable or substitutable. That is, other firms can achieve the same dynamic capabilities either by imitating the best practices of the focal firm or by developing the same dynamic capabilities through different paths. Debates within the research literature on whether dynamic capabilities can lead to sustainable performance differences remain unresolved

(Drnevich & Kriauciunas, 2011; Easterby-Smith et al., 2009; Teece, 2007).

Compared with definitional issues and performance implications, behavioral assumptions have received less research attention. Historically, the dynamic capabilities approach shares the same behavioral assumption of bounded rationality as the capabilities perspective. In addition to positing bounded rationality, Teece (2007) identifies the need for managers to avoid bias, delusion, deception, and hubris, which adds nuance to the bounded rationality assumption to include not only the limited cognitive capacities but also the cognitive biases of managers (Tversky & Kahneman, 1974).

Although dynamic capabilities research has explored the topic for almost two decades, many key strategic issues relating to dynamic capabilities remain unresolved. First, extant research does not have an agreement on the impact of dynamic capabilities on persistent performance differences among firms (Easterby-Smith et al., 2009; Eisenhardt & Martin, 2000; Teece et al., 1997). Second, while the dynamic capabilities perspective highlights the value of dynamic capabilities in managing the changing environment, little insight is offered on which dynamic capabilities should be employed when facing uncertain environments. How do managers create dynamic capabilities and know which ones to use to cope with a particular environmental change? Equally important, little insight is offered explaining why an organization adopts a particular dynamic capability in the first place. What alternatives are available and considered when managers choose to develop a dynamic capability? What factors should managers consider when making comparative assessments in designing one dynamic capability instead of others?

### **Governance Perspective**

The governance perspective, which is principally informed by Williamson's (1985) transaction cost economics, seeks not only to provide an explanation for the existence and boundaries of the firm but also to explain how firms are internally organized. The locomotive for transaction cost economics' predictive power is asset specificity, which

is "a specialized investment that cannot be redeployed to alternative uses or by alternative users except at a loss of productive value" (Williamson, 1996, p. 377). Investing in specific assets therefore marks the shift of "what was a large numbers bidding condition at the outset [being] effectively transformed into one of bilateral supply thereafter" (Williamson, 1985, p. 61). The shift results in a fundamental transformation, where investments of specialized assets enable the creation of transaction value (Zajac & Olson, 1993) and the appropriation of quasi-rents (Klein et al., 1978). Ex post exchange hazards such as economic hold-up problems and other maladaptations are a possibility after the fundamental transformation. Thus, it is in managers' best interest to mitigate ex post exchange problems in a cost-effective way through ex ante fashioning of ex post governance mechanisms that yields transaction costs theory's economizing hypothesis. Indeed, Williamson (1991a) submits that economizing is typically the best strategy.

To explore the governance perspective, we define and describe its unit of analysis, the prototypical governance alternatives, the economizing principle, and behavioral assumptions. The principal unit of analysis in transaction cost economics is the transaction, which occurs "when a good or service is transferred between technologically separable stages" (Williamson, 1996, p. 378). The transaction was chosen by Commons (1932) on the basis of three principles: (1) conflict, (2) mutuality, and (3) order (Commons, 1932; Williamson, 1985). The so-called Commons' (1932) triple provides the criteria for choosing a unit of analysis that is suitable to the design of governance mechanisms "by which to infuse order in a relation where potential conflict threatens to undo or upset opportunities to realize mutual gains" (Williamson, 1999, p. 1090). By employing the transaction as the unit of analysis, the governance perspective explains why firms adopt various forms of governance alternatives, of which market, hybrid contracting, and hierarchy are three primary forms.

Governance structures are mechanisms by which a transaction can be governed or managed to mitigate and avoid potential exchange prob-

lems. Governance structures encompass three primary instruments: incentive intensity, administrative control, and contract law regime. Combinations of these three mechanisms lead to discrete structural prototypical alternatives of market, complex contracting, and hierarchy (Williamson, 1991b). For instance, economic incentives are far more intense in markets than in organizations. Administrative controls, which put constraints on as well as shape behavior, are more accessible in organizations than in markets. Although administrative control is identified as one of the key mechanisms of governance, extant governance research rarely provides theoretical accounts of its features. Finally, discrete legal regimes exist for markets, complex contracting, and organizations, the last of which enjoys forbearance from court intervention (Masten, 1988; Williamson, 1991b).

Economizing in Williamson's discriminating alignment hypothesis refers to "aligning transactions (which differ in their attributes) to governance structures, (the adaptive capacity and associated costs of which differ) in a discriminating way" (1985, p. 18). Properly aligned governance structures provide a degree of protection for quasi-rents that can be created by investing in specific assets. Without a discriminating alignment, the transaction value of specific investments is more likely to be expropriated or lost, which diminishes the incentive to invest in them in the first place.

The governance perspective makes two behavioral assumptions: bounded rationality and opportunism. Economic actors are posited to be farsighted in that they attempt to foresee potential contracting problems and try to mitigate problems by adopting economic safeguards (Williamson, 1999). However, bounded rationality constrains foresight to be imperfect and incomplete (Mayer & Argyres, 2004). Bounded rationality thus implies that it is costly for actors to comprehensively write complete contracts especially as complexity/uncertainty within the exchange increase (Williamson, 1985). Both aspects of bounded rationality imply that complex contracts will be incomplete.

Opportunism, defined as "self-interest seeking with guile" (Williamson, 1985, p. 47), extends beyond simple self-interest by including the notion of strategic misrepresentation. With a back-

ground assumption of uncertainty in the external environment, the behavioral assumption of opportunism combined with the fundamental transformation can give rise to opportunistic behavior. In the presence of asset specificity, opportunism can invite economic hold-up and other maladaptation problems that may deter investment in value-creating transactions (Williamson, 1985). In sum, while Williamson treats economic organization "as a means by which to economize on bounded rationality and mitigate the hazards that accrue to opportunism" (1999, p. 1090), most governance studies, both theoretical and empirical, focus more on the transaction costs due to the opportunistic behavior. The notion of bounded rationality thus receives substantially less research attention than it warrants as a behavioral assumption (Foss, 2003).

Although significant empirical support exists for the discriminating alignment hypothesis (Macher & Richman, 2008; Shelanski & Klein, 1995), the governance perspective is silent on many management questions (Walker, 2007). For example, what transactions should firms engage in? For the transactions a firm chooses to engage in, what determines the nature and level of asset specificity to be invested in? Indeed, the governance perspective does not inform how managers should design transactions. Without exploring decisions about which transactions and why specific investments are chosen, the governance perspective does not fully address performance differences among firms.

### **The Problem-Finding and Problem-Solving Approach**

The emerging problem-finding and problem-solving approach asks three interrelated questions: (1) how can leaders find, frame, and formulate<sup>1</sup> problems and opportunities, the resolution of which enables their organizations to cre-

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<sup>1</sup> Although the first stage of the problem-finding and problem-solving approach entails activities of problem finding, framing, and formulating (Dougherty, 2004), the current paper mainly discusses the role of problem formulation. Problem-finding and -framing activities have a clear connection to a theory of attention (e.g., Ocasio, 1997), which should be incorporated more explicitly in future research on the approach. Therefore, we mention "problem finding, framing, and formulating" when introducing the

ate and capture value; (2) how can leaders organize knowledge sets to search for and efficiently create valuable solutions to chosen problems; and (3) how can leaders efficiently implement solutions to create and capture value? The essence of the problem-finding and problem-solving approach revolves around the identification of problem characteristics and the extent to which they entail corresponding impediments to the activities of problem finding, framing, and formulating; problem solving; and solution implementation. Methodologically, this approach responds to design science's call to comparatively evaluate alternative governing mechanisms that mitigate impediments, leading to more comprehensive problem formulations, more efficient searching for and creating of valuable solutions, and more successful implementation of solutions. This section describes the approach's unit of analysis, its behavioral assumptions, and primary contributions to date. We also discuss its strengths and weaknesses as an emergent approach.

The problem-finding and problem-solving approach adopts the problem as the unit of analysis, rather than the routine, resource, or transaction (Nickerson et al., 2007). A problem is defined as "a deviation from a desired set of specific or a range of acceptable conditions resulting in a symptom or a web of symptoms recognized as needing to be addressed" (Baer, Dirks, & Nickerson, 2009, p. 5). A problem as the unit of analysis is broadly defined to include not only the symptom and other related symptoms that launch an inquiry but also the discovery and implementation of a solution. Thus, a problem encompasses four activities of interest to management research: (1) problem finding, framing, and formulating; (2) problem solving; (3) implementing solutions; and (4) operating the implemented solution utilizing people, processes, and physical as well as intangible assets that, in conjunction with inputs, generate outputs that create and capture value for the organization. These four activities represent necessary steps for creating and capturing value, and offer much con-

sistency with design science and its desire to design solutions to field problems.

The problem-finding and problem-solving approach employs bounded rationality and opportunism as its core behavioral assumptions, but it differs from transaction cost economics in that it adopts a broader and more nuanced definition of bounded rationality. Following Simon (1967, 1985), the problem-finding and problem-solving approach acknowledges that bounded rationality can refer additionally to a variety of biases that arise not only from motivational cognitive sources (Nickerson & Zenger, 2004) but also from emotional sources and group dynamics. For instance, impediments such as anchoring, perceptual bias, information distortion, dominance, groupthink, confirmation bias, and primacy can limit and narrow formulation comprehensiveness (Janis, 1982; Nickerson et al., 2007). Accordingly, decision makers need to account for the possibility of impediments when structuring activities to create and capture economic value (Brandenburger & Stuart, 1996), because how firms overcome impediments can impact performance outcomes.

The problem-finding and problem-solving approach also undertakes comparative analysis of alternative governance mechanisms, evaluating their costs and competencies for efficiently improving problem formulation and problem solving by mitigating knowledge formation hazards and other impediments. Whereas transaction cost economics focuses on incentives, administrative controls, and contract law differences, the problem-finding and problem-solving approach also considers additional mechanisms of governance. For instance, this approach recognizes different discrete alternatives for conflict resolution within organizations, such as the use of authority versus the use of peer pressure. Instead of relying on a general definition of "administrative controls," the problem-finding and problem-solving approach also considers specific mechanisms like structured processes and investments in various communication channels and codes (Arrow, 1974). For instance, structured processes may be useful in overcoming impediments in formulating problems (Nickerson et al., 2007). Investments in different kinds of communication channels and codes, such as vertical versus

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first stage in the approach, and we use "problem formulation" whenever the discussions are specific to formulating problems.



horizontal ones, can affect which knowledge is exchanged and recombined in an organization (Nickerson & Zenger, 2004).

Research within the management field concerning the problem-finding and problem-solving approach largely began in the 1970s and focused on problem formulation but essentially died out in the mid-1980s because it was largely descriptive, lacking a theoretical foundation.<sup>2</sup> Recent research is reviving the literature by theoretically identifying a specific set of impediments that can arise to limit and narrow problem formulation comprehensiveness when diverse teams tackle complex, ill-structured problems (Baer et al., 2009). Suggesting that incentives and selection represent inappropriate mechanisms for overcoming these impediments, Baer, Dirks, and Nickerson (in press) design a specific structured process for problem formulation, and posit that their structured process can lead to greater formulation comprehensiveness, which is claimed to lead to a higher likelihood of finding a problem, the solution to which is likely to be valuable—a necessary condition for the creation and capture of value (Nickerson et al., 2007).

Focusing on problem solving, Nickerson and Zenger (2004) introduce a knowledge-based theory of the firm that predicts how knowledge sets can be organized to efficiently search for and create new knowledge. Employing Simon's (1962) taxonomy of problem complexity—decomposable, nearly decomposable, and non-decomposable problems—Nickerson and Zenger (2004) submit that searching for and creating new knowledge encounters both knowledge-transfer and knowledge-formation hazards. These hazards differ depending on the complexity of the problem. Macher (2006) expanded the taxonomy to consider

not only problem complexity but also the extent to which the problem is ill-structured (Simon, 1973). To mitigate knowledge-formation impediments, Nickerson and Zenger (2004) suggest an economizing alignment between the complexity of the problem and one of three prototypical organizational structures: using an internal consensus-based team, using an internal authority-based team, and outsourcing. The principal dimensions on which the organizational modes differ are incentive intensity, communication channels, and conflict resolution approaches. The theory comparatively analyzes the prototypical governance structures with respect to their costs and competencies for mitigating the knowledge exchange and formation hazards and generates the following prediction: non-decomposable problems are assigned to consensus-based teams, nearly decomposable problems are assigned to authority-based teams, and decomposable problems are assigned to the market. Macher (2006) empirically examined and found support for the problem-solving approach. Expanding beyond prototypical organizational structures to explore governance alternatives that support inter-firm knowledge exchange to solve problems, Heiman and Nickerson (2002, 2004) also found empirical support for the problem-solving approach.

The problem-finding and problem-solving approach thus far has generated several new hypotheses, with the first empirical analyses providing support for the theories. This approach has been used to suggest a new set of questions for management research (Nickerson et al., 2007). For instance, what impediments limit and narrow problem formulation and how can they be overcome? How can new process design be guided by theory to generate competitive advantage? What constrains organizations from sustaining multiple types of processes within the same organization? Finally, under what conditions are processes complements versus substitutes (Nickerson et al., 2007)? Many of these questions remain unaddressed, and there are few empirical papers evaluating this approach. To date the problem-finding and problem-solving approach has not been used to examine how solutions are implemented (for an exception see Nickerson, 2010), although formu-

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<sup>2</sup> By theoretical foundation, we mean identifying assumptions or providing a causal logic in the research. See, for example, Abbott (2004); Ackoff and Emery (1972); Bransford and Stein (1993); Bruner (1986); Carlile (2004); Denzin (1978); Dewey (1938); Eden, Jones, and Sims (1983); Fredrickson (1984); Getzels and Csikszentmihalyi (1976); Halpern (1996); Kaplan (1964); Kepner and Tregoe (1965); Kilmann and Mitroff (1979); Kuhn (1970); Lawrence (1992); Lyles and Mitroff (1980); Maier (1970); Mason and Mitroff (1981); Mitroff and Emshoff (1979); Nutt (1984); Polanyi (1962); Popper (1959); Rescher (1996); Volkema (1986); and Yadav and Korukonda (1985).

lation and problem-solving activities may have important implications (Baer et al., 2009; Nickerson & Zenger, 2004).

### **Is Joining These Perspectives to Advance Design Science Feasible?**

This paper seeks to evaluate the extent to which the problem-finding and problem-solving approach might usefully join the capabilities, dynamic capabilities, and governance literatures. To be useful, this approach must not only provide a unit of analysis and a “model of man” that can be reconciled with these three perspectives, but also must offer new value such as suggesting answers to previously unresolved questions in the individual approaches or generating new insights to the management literature and practitioners. To begin our exploration, we revisit the unit of analysis and behavioral assumptions to evaluate the problem-finding and problem-solving approach’s consistency with the three perspectives. We then examine the extent to which this approach might address any of the weaknesses identified in the individual literatures and whether it can provide new questions or new insights to theory and practice for understanding performance heterogeneity among firms.

#### **Unit of Analysis**

The problem-finding and problem-solving approach adopts the problem as the unit of analysis, which encompasses the four distinct but interrelated constructs of problem formulation, problem solving, implementation, and the implemented solution. We submit that these constructs can and do encompass the units of analysis employed by the capabilities, dynamic capabilities, and governance literatures. We discuss each research literature in turn.

Routines and resources, which are the units of analysis for the capabilities literature, are subsumed in the problem as the unit of analysis. The problem-finding and problem-solving approach can be used to conceptualize routines and resources and hence capabilities as implemented solutions or aggregations of implemented solutions. Personnel, processes, and physical and intangible assets all are elements of a solution or set

of solutions applied to inputs to produce outputs that create value. Many of these solutions will be composed of resources and routines that are firm-specific (Barney, 1991; Nelson & Winter, 1982). Because resources and routines are individual components of an overall implemented solution to a problem, the units of analysis for capabilities are components of the problem as unit of analysis. They are valued as individual elements of a solution, but it is the functionality of the set of the routines and resources that ultimately creates value.

Dynamic capabilities—the unit of analysis for the dynamic capabilities perspective—also fall within the problem-finding and problem-solving approach’s unit of analysis. This approach enables us to conceptualize dynamic capabilities as governance structures—with special emphasis on their processes—adopted by organizations for problem finding, framing, and formulating; problem solving; and solution implementation. Governance within the problem-finding and problem-solving approach is broader in its mechanisms than what is found in traditional transaction cost economics. Problem finding, framing, and formulating; problem solving; and solution implementation activities are aimed to generate new knowledge and to modify existing solutions, which are current capabilities of a firm (Eisenhardt & Martin, 2000; Teece et al., 1997). In particular, problem finding, framing, and formulating determine whether or not, in what direction, and for whom an organization creates new value—an area of central concern to the dynamic capabilities literature (Helfat et al., 2007; Helfat & Peteraf, 2009). Problem solving and solution implementation determine whether solutions are discovered in a cost-effective way and the extent to which they are implemented (Teece, 2007). Thus, the problem-finding and problem-solving approach offers a unit of analysis that encompasses the kind of change that is the focus of dynamic capabilities.

The problem-finding and problem-solving approach not only provides a unit of analysis that encompasses the domain in which dynamic capabilities change and alter existing capabilities or resources (Eisenhardt & Martin, 2000; Teece et al., 1997), but also introduces a potentially useful

taxonomy for the classification of types of dynamic capabilities. Instead of relying on definitions that refer to dynamic capabilities as being higher or lower order capabilities (Winter, 2003), which raises operationalization concerns, the problem-finding and problem-solving approach suggests that dynamic capabilities might be better categorized in terms of governance<sup>3</sup> for finding, framing, and formulating problems; problem solving; and solution implementation. All three activities, necessary for developing or changing existing capabilities, can involve different governance mechanisms and thus should be classified as separate dynamic capabilities. This classification of dynamic capabilities is consistent with the recent development in the dynamic capabilities literature, which describes dynamic capabilities as “capacities for identifying the need or opportunity for change, formulation of a response, and implementation of a course of action” (Helfat et al., 2007, p. 30). Moreover, the research by Baer and colleagues (2009) and Nickerson and Zenger (2004) suggests that these categories provide operationalizations that can advance the empirical research literature as well as prescriptions for managers.

The transaction—the unit of analysis for the governance perspective—also can be found within the problem-finding and problem-solving approach’s unit of analysis. Any solution to be implemented will involve a constellation of transactions. Moreover, a solution specifies the desired content of each transaction, which provides the attributes of the exchange like asset specificity and uncertainty. Thus, the problem-finding and problem-solving approach enables us to examine antecedents of transactions and their content by analyzing problems that the firm is attempting to solve.

## Behavioral Assumptions

The current paper maintains that the problem-finding and problem-solving approach’s behavioral assumptions—bounded rationality and opportunism—represent a superset of assumptions for the capabilities, dynamic capabilities, and governance perspectives. For instance, capabilities research relies on bounded rationality. A growing perspective in dynamic capabilities is that bounded rationality must be more broadly defined to span a variety of cognitive and social biases (Teece, 2007), with which the problem-finding and problem-solving approach concurs (Nickerson et al., 2007). And transaction cost economics’ assumptions of bounded rationality and opportunism are clearly shared with those of the problem-finding and problem-solving approach. Although traditional research on capabilities and dynamic capabilities do not posit opportunistic behavior, a recent call for the inclusion of deceptions in the dynamic capabilities literature (Teece, 2007) is largely consistent with the assumption of opportunism.

In short, the problem-finding and problem-solving approach adopts the problem as the unit of analysis, which entails problem finding, framing, and formulating; problem solving; solution implementation; and implemented solution, within which capabilities, dynamic capabilities, and transactions can be located. This approach’s behavioral assumptions encompass those of the capabilities, dynamic capabilities, and governance perspectives. These two conclusions indicate that an effective joining of these perspectives through a problem-finding and problem-solving approach may be feasible, which, if doing so proves correct, can facilitate designing organizations to create and capture value. We thus evaluate next the extent to which such an approach offers new value.

## Does Joining the Perspectives Address Unresolved Issues?

**W**e examine the extent to which the problem-finding and problem-solving approach might contribute to resolving critiques of the capabilities, dynamic capabilities, and gover-

<sup>3</sup> Williamson’s view of governance (1985, 1996) includes administrative controls with incentives and conflict resolution as the mechanisms of governance. We assume that administrative controls can include structured processes (Baer et al., in press) and technological rules (Van Aken, 2005) both of which contribute to linking general knowledge with an intervention with an expected outcome or performance in a specific field of application.

nance literatures as well as the potential for developing new questions and insights for management research. We begin by returning to the critiques of each literature and considering the problem-finding and problem-solving approach's potential contribution for resolving the critiques. Moreover, the problem-finding and problem-solving approach provides a framework that joins the constructs of the dynamic capabilities, capabilities and resources, and transactions in the governance perspective (see Figure 1<sup>4</sup>).

The capabilities literature has received a number of critiques for which the problem-finding and problem-solving approach may offer new responses. For example, this approach may provide definitions that eliminate the potential tautology of the capabilities literature. Instead of claiming that strategic advantage is based on valuable capabilities, the problem-finding and problem-solving approach maintains that the economic value created by a capability depends on whether it is implemented efficiently and if it solves a specific problem, the solution to which is valued by potential customers. The portion of the economic value that is captured by a firm then depends on *isolating mechanisms* (Lippman & Rumelt, 1982; Mahoney & Pandian, 1992; Rumelt, 1984) that keep other firms from implementing similar or equivalent solutions. Additionally, a capability creates little or no economic value if the firm formulates and solves the "wrong problem" and captures little or no value if its solution is a poor one or costly to implement, or if isolating mechanisms are unavailable. Building on the problem-finding and problem-solving approach may avoid the possibility of a tautology in the capabilities literature. It also provides a possibility of an explicit way to theoretically incorporate consumer demand and lead-user information into strategic

problems (Adner & Zemsky, 2006; Griffen & Hauser, 1992; Von Hippel, 1986).

Another criticism of the capabilities literature is that it does not identify *ex ante* what are the "right" resources and capabilities to construct and how to develop competitive advantage. The problem-finding and problem-solving approach suggests that resources and capabilities are the elements of a solution to a specific problem, which holds the potential of developing prescriptions that are context-specific and potentially firm-specific, an important objective of design science. By focusing on problems as well as solutions, this approach may offer new insights concerning the equifinality of capabilities. For instance, instead of focusing on equifinality of performance, such as economic profitability, the problem-finding and problem-solving approach draws our attention to whether or not organizations are solving the same problems and the extent to which their solutions and implementation are equivalent and economically substitutable.

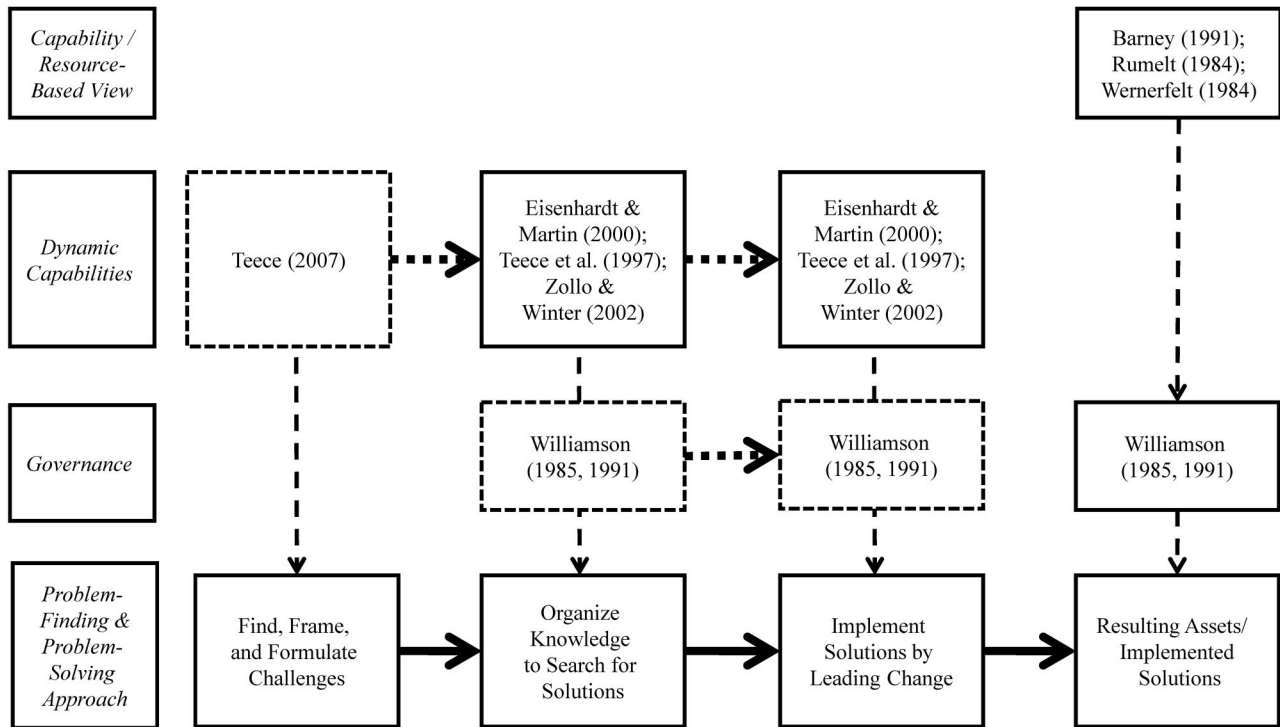
Finally, a debate within the capabilities literature revolves around whether capabilities can be purchased from strategic factor markets (Barney, 1986; Dierickx & Cool, 1989). In the problem-finding and problem-solving approach, whether implemented solutions (i.e., capabilities) can be purchased from strategic factor markets depends on the characteristics of the solutions, such as whether co-specialized investments are involved in building the capability or the extent to which various subelements exhibit complementarity. Although capabilities that require no specific or complementary asset investments are purchased in strategic factor markets (Barney, 1986), capabilities that are co-specialized and highly complementary to other assets should be accumulated within firms (Dierickx & Cool, 1989; Teece, 1986; Williamson, 1985). For example, while the capabilities perspective maintains that firms should vertically integrate their core competencies due to bounded rationality and tacit knowledge (Prahalad & Hamel, 1990; Rumelt, 1974), the problem-finding and problem-solving approach emphasizes that core competencies are determined by problems, solutions to the problems, and implementation of the solutions, and thus the

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<sup>4</sup> This framework shows the four activities of the problem-finding and problem-solving approach, joining with the three perspectives: (1) three *dynamic capabilities* are problem-formulating processes, problem-solving processes, and implementation processes; (2) *capabilities* and *resources* are the resulting assets or implemented solutions; and (3) *transactions* are conceptualized as a part of an implemented solution. Note that solid boxes show the focus of the three perspectives and dotted boxes show the four elements of the problem-finding and problem-solving approach that require further research.



**Figure 1**  
**The Problem-Finding and Problem-Solving Approach Joins the Three Perspectives**



boundary choice should be a function of the three activities in this approach.

The problem-finding and problem-solving approach also may help resolve a number of outstanding issues in dynamic capabilities research. For instance, an ongoing debate explores whether dynamic capabilities can create sustainable competitive advantage (Eisenhardt & Martin, 2000; Teece et al., 1997; Teece, 2007). Although some literature proposes that dynamic capabilities are a source of sustainable competitive advantages (e.g., Teece et al., 1997), Eisenhardt and Martin (2000) submit that variations of dynamic capabilities have the characteristic of equifinality, which implies that only temporary, rather than sustainable, competitive advantages can be achieved.

The problem-finding and problem-solving approach maintains that equifinality depends first and foremost on the problems that organizations choose to solve. For instance, if organizations possess equivalent problem-solving and solution implementation dynamic capabilities, organizations can still end up differentiated and with competitive advantage even though they have several equivalent dynamic capabilities so long as organi-

zations find, frame, and formulate different problems to solve or differ in their ability to formulate problems. Competitive advantage from problem formulation requires an organization to formulate different problems or to formulate them with a greater frequency than competitors, with an expectation that those problems can lead to solutions that customers perceive as valuable. Advantage could come from superior performance in any one of the three categories of dynamic capabilities identified by the problem-finding and problem-solving approach. This approach suggests that sources of competitive advantage therefore are far more complicated than has been discussed before in the dynamic capabilities literature (Pierre, Devinney, Yip, & Johnson, 2009).

The problem-finding and problem-solving approach also may create new value for the governance perspective. Whereas the governance perspective highlights the role of economizing in making governance decisions for a given transaction (Williamson, 1991a), it provides little guidance not only about which transactions to engage in, but also whether and at what level a firm should invest in specific assets. The problem-find-

ing and problem-solving approach can help in determining both the constellation of transactions and the content of those transactions that organizations engage in to create and capture economic value. Implementing a solution requires undertaking a constellation of transactions and specifies the content for the transactions. This approach thus holds the promise of linking transaction cost economizing at an individual transaction more directly to formulating and solving strategic problems that create and capture economic value. Put differently, the problem-finding and problem-solving approach may be able to provide the antecedents for transactions and their content so the full constellation of transactions can be designed.

### **Does Joining the Perspectives Provide New Questions?**

Through a process of taking stock (Rumelt, Schendel, & Teece, 1994) and looking ahead, the problem-finding and problem-solving approach may introduce several new and potentially important questions for management research and may open a path to a more comprehensive theory of the firm. This emerging approach directs our attention to at least four research questions: (1) what is the role of problem formulation in management, (2) to what extent can structured processes be used as mechanisms of governance, (3) how can capabilities be identified *ex ante* and which dynamic capabilities should be activated in responding to the changing environment, and (4) how can firms persistently create and capture new value?

The problem-finding and problem-solving approach calls attention to how firms find, frame, and formulate problems, challenges, and opportunities. In particular, problem formulation is a creative and iterative process that connects theories, models, and/or methods to cope with real-world situations (Ladd, 1987; Polya, 1957; Van de Ven, 2007). The formulation of problems was once an active research topic in the management field but now is largely absent from the research literature. Instead, the research literature largely assumes that the problem has already been identified and

structured, and mainly focuses on solutions to these problems. For instance, Barney (1991) and Dierickx and Cool (1989) examined the possession and accumulation of resources, Kogut and Zander (1996) and Szulanski (1996) studied the transfer of knowledge within firms, and Cohen and Levinthal (1990) examined the acquisition and absorption of knowledge. These studies approached a variety of issues of knowledge in the solution stage without explicitly describing a problem-formulation stage. Even as far back as the behavioral theory of the firm (Cyert & March, 1963), the problem that the organization was intended to solve was assumed, which makes designing an organization to solve a set of potential problems difficult to accomplish.

The problem-finding and problem-solving approach can contribute to management research by bringing the problem-formulation process center stage for creating and capturing value (Baer et al., 2009, *in press*; Nickerson et al., 2007). Problem formulation is critical to economic value creation because solving strategic problems, problems that are usually complex and ill-structured, without proper formulating can easily lead to solving “wrong” problems, creating an error of the third kind (Mitroff & Featheringham, 1974; Volkema, 1983) that may undermine firm performance (Nickerson et al., 2007). A strategic problem is complex because it contains multiple knowledge sets interacting with each other (Rivkin, 2000), and it is ill-structured because the structure of the interaction effects is ambiguous (Mintzberg, Raisingham, & Theoret, 1976; Simon, 1973). Consequently, a strategic problem usually allows various problem formulations due to multivariate and ambiguous interaction effects among knowledge sets. The explicit governance of the problem formulation activity enables decision makers to develop more alternative problem statements before they start to search for solutions. The more comprehensive a problem’s formulation, the higher the likelihood that subsequent solutions generate high value (Baer et al., 2009, *in press*). Consistent with the view that “problem formulation is often the first—and most important—task of the engaged scholarship process” (Van de Ven, 2007, p. 71), the problem-finding and problem-solving ap-

proach therefore asks what the role of problem formulation in management is and explores how to lead problem formulation efforts to generate a dynamic capability.

Process in multiple ways has always been on the agenda of management research. For example, March and Simon (1958) make frequent use of flow charts in their classic on organizations, and the dynamic capabilities perspective acknowledges that organizational processes matter (Eisenhardt & Martin, 2000). So, too, transaction cost economics recognizes the importance of processes, albeit under the different name of administrative controls and ex post dispute resolution mechanisms (Williamson, 1991b). Yet much of the extant research, especially from a design perspective, remains vague about the definition of processes and how and why they are used systematically as mechanisms to shape behavior and create new knowledge. Research in the problem-finding and problem-solving approach maintains that structured processes can be mechanisms devised to attenuate, and in some circumstances overcome, opportunism and the broad form of bounded rationality that includes impediments or biases that can arise in the strategic tasks of problem finding, problem solving, and solution implementation (Baer et al., 2009, in press; Nickerson et al., 2007; Nickerson & Zenger, 2004). As mechanisms that can have theoretical foundations for their design goals, structured processes differ fundamentally from the taken-for-granted aspect of routines and the imprecision of most discussions of process. The problem-finding and problem-solving approach enables the design and evaluation of organizational processes and administrative controls. This approach asks to what extent structured processes can be used as mechanisms of governance and explores how to design structured processes as administrative controls in governance structures.

A challenge for the capabilities and dynamic capabilities perspectives is to identify ex ante appropriate capabilities and dynamic capabilities to respond to the changing environment. Much of the research literature is either not predictive or deduces the capabilities ex post. The problem-finding and problem-solving approach offers one path forward to decompose dynamic capabili-

ties—for example, new product development, strategic decision making, and alliancing (Eisenhardt & Santos, 2002; Eisenhardt & Zbaracki, 1992; Fredrickson & Mitchell, 1984)—into the activities of problem formulation, problem solving, and solution implementation. It is plausible that the specific dynamic capability, whether problem formulation, problem solving, or solution implementation, may depend on the nature of the changing environment. Relatedly, by understanding a problem's formulation and its solution, we can offer predictions about what set of capabilities might create and capture economic value. This approach therefore asks how a focus on problems and their solutions can provide context for identifying valuable capabilities ex ante as well as which kinds of dynamic capabilities—problem formulation, problem solving, and solution implementation—might be appropriately activated in responding to a changing environment. Moreover, such an approach may provide insights into how firms create a changing environment, instead of reacting to one, by choosing to solve new problems.

Strategy research historically focused on how to create a sustainable competitive advantage (Porter, 1985, 1996; Rumelt, 1974, 1984). Creating a sustainable competitive advantage generates an economic annuity, which by definition is valuable. Yet creating and protecting such an annuity does not necessarily facilitate growth. The challenge for managers is not just to maintain an annuity in a changing environment but to persistently find new opportunities with which to create and capture economic value. The persistent growth of firms' profits is rewarded in stock markets much more than the maintenance of profits. Therefore, capturing economic value is a necessary, but not a sufficient, condition for growth. The problem-finding and problem-solving approach may yield new insights about the sufficient conditions for *profitable growth*. For instance, it is not sufficient to have a dynamic capability for implementing solutions, solving problems to grow, or adapting to environmental change to maintain an annuity. Firms also must persistently find, frame, and formulate new problems to which they can develop and implement valuable solutions.

This approach thus asks how firms can persistently create and capture new value by developing governance mechanisms that enable continuous finding, framing, and formulating of problems that may lead to valuable solutions from which a firm can capture economic value.

### Discussion and Conclusion

The emergent problem-finding and problem-solving approach, which is further developed here, may enable an effective joining of the capabilities, dynamic capabilities, and governance perspectives. Our exploration concluded that the unit of analysis and behavioral assumptions of the problem-finding and problem-solving approach encompass those found in the three perspectives. We also maintain that the problem-finding and problem-solving approach holds the promise of resolving criticisms leveled at each of the three perspectives and suggests several additional questions for management research. We now offer preliminary thoughts on research avenues to expand and build upon the problem-finding and problem-solving approach that may contribute to the design of organizations.

We propose several research directions for problem formulation, problem solving, and solution implementation that may enhance the problem-finding and problem-solving approach. For research on problem formulation, existing studies are largely theoretical and mainly focus on one specific type of problem—one that is complex and ill-structured (Baer et al., 2009, in press). Two broad research trajectories are envisioned. First, future research can examine the costs and competencies of different governance structures designed for formulating problems of varying complexity and ill-structuredness. Problems with different attributes may pose different formulation challenges. For instance, a firm seeking novel formulations, which are likely to be complex and ill-structured, will likely need governance mechanisms that differ from those adopted by a follower firm.

Second, existing theory of strategic problem formulation assumes that the information and knowledge needed to formulate the problems are available to individuals chosen for the team as-

signed these activities. Future research could relax the assumption and explore variations in the dispersion of knowledge, which would have implications for processes and governance to formulate the problem. For instance, the team could possess all, some, or none of the relevant knowledge and information. Or some vital knowledge and information may be located outside of a firm. How governance instruments could be used to assemble the dispersed information to formulate the problem remains unstudied but is necessary to understand design alternatives and their best use.

Research on problem solving focuses on matching governance structures to the problem attribute of decomposability to mitigate knowledge formation impediments derived from motivational hazards (Nickerson & Zenger, 2004). To date, the problem-solving research gives little attention to impediments that arise from individual biases and group dynamics that also can inhibit searching for valuable solutions (Delbecq & Van de Ven, 1971). In other words, little attention is given to the administrative controls that groups use to facilitate searching for a solution. While research on solution search exists in related domains (e.g., Gavetti & Levinthal, 2000; Levinthal, 1997), a problem-finding and problem-solving approach has not been utilized to understand contributions in these other areas.

Implementation is a crucial topic in the world of business and has received much attention in both theory and practice. However, few research studies explicitly examine implementation processes as structured governance mechanisms. Approaching implementation of solutions from the problem-finding and problem-solving approach would call attention to not only motivational issues but also the variety of impediments that could arise in different contexts calling for designing a range of alternative processes for different contexts. Bridging research on implementation processes and the problem-finding and problem-solving approach could identify new implementation efforts.

We maintain that management's ability to find, frame, and formulate problems to solve, opportunities to seize, and challenges to respond to is vital to strategy research. So are searching for and



implementing these solutions. Penrose (1959) first provided a theory of the internal growth of the firm, positing that managers' desire to utilize a firm's excess resources is an internal driver of a firm's growth because it motivates management to find new opportunities to apply unutilized productive services. The later development, however, focused more on solutions—resources or capabilities—than on the problem/opportunity discovery. The current paper attempted to refocus research by exploring the extent to which the problem-finding and problem-solving approach might provide a foundation for effectively joining the capabilities, dynamic capabilities, and governance literatures to design organizations. We suggested such joining might be feasible because the problem-finding and problem-solving approach offers a unit of analysis and a set of behavioral assumptions that encompass all three theories. We then explored whether this approach might add value either by addressing some of the weaknesses and open questions in each research literature or by proposing new questions. We concluded that there is value in seizing these opportunities, and our paper provides some guidance. To do so, we may need to formulate the problems more comprehensively, organize our knowledge to search for solutions, and implement those solutions in future research.

Finally, the research agenda put forward in this paper goes beyond the conventional path of basic social science research in developing *theory*, which is traditionally defined as “a set of inter-related constructs (concepts), definitions, and propositions that presents a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting phenomena” (Kerlinger, 1964, p. 11). The problem-finding and problem-solving approach requires that our research inform the design and evaluation of models, policies, and programs for addressing practical problems. This pragmatic form of research, called *design science* (Simon, 1996), goes beyond describing or explaining problems to obtain evidence-based knowledge to enable a Williamsonian comparative assessment of (imperfect) alternative solutions to these applied problems (Romme, 2003; Rous-

seau, 2006; Van Aken, 2005; Williamson, 1996). In terms of Van de Ven's engaged scholarship model: “These decisions include the purposes of the evaluation study (problem formulation), the criteria and models used to evaluate the program in question (research design), and how study findings will be analyzed, interpreted, and used (problem solving)” (2007, p. 28). We believe that such a research agenda will advance our evolving science of organization.

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