

Schools of Thought in Organizational Learning

Simon J. Bell
Gregory J. Whitwell
Bryan A. Lukas

University of Melbourne

This article attempts to bring coherence to the diversity that characterizes organizational learning research. It argues that organizational learning is embedded in four schools of thought: an economic school, a managerial school, a developmental school, and a process school. The article provides a comprehensive analysis of the schools, describes how they differ from each other, and outlines how each of them can be employed effectively. To demonstrate the benefits of theoretical plurality, the four schools are applied to the key marketing topics of market orientation and new product development. Implications for future research in marketing are provided.

Scientists tend not to follow in the trails of others if blazing their own trail leads to ownership of part of the landscape.

—Huber (1991:108)

The capacity of organizations to learn has long intrigued researchers. There has emerged a large and growing literature on organizational learning, including work by marketers on how organizational learning confers competitive advantage through its interplay with marketing capabilities and outcomes (e.g., Baker and Sinkula 1999b; Slater and Narver 1995). The literature, however, has been criticized for its lack of accord across business disciplines on what organizational learning is. Indeed, Crossan, Lane, and White (1999) concluded that “little convergence or consensus on what is meant by the term, or

its basic nature, has emerged” (p. 522). Palmer and Hardy (2000) pointed to a growing collection of confusing definitions and conceptualizations of organizational learning applied to a variety of units and levels of analysis.

One reason for limited convergence is the diversity of research domains in which learning phenomena have been explored (Crossan et al. 1999; Huber 1991). These include new product development (e.g., McKee 1992), organizational change (e.g., Lawson and Ventriss 1992), human resource management (e.g., Pucik 1988), market orientation (e.g., Slater and Narver 1995), and marketing channels (e.g., Lukas, Hult, and Ferrell 1996), to highlight a few. Due to the differences in domains, the similarities and complementary properties of the research results may easily be overlooked.

A more fundamental reason for the lack of convergence is that the concept of organizational learning is embedded in different schools of thought. For instance, Senge (1990) adopted a managerial view, where organizational learning is a matter of introducing a systemic combination of values and norms, referred to as disciplines. Authors such as Huber (1991), by contrast, argue for a process view, suggesting that learning is inherent to all organizations but may be dormant. Apparently, to some researchers, organizational learning is a matter of implementation; to others, it is a matter of stimulating and leveraging a preexisting ability. These differences are typical of a field that does not share the degree of consensus characterizing more paradigmatically developed topic domains.

Some philosophy-of-science theorists (e.g., Kuhn 1970; Polanyi 1958) would argue that a lack of consensus on the meaning of organizational learning and the frequently eclectic conceptualizations that result from this (Miller 1996) are a potential obstacle to developing scientific knowledge. We believe that diversity of this kind does

not have to prove detrimental to the development of knowledge about organizational learning, as long as our understanding of learning phenomena is extended. The prerequisite for leveraging this diversity is a clear understanding and an unbiased appreciation of the major schools that guide organizational learning inquiry. Some researchers (e.g., Sinkula 1994; Slater and Narver 1995) have reviewed selected views on organizational learning before adopting a particular conceptual stance as a basis for their analysis of organizational learning. But no study in the marketing literature has attempted to delineate the major schools of thought, compared them along criteria that would allow readers to assess the differences and commonalities of opinion, outlined how the different schools can be employed effectively, and specified the implications for future research on key marketing topics. The objective of our study is to address this void.

A number of researchers have emphasized the relevance of organizational learning in several marketing areas, including strategic marketing (e.g., Frankwick, Ward, Hutt, and Reingen 1994) and marketing management (e.g., Baker and Sinkula 1999b). Indeed, marketing has a large stake in organizational learning. Many researchers (e.g., Day 1994a; Sinkula 1994) view organizational learning as critical to the process of developing market knowledge and, as such, a driving force of action in, and governance of, market-oriented organizations. Not surprisingly, the Marketing Science Institute has on more than one occasion highlighted the role of organizational learning in marketing as a priority research topic.

Surveying, ordering, and classifying the underlying schools of organizational learning research will afford a number of benefits to those researchers seeking to advance organizational learning inquiry in marketing. They will be better able to understand the nature of, and reasons for, differences between theorists of organizational learning, as well as differentiate the theoretical heritage of existing organizational learning concepts. Potentially, researchers will expand their interpretive framework by viewing learning from multiple perspectives simultaneously. Furthermore, they will be able to appreciate how two or more substantively different and seemingly incompatible conceptualizations of organizational learning can generate new and complementary insights into the nature of, and solutions to, marketing problems.

BACKGROUND AND OVERVIEW

Scholars researching organizational learning usually make some reference to the notion that organizational learning, if implemented properly, is certain to yield superior performance. Palmer and Hardy (2000) noted in their review of the organizational learning literature that "most researchers assume that organizational learning produces

only positive benefits on performance" (p. 198) to the point where discussions of the benefits of being a learning organization are almost enigmatic. For example, Senge (1990) argued that learning organizations are places "where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together" (p. 3). Discussions of the effect of organizational learning on performance would benefit from a better understanding of what learning is and its theoretical origins.

The genesis of organizational learning research can be traced to theorists who began developing behavioral theories of organizations (Cyert and March 1963; Penrose 1959) in which firms were conceptualized as something more than bundles of transactions or simple production functions. From these works surfaced new ways of theorizing about organizations, including the resource-based view (e.g., Barney 1991; Conner 1991; Montgomery 1995; Wernerfelt 1984) and the dynamic-capabilities view (e.g., Kogut and Zander 1992; Leonard-Barton 1992). Another stream of inquiry was based on the idea that organizations could learn as independent entities. Beginning with Cangelosi and Dill (1965), this intriguing conjecture has attracted the attention of virtually all disciplines concerned with the study of organizations.

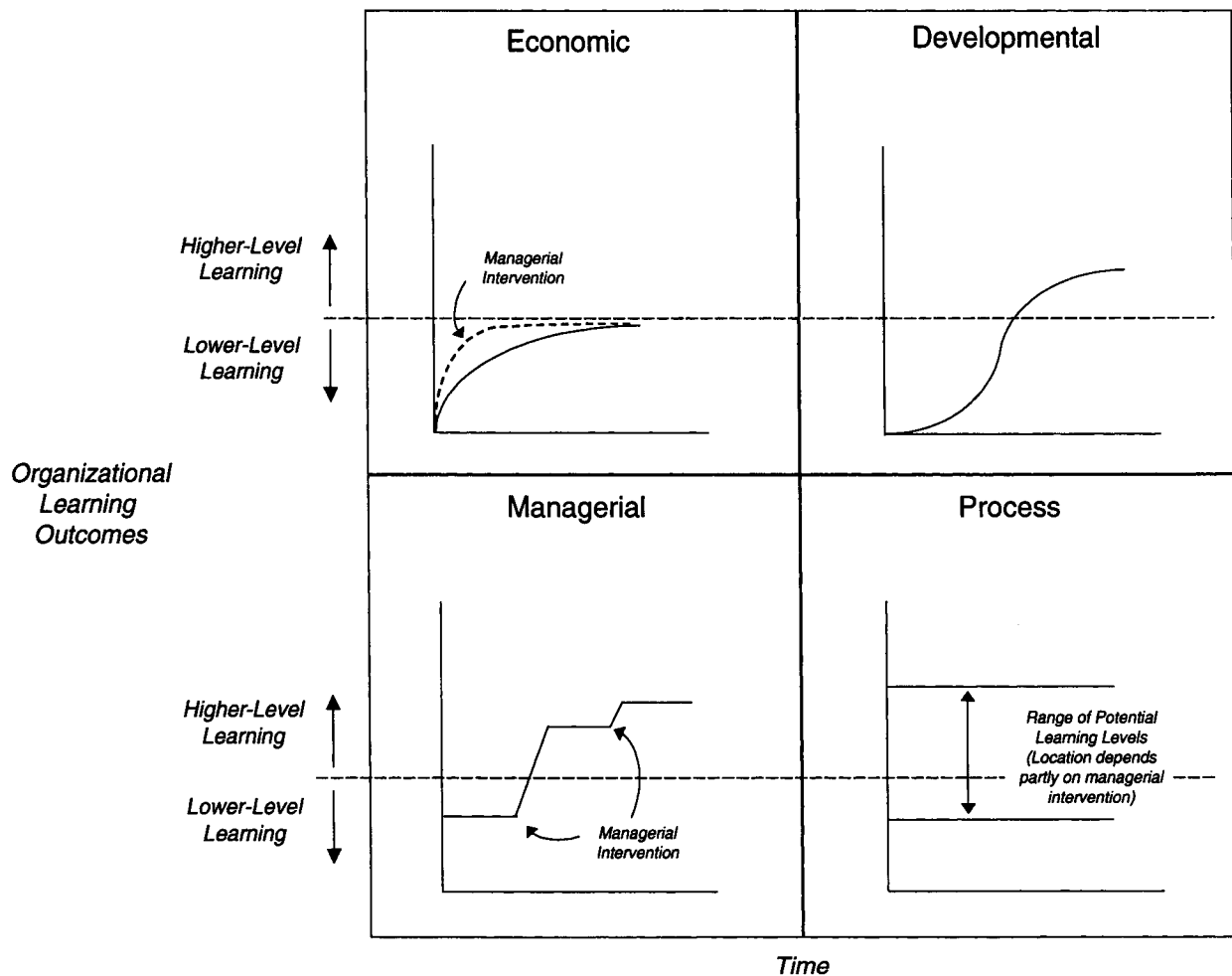
Many views of organizational learning have subsequently emerged (cf. DiBella 1995). On the basis of a comprehensive review of the literature, we have identified four principal schools of organizational learning research: an economic view, a developmental view, a managerial view, and a process view.

The *economic* school focuses on the learning that accrues with continuous production. Experience yields tacit knowledge, which in turn provides the basis for a reduction in production costs. In the economic view, no distinction is made between lower and higher order learning, but attention is implicitly focused on the former.¹ Interest centers on incremental gains in the stock of knowledge, rather than qualitative changes in the nature of learning.

The focus of the *developmental* school is on higher-order learning and the stages that must be followed to achieve such learning. It has a distinctly linear, stepwise conception. Learning proceeds in a series of interlinked sequences that provide the necessary foundation for moving to each successive stage. In turn, each stage is associated with a qualitatively different sort of learning.

The *managerial* school also focuses on higher order learning, but it does not see the achievement of such learning as having to progress through a hierarchical sequence. Instead, the key to achieving higher order learning is to follow a set of prescriptive guidelines that will change the organization's culture. The nature and extent of organizational change are the keys to how quickly and fully higher order learning is unleashed.

FIGURE 1
Organizational Learning Schools: Organizational Learning Outcomes



The focus of the *process* school is on all forms of learning, be it lower order or higher order, and in particular on the fundamental processes that underpin learning, regardless of nature and style. Organizational learning is conceptualized in terms of the processes of information acquisition, dissemination, and utilization, as well as the encoding and retrieval of memory.

Figure 1 and Table 1 summarize the differences between the four schools. A more detailed discussion is presented in the following section. Briefly, Figure 1 provides a graphic representation of the pattern and learning outcomes characteristic of each of the four schools. Table 1 examines the defining characteristics of each school, the analytic focus of each view, learning mechanisms and outcomes, pattern of learning, and the extent to which the achievement of each approach is under managerial control. We acknowledge that each of the schools is related and that there is some conceptual overlap between them. Indeed, it would be surprising if this were not the case. We

argue below, however, that each school has a distinctive focus of interest and each differs in terms of its assessment of what is required to achieve organizational learning. Table 1 also includes representative studies that have been informed by each of the four schools. We do not intend to compartmentalize the work of specific authors. Instead, we have categorized the studies according to the view that dominates. We also acknowledge that any individual study may be influenced by multiple views.

Consider, for example, the work on organizational learning of Sinkula and others (cf. Baker and Sinkula 1999a, 1999b; Sinkula 1994; Sinkula, Baker, and Noordewier 1997). Sinkula (1994) has presented work in the developmental school. The analysis in Sinkula et al. (1997), by contrast, was informed by aspects of the process school and the managerial school. The process view is evident in the measurement of the information-processing variables of acquisition and dissemination, and the recognition of interpretation and memory within their

TABLE 1
Organizational Learning Schools: An Overview^a

<i>Learning schools</i>	<i>Characteristics</i>	<i>Analytic Focus of View</i>	<i>Learning Mechanism</i>	<i>Learning Outcomes</i>	<i>Pattern of Learning^b</i>	<i>Manageability</i>	<i>Representative Studies (Marketing)</i>	<i>Representative Studies (Other Business Disciplines)</i>
Economic	Learning accrues due to experience and cumulative production	Lower order	Repetition of work flows and processes	Tacit knowledge, behavioral change	Asymptotic (constrained at lower level learning)	High; easy to facilitate learning but cannot apply in alternative settings	Day and Montgomery (1983), Alberts (1989)	Argote (1993), Arrow (1962), Lieberman (1987)
Developmental	The learning organization is a stage in the evolution of the firm	Lower order and higher order	Evolution of the firm (e.g., age and experience)	Initially, knowledge is tacit. Organizational cognition eventuates	Linear/curvilinear (higher level learning is possible with evolution of the firm)	Low; managerial options are constrained by path dependencies	Sinkula (1994)	Dechant and Marsick (1991), Torbert and Fisher (1992), Torbert (1994)
Managerial	There is an optimal way of achieving organizational learning. Prescriptive of learning outcomes	Higher order	Interventions in organizational culture and practices	Organizational cognition. Range of potential behaviors increased	Punctuated equilibrium (higher level learning following managerial interventions)	Moderate/high. Difficulties in accounting for industry contingencies and permeation of cultural factors	Baker and Sinkula (1999a, 1999b); Sinkula, Baker, and Noordewier (1997)	Galer and van der Heijden (1992); Garvin (1993); Hodgetts, Luthans, and Lee (1994); McKee (1992); Mills and Friesen (1992); Tobin (1993); Senge (1990, 1993)
Process	Learning is grounded in the cognitive and behavioral capabilities of individuals and is socially constructed	Lower order and higher order	Processing of information	Organizational cognition. Behavioral change in information processing	Multiple (level of learning depends on how well information processes are leveraged)	Moderate/high. Translating learning outcomes from lower to higher levels may be problematic	Day (1994b); Hult and Ferrell (1997a, 1997b); Lukas, Hult, and Ferrell (1996); Sinkula et al. (1997); Slater and Narver (1995)	Argyris and Schön (1978), Dixon (1994), Huber (1991)

a. The intent is not to compartmentalize the work of specific authors. Instead, the studies are categorized according to the view that dominates. It is conceivable that some studies may be influenced by multiple views.

b. See Figure 1.

conceptual model. The managerial school is evident in the reference to those “organizational values that influence the propensity of the firm to create and use knowledge” (Sinkula et al. 1997:309).

The Semantics of Organizational Learning

Before proceeding, we need to deal with some definitional issues. As marketing researchers' interest in organizational cognition has grown, so too it seems has the lexicon. A wide range of concepts and related terminology has emerged—a reflection of the diverse theoretical heritage of this area of study. Some of the key concepts include *knowledge*, *information*, *memory*, and *learning*. The similarities and distinctions between such terms, however, are not often made clear. In this section, we discuss the semantics of organizational learning. This will help clarify our subsequent discussion.

An important point of departure is the distinction between organizational learning as a verb and organizational learning as a noun. Organizational learning as a noun refers to that which has been retained by the organization as a result of the learning process (verb). At the organizational level, the noun *learning* might be expressed as “What has the organization learned to this point?” In this sense, learning is functionally equivalent to organizational memory or stored knowledge. On the other hand, to illustrate the verb, we might ask, “How can we improve our understanding of markets?” Of interest to this approach to learning are the mechanisms and processes that improve organizational understanding. Certainly, these two aspects of learning are inextricably linked. Mahoney (1995) argued that “the process of knowledge acquisition by an organization . . . is intertwined with the content of organizational knowledge. The process of ‘knowing’ influences the ‘known’” (p. 95).

The view of organizational learning as a verb predominates within the literature. There are two reasons for this. First, the view of organizational learning as a process is more amenable to empirical measurement than a stock perspective (e.g., Hult and Ferrell 1997b; Sinkula et al. 1997). Complications arise in measuring what an organization has learned because much of this may be tacit (Nonaka 1991) or procedural (Cohen and Bacdayan 1994) and, hence, difficult to articulate. Second, an understanding of what is known is of less value to the organization than understanding what it is capable of knowing, because a stock of knowledge that is not continually updated rapidly depreciates in value. Viewed from the process perspective, learning is a capability that can be nurtured and developed within the organization (Leonard-Barton 1992; Moorman and Slotegraaf 1999; Teece, Pisano, and Shuen 1997). Indeed, Dixon (1994) has suggested that “accumulated knowledge . . . is of less significance than the

processes needed to continuously revise or create knowledge” (p. 6).

This is not to say, however, that accrued knowledge has little value. On the contrary, without some facility for retention, organizations could not advance beyond simple reflexive action. The related concepts of *knowledge* and *memory* play an important role in retention. The role of memory as a retention facility has significant support within the literature (Anand, Manz, and Glick 1998; Walsh and Ungson 1991). Memory is seen as a repository for what has been learned in the past. The term *organizational knowledge* has been used to describe a similar function (Cohen and Bacdayan 1994; Nonaka 1991).

Many theorists consider that organizations can process both knowledge and memory as they would information. That is, knowledge and memory can be acquired, shared, and interpreted in a manner akin to organizational information processing. For instance, Moorman and Miner (1997) discussed the dispersion or sharing of memory across the organization. Others have discussed the transfer of knowledge along similar lines (e.g., Gupta and Govindarajan 1991; Sligo 1996). This is consistent with views that organizational knowledge should be considered in terms of its process rather than resource dimensions (Spender 1996a).

To talk about knowledge transfer and memory transfer within organizations is, however, potentially confusing. We take the stance that organizational knowledge and organizational memory are conceptually similar constructs. Both represent what an organization *knows*. Their bearing on organizational outcomes will be contingent on how well the organization can leverage what it knows—whether this involves translating tacit to explicit knowledge (Nonaka 1991), procedural to declarative knowledge (Cohen and Bacdayan 1994), or improving memory accessibility (Moorman and Miner 1997).

To better appreciate this position, we need to understand the role of knowledge within organizations. At its most basic, knowledge results from the combination of grasping experience and transforming it (Kolb 1984). It is the readiness to act on the basis of firmly held beliefs concerning the world or some part thereof (Boisot 1995; Ramesh and Tiwana 1999). Knowledge can be represented as a set of probability distributions that organizations deploy with respect to the phenomena they encounter (Arrow 1974). These probability distributions are shaped by repeated encounters with information. Information itself constitutes an extraction from data that modifies or reinforces organizations' probability distributions, in effect making organizations more comfortable about potential courses of action. Information has an influence on how we feel about things or how we are disposed to act. Data that do not have this modifying effect have no informational qualities. It follows, then, that data are the raw

material out of which information is metabolized (Boisot 1995).

Having explored these definitional issues, we are now in a position to consider the four schools of organizational learning. The theoretical heritage, defining characteristics, strengths and weakness, views on manageability, and exemplars within the literature are considered for each.

SCHOOLS OF THOUGHT IN ORGANIZATIONAL LEARNING

The Economic School—Learning by Doing

The economic view of organizational learning arose out of an attempt to explain decreasing cost functions in firms with cumulative production experience. Economists provided insight to a situation common to many organizations where, despite the absence of new investment in land, labor, and capital, significant productivity improvements were detected. They highlighted the importance of learning by doing, a notion that has variously been referred to as the learning curve, progress ratio, or experience curve (Alberts 1989; Argote 1993; Lieberman 1987). Arrow (1962) provided a statement of conditions under which learning occurs, arguing that it “can only take place through the attempt to solve a problem and therefore only takes place during activity” (p. 155). This view is grounded in the notion of experience where learning is a by-product of production. Competitive advantage derives from the tacit nature of that which is learned by organizational members. Such learning is difficult to replicate and transfer between organizations. Given that learning occurs largely *within* individuals, however, the sustainability of this advantage is subject to personnel turnover. A neoclassic theory of the firm (Sawyer 1979) underpins this approach to learning. Attention focuses on inputs and outputs but not on what mediates the relationship between the two. Economic agents do not make systematic mistakes, but they do face learning constraints in their pursuit of an equilibrium state.

The economic school can be contrasted with the other schools in terms of its particular conception of both the pattern of learning (see Table 1 and Figure 1) and the nature of learning mechanisms. These in turn give rise to differing perspectives on the issue of manageability, that is, the clarity and simplicity of steps that firms must take to install learning capabilities within organizations.² Economic conceptions of learning have a simple set of implications for management. Learning by doing requires only that individuals within the firm be cumulatively exposed to organizational routines and processes. The challenge for managers is to generate steeper learning curves. Complications arise, however, when management seeks to transfer the tacit knowledge obtained from one aspect of the

business to another. An implication of the economic view is that the attainment of higher order learning is managerially unachievable.

The economic approach to organizational learning has drawn criticism for some of its more obvious limitations, such as the assumption that learning accrues only with experience. There is little scope for organizations to pursue an objective of learning in itself or what Stiglitz (1987) suggested is “learning-by-learning,” where organizational learning has its own production function.

What is essentially a reactive learning style limits the benefits that can accrue to the organization. First, because repetition is the mechanism by which learning occurs, much of what is learned will be tacit (Nonaka 1991). In other words, whatever is learned from cumulative production will be embodied in the efficient behavior of employees. While individuals may become more effective in performing their responsibilities, they may find it difficult to articulate the reasons why they are able to do so. Without mechanisms for transferring knowledge from being tacit to being explicit, the benefits of learning will be lost to the organization when these employees depart.

Second, the learning style proposed in the economic view often involves learning from mistakes or successes, which implies a focus on past behavior as the source of learning. While efficiencies may still accrue to the organization, this approach to learning is akin to walking backward into the future. Learning, in this context, has little relevance for guiding strategy to meet future objectives and for changing organizational processes and mental models.

Hedberg (1981) criticized the idea that individuals or systems that learn “need not understand the reality behind the stimuli to which they respond” (p. 4). In the economic view, learning is merely the retention of response patterns for subsequent use. Fiol and Lyles (1985) suggested that, frequently, there is little understanding by adherents of this approach of the causal relationships involved in learning. While learning effects were observed in organizations and groups across a range of industries, very little research effort was devoted to explaining precisely what accounted for such productivity improvements. Subsequent reference to learning curves in both academic and business forums, however, led to a number of attempts to explain the concept. An example of how this is applied in the marketing literature is provided by Day and Montgomery (1983), who identified three sources of influence on the experience curve: learning by doing, technological advances, and scale effects. Day and Montgomery (1983) judged that organizational learning is an individual phenomenon involving the increased efficiency of “*all* aspects of labour input as a result of practice and the exercise of ingenuity, skill and increased dexterity in repetitive activities” (p. 46). From this perspective, learning is largely behavioral, is focused on the individual production

worker, and leads to incremental improvements in work processes.

The concept of learning by doing assumes that what matters to the organization is the efficiencies resulting from repeated exposure to an established task, rather than the appropriateness of the task per se. The notion of correcting error using established procedures rather than challenging the validity of these procedures for the firm constrains an organization's learning to low levels. This approach is analogous to "single loop" learning³ (Argyris and Schön 1978). Consequently, learning by doing allows for the development of competency traps (Levitt and March 1988). Greater competency within a given routine increases subsequent usage of the routine. To the extent that the process leads to continuing organizational success, such specialization is advantageous. However, where superior routines and processes are available, a lack of experience with such procedures inhibits their adoption, and the outcomes for the firm are suboptimal.

The Developmental School— Learning by Evolution

The developmental view (cf. DiBella 1995) holds that the learning organization⁴ represents a phase or objective in the organization's evolution (Dechant and Marsick 1991; DiBella 1995; Torbert 1994; Torbert and Fisher 1992). The organization becomes one that has a learning orientation, which, according to Baker and Sinkula (1999a, 1999b), is an organizational commitment to higher level learning initiatives. It does so as a result of experience, management development, and changes in the size of the organization. In addition, the developmental phase of the organization may determine the characteristics or style of learning (Meyers 1990). In a review of the developmental approach, DiBella (1995) suggested that

learning processes evolve as an organization reaches the later stages in its development as affected by age, growth, management development, or technological innovation. Within this framework, the learning organization is a concept of becoming since development provides a historical context in which learning continues to evolve. (P. 288)

Competitive advantage, in this school, stems from the temporal nature of learning capability development. Given that learning occurs as a series of related and sequential steps, it is difficult for organizations to "leap ahead" of competitors' learning capability. The dynamic-capabilities theory of the firm (Teece et al. 1997) drives the developmental view, particularly the idea that learning is a resource whose evolution is subject to path dependencies.

Van de Ven and Poole (1995) identified various drivers of organizational development and change. Among others,

they refer to life cycle, teleological, and evolutionary views on organizational development and learning. Life cycle theories describe a sequence of events through which organizations must progress to achieve an outcome. Advocates of this perspective suggest that higher levels of learning are achieved as the organization matures. In other words, over time, learning develops beyond the simple detection and correction of error—characteristic of single-loop or adaptive learning—toward more advanced and higher levels of learning.

A teleological approach holds that development of organizations proceeds toward a goal or end state. This would be to become a learning organization. Unlike the life cycle model, there is no single path that the organization must take to achieve this final state. Furthermore, the path is constructed in a purposeful and adaptive manner and hence will differ between firms striving to achieve higher order learning capabilities. Such a view is evidenced in March and Olsen's (1975) theory of adaptive organizational learning.

Evolutionary models describe organizational development in terms of a recurrent and cumulative sequence of variation, selection, and retention episodes within an environment in which resources are scarce. In their typology, Van de Ven and Poole (1995) combined both Darwinian and Larmarkian views of evolution, in which the former accounts for organizational change between generations and the latter describes organizational attributes acquired within each generation. The cumulative nature of evolutionary adaptations suggests that each adaptation builds on, or is constrained by, earlier change. This view is reflected in the literature on path dependencies in organizational learning (Barkema, Bell, and Pennings 1996; Friedlander 1983). The concept of path dependencies recognizes that past behavior matters to the firm. The consequences and outcomes of previous choices and actions restrict the set of strategic options available to the firm. Thus, a firm's "history" constrains its future behavior.

In the marketing discipline, Sinkula's (1994) study fits securely in the developmental school. Drawing influence from the life cycle school, he emphasizes the important influence of age and experience on learning and argues that the nature of learning in young, small organizations differs from what happens when organizations grow and age. He acknowledges that "old organizations are not necessarily collectively wise in their processing of market information. Likewise young organizations are not necessarily collectively obtuse" (Sinkula 1994:38). Nevertheless, he presents a hierarchy of market knowledge that has a temporal or evolutionary dimension to it. Early and later stages of knowledge development are compared and contrasted. He proposes that as organizations age and grow, their supply of market information increases and that a larger portion of their market information supply is passively rather than actively acquired.

The developmental school is perhaps the most constrictive for management because of its linear approach or rigid learning sequence. This depends, however, on the various forms that a developmental approach can take. A life cycle conception is the least manageable inasmuch as learning is the result of organizational age. Managers cannot expedite the learning process through interventions. By contrast, teleological views do not prescribe a specific path that must be taken and, accordingly, firms can be managed toward desired end states. As a developmental model, however, the teleological view holds that the learning organization is a function of organizational development over time and the implementation of logical and sequential steps. Somewhere between life cycle and teleological views resides the evolutionary view. In this framework, managers can select the organizational characteristics that improve the likelihood that a learning culture will eventuate. That is, organizational attributes can be selected by managers for favorable learning outcomes. Nonetheless, in all developmental views, the likelihood that previous actions and behaviors will constrain future options is high. In other words, the progression toward higher level organizational learning is path dependent. One of the key features of the developmental approach, its emphasis on the notion that organizations face a bounded set of alternatives due to their limited ability to remember the lessons from past successes and failures, has intuitive appeal.

The Managerial School— Learning by Management-Led Change

The managerial view of organizational learning is highly normative. It presumes that learning can only take place under certain conditions or circumstances. Organizations do not learn by chance or by random action. A set of criteria needs to be met. Otherwise, learning will be the simple, incremental type, characteristic of the economic school. The role of the organization and its managers, therefore, is to create an environment or culture conducive to learning.⁵ Managers are assumed to be the key drivers of organizational change. Learning is viewed as an organizational attribute, which, like any other resource, must be procured and nurtured. A managerial approach to organizational learning is especially prevalent in the management (Senge 1990) and organizational behavior (Watkins and Marsick 1993) literatures. Competitive advantage, in this view, derives from the level at which organizational learning is implemented. Learning requires the implementation of organization-wide values, systems, and norms. It is sustainable to the extent that organizational culture is difficult to replicate and is relatively resistant to personnel turnover. The managerial theory of the firm (Williamson 1964) underpins the managerial school inasmuch as it recognizes that managers enjoy discretionary powers, are key

organizational actors, and may seek optimal learning as one of their goals.

The prescriptive nature of managerial frameworks provides a degree of certainty and transparency that other models do not possess and assumes a moderate to high degree of manageability. Managers are given a learning checklist that can be employed to diagnose and implement a learning culture leading to discontinuous advances in learning capability. For this reason, managerial models of organizational learning are immediately appealing to business people. Pursuing organizational learning from a managerial perspective, however, requires detailed consideration of industry and environmental contingencies and their implications for the appropriateness of each tenet (DiBella, Nevis, and Gould 1996). Implementation is further complicated by organizational members' willingness to embrace change.

Senge (1993, 1990), arguably the leading exponent of this approach, suggested that it takes five disciplines to establish organizational learning: personal mastery, mental models, shared vision, team learning, and systems thinking. Without sufficient focus on these disciplines, firms cannot expect to attain higher level learning outcomes. Garvin (1993) suggested that learning organizations are skilled at five main activities: systematic problem solving, experimentation with new approaches, learning from their own experience and past history, learning from the experiences and best practices of others, and transferring knowledge quickly and efficiently throughout the organization.

The literature is replete with managerial prescriptions for organizational learning (Galer and van der Heijden 1992; Hodgetts, Luthans, and Lee 1994; McKee 1992; Mills and Friesen 1992; Watkins and Marsick 1993). An example in the marketing literature is Sinkula et al.'s (1997) discussion of the elements that define a learning organization. Open-mindedness, shared vision, and commitment to learning constitute the distinctive elements of learning organizations. They are studied as organizational values created by management and as drivers of information processing within firms.

Key strengths of the managerial school are its recognition that managers can play a role in effecting organizational learning and its preparedness to offer guidelines on how this can be done. It also, however, has some limitations. It is, at the very least, ambitious to prescribe generic learning disciplines or criteria across multiple firms in different industries. Garvin's (1993) prescription of experimentation may be suitable for organizations such as 3M where product innovation is a strategic objective. However, for some organizations, the idea of using experimentation as a driver of learning may be entirely inappropriate. To illustrate this point, DiBella et al. (1996) referred to the nuclear accident at Chernobyl, where experimentation led to unanticipated and catastrophic results.⁶

Another issue arising from the managerial approach relates to the implementation of learning skills within the organization. Hult and Ferrell (1997b) identified problems that may arise from implementing learning as a set of "easy-to-learn tactics and techniques" (p. 108). The normative prescriptions of the managerial view may lead to organizations expediting the change process without thoroughly internalizing the "conceptual foundation required to support these tactics in the long term" (p. 108). Similarly, the more apparently amenable the prescription is for immediate implementation, the less likely it is that it will be sufficiently different from the processes or conditions already in place. This leads to what Hult and Ferrell (1997b) considered "flavor-of-the-month" management practices where "organizational learning remains confined to one or two projects without challenging the organization's fundamental operating behaviors" (p. 108).

Finally, the managerial school is also prescriptive in the sense that it is only by following certain activities or disciplines that the goal of becoming a learning organization can be realized. The notion that organizational learning can take place only under certain conditions or circumstances presumes that organizations without such skills are suboptimal or dysfunctional with respect to the goal of becoming a learning organization (DiBella 1995).

The Process School— Learning by Information Processing

Central to the process view is the idea that the organization has a capacity to learn when required. Furthermore, learning may take different forms, even within a given organization. March (1991), for example, delineated between learning as exploitation and exploration, both of which are determined by different organizational characteristics. As noted, developmental and, more often, managerial models of organizational learning stipulate a best way for the organization to achieve learning. Consequently, these approaches are oblivious to the contingencies of the business or industry under investigation. The process view of learning, rather than identifying managerial norms to motivate learning, shifts the focus to constructs of learning (such as information generation and information dissemination) that are common to all organizations. Effective management of these attributes or constructs provides the firm with the capacity required for learning and for employing different learning styles according to circumstances. The behavioral theory of the firm drives the process school (Cyert and March 1963). Here firms have a limited capacity to process information—they are boundedly rational. Process views of organizational learning are, in part, responses to the challenge of dealing with this behavioral characteristic.

An underlying tenet of the process school is that learning is grounded in the cognitive and behavioral capabilities of individual members. Each of the four schools readily agrees that the sum total of individuals' knowledge, understanding, and memory contributes significantly to the overall learning of the organization. Few theorists would dispute the fact that individual learning, while not completely sufficient for organizational learning, is a fundamental building block. The process school, however, goes further than this, arguing that individual learning processes are replicated at a macro level to produce organizational cognition (Wacker 1981). Learning processes effective at the individual level may be at work within the organization to produce organization-wide learning (Kim 1993).

Kolb's (1984) experiential learning cycle provides the clearest exposition of individual learning processes. In this cycle, as summarized by Kim (1993),

people observe concrete events and actively observe what is happening. They assess (consciously or unconsciously) their experience by reflecting on their observations and then design or construct an abstract concept that seems to be an appropriate response to the assessment. They test the design by implementing it in the concrete world, which leads to a new concrete experience, commencing another cycle. (Pp. 38-39)

The process view suggests that idiosyncrasies of the individual explain differences in individual learning. Such idiosyncrasies are also likely to translate to learning at the organizational level.

This issue of individual learning processes as the basis for organizational learning processes has been the subject of much discussion (Dixon 1994). Perhaps the most pervasive theme within the literature is the notion of organizational learning as firmwide information processing (Huber 1991; Hult and Ferrell 1997a). This approach draws directly from the individual learning cycle. The argument is that learning incorporates the processes of information acquisition, dissemination, interpretation, and memory. An example of the process school in marketing is Slater and Narver's (1995) study on market orientation and organizational learning; they explore culture and climate as drivers of organizational learning, which is conceptualized as information-processing behaviors.

The process view also argues that learning is a socially constructed phenomenon. Organizational learning is determined by the infrastructure of social relations within firms. This defines the way in which individuals, groups, and processes interact. And it is these interactions that facilitate the performance of organizational learning processes, which in turn determine the nature and style of

learning (Chandler 1990). Brown and Duguid (1991) argued that the interactions between, and adaptive capabilities of, individuals and groups affect learning. Similarly, Weick and Roberts (1993), building on Durkheim's (1964) notion of collective conscience, argued that a system's collective properties (i.e., its learning) emerge from interrelated social practices of organizational members. Organizational learning, in this view, lies *between* rather than *within* participating individuals. Accordingly, to understand the process view of learning, we need to consider more closely the notion of organizational learning as a social construction, paying particular attention to the impact of interpersonal and interfunctional relationships on the performance of key information-processing behaviors. Indeed, it is the uniqueness of this network of interfunctional and social relationships that contributes to competitive advantage. Such advantage is sustainable inasmuch as these networks are difficult to replicate and are resistant to the effects of personnel turnover.

Process views of learning imply high manageability at lower levels, while the achievement of higher level learning can be problematic—despite the key tenets of organizational learning remaining unchanged. In the absence of managerial input, information acquisition, dissemination, interpretation, and memory processes will, nonetheless, occur to some degree in all organizations. In other words, lower level learning will occur with minimal intervention from management. On the other hand, leveraging these processes to achieve higher level learning will have significant implications for management. The task of management will be to nurture information-processing capability by removing barriers to effective and efficient information-processing practices. For example, Menon and Varadarajan (1992) suggested that knowledge use within the firm can be instrumental (the direct application of information to solve a problem), conceptual (indirect use, such as expanding managerial knowledge base), and symbolic (using knowledge to confirm a predetermined position). Clearly, the contribution of both instrumental and conceptual uses to organizational learning will be greater than symbolic uses of knowledge. The task of management is to facilitate the former while avoiding the latter.

While the process school has quickly gained currency within the literature, some have been more guarded in their views of individual learning as a basis for organizational learning. Spender (1996b) remains cautious about the relationship between individual and organizational-level learning. In highlighting the lack of functional equivalence between individuals and organizations, Spender (1996b) argued that the concept of organizational learning as the summation of individual learning constrains organization behavior to human-like activities. Expressing similar concerns, Kim (1993) warned that models of organizational learning must “resolve the dilemma of imparting intelli-

gence and learning capabilities to a non-human entity without anthropomorphising it” (p. 40).

A further concern with the process school derives from the reductionist method used to identify learning constructs common to all organizations and the contingency approach to their deployment. By focusing on the performance of information-processing behaviors, there is a risk that insufficient attention will be paid to the interventions required to transform an organization's learning from lower to higher levels, where appropriate.

FOUR SCHOOLS OF ORGANIZATIONAL LEARNING: WHAT NOW?

The real challenge to the field of organizational learning is not to choose one belief system over another but to employ all four schools effectively. Does this imply that organizational learning scholars should attempt to synthesize the existing schools of thought? We think not. Striving for scientific knowledge in organizational learning research by simply synthesizing the four schools is likely to be a fruitless effort given the fundamentally different theoretical heritages. It is our view that the different assumptions and linkages reflected in each of the four perspectives presented here, when taken together, provide a more comprehensive understanding of organizational learning than any view by itself. There are advantages to be derived from theoretical plurality.

To illustrate this, we apply the four schools to the topics of market orientation and new product development (NPD). These are the two areas within the discipline of marketing that have most fully embraced the organizational learning concept. For both of them, we examine the extant literature and show how the schools have been applied thus far. We also provide a guide to directions for future research. We do so by considering some of the key research directions that arise from applying each of the schools to the two topics. This approach is summarized in Table 2.

APPLYING THE FOUR SCHOOLS OF ORGANIZATIONAL LEARNING TO MARKET ORIENTATION

Market orientation is an important area of application for organizational learning researchers for a number of reasons. First, the organizational learning and market orientation research domains are often perceived as conceptually similar. In particular, both help to explain the critical organizational capability of market sensing. Second, they are concerned with understanding organization-wide phenomena such as organizational culture and norms. Finally, both encompass relationships and interdependencies

TABLE 2
Domains of Application of Organizational Learning Schools

		<i>Schools of Thought in Organizational Learning</i>		
<i>Domains of Application</i>	<i>Economic</i>	<i>Developmental</i>	<i>Managerial</i>	<i>Process</i>
Market orientation Extant research			The moderating effect of organizational learning on the market orientation-business performance relationship (Baker and Sinkula 1999b)	Market orientational as a foundation for organizational learning (Slater and Narver 1995) Information processes for learning about markets (Day 1994b) How do information processing capabilities affect market orientation?
Future directions	In what ways can learning by doing be applied to customer-related activities?	Does learning precede or follow a market orientation? To what extent are the synergies between organizational learning and market orientation contingent on learning phases?	Are there organizational values and norms that are common to both market orientation and organizational learning?	
NPD Extant research	Impact of streamlining processes and reducing waste on incremental innovation (Lynn 1998)	Impact of routines on the organization's ability to sustain sequential product development (Methé, Toyama, and Miyabe 1997)	Impact of customer-oriented learning on innovativeness and efficiency (Claycomb and Germain 1997) Learning tenets are differentially relevant given NPD objectives (Lynn 1998) Identification of learning skills for new product development (McKee 1992) Impact of organizational learning values on product innovation (Baker and Sinkula 1999a) To what extent do learning norms apply to different NPD objectives?	Impact of information processing on NPD speed and success (Lynn, Skov, and Abel 1999) Role of market knowledge in NPD success and organizational barriers preventing information processing (Adams, Day, and Dougherty 1998)
Future directions	What is the relationship between organizational learning and speed of NPD processes?	What is the effect of past product success and/or failures on organizational learning?		How do information-processing capabilities affect invention and innovation?

between individuals and groups and the coordinated use of both tangible and tacit resources.

Extant Research in Organizational Learning and Market Orientation

Theorists influenced by the process view have been interested especially in the issue of the causal relationship between market orientation and organizational learning. The key question is whether market orientation is the foundation for organizational learning or vice versa. For Slater and Narver (1995), market orientation is the principal foundation on which organizational learning occurs. The extent to which market orientation is exercised will determine whether learning occurs within traditional boundaries or whether it is higher level or generative. They argue that “for a business to maximize its ability to learn about markets, creating a market orientation is *only a start* [emphasis added]” (Slater and Narver 1995:63). Market orientation provides only the potential for generative learning. For the latter to have any chance of occurring, it is necessary to broaden the conception of the term *market* and to tap all relevant sources of knowledge. Day (1994b), who also draws on the process view of learning, took the opposite view on the issue of causality. He suggested that a market-oriented or market-driven approach can emerge only if learning processes are examined and altered in a way that enables firms to “learn to learn” about markets. To use Slater and Narver’s (1995) terminology, organizational learning is the foundation for a market-oriented or market-driven strategic orientation.

Adherents of the managerial view of learning have been interested in the issue of synergy between organizational learning and market orientation. In a series of studies, Baker and Sinkula (Baker and Sinkula 1999a, 1999b; Sinkula et al. 1997) describe learning orientation and market orientation as related but distinct organizational characteristics. In their view, market orientation primarily facilitates adaptive learning. Learning orientation, by contrast, is seen as a mechanism by which generative learning occurs. They argue that learning orientation “can lead an organization astray if a strong market orientation is not present to provide grounding” (Baker and Sinkula 1999b:412). One of the major advantages of an enhanced learning orientation is that organizational members “will not only gather and disseminate information about markets but also constantly examine the quality of their interpretive and storage functions and the validity of the dominant logic that guides the entire process” (Baker and Sinkula 1999b:416).

The economic school has not been employed by researchers investigating market orientation due to its focus on the lower order nature of learning. Given the

tendency of the economic view to address internal efficiencies, it has been of limited use in understanding market orientation, which is fundamentally external in its focus.

To date, the developmental school has not been applied to the issue of market orientation as such but to the issue of market information processing—a key component of market orientation (Kohli and Jaworski 1990). The research raises some tantalizing, but unresolved, questions about whether young and new organizations process market information differently from large and old ones. These, in turn, are linked to the issues of the amount of information that is processed and the balance between active and passive information acquisition (Sinkula 1994). Below, we consider some specific research issues that arise from relating the four schools of organizational learning to market orientation (see also Table 2).

Research Directions for Organizational Learning and Market Orientation

In what ways can learning by doing be applied to customer-related activities? We noted that the economic school has not been employed in studies of the relationship between market orientation and organizational learning. An obvious way in which it can be used, however, is to explore the relevance of learning by doing in customer-related activities (e.g., efficiency in customer interactions). One of the pillars of the economic school is that learning is behavioral and occurs through repeated exposure to events. Market orientation, in addition to being an organization-wide philosophy, involves a set of behaviors and processes. The repeated exposure of organizational members to key market orientation processes could potentially lead to a speedier adoption of market orientation within the organization than when driven by managerial norms and directions.

Does learning precede or follow a market orientation? Earlier we referred to the issue of the causal relationship between market orientation and organizational learning. The issue remains unresolved, with researchers taking what appear to be two completely opposed viewpoints. Nevertheless, each camp conceptualizes the issue in terms of organizational learning or market orientation being a platform for the development of the other. Thus, both see organizational learning and market orientation as mutually dependent.

To advance the debate, theorists could look to the developmental school, which suggests an alternative way of framing the issue by asking whether a market-oriented firm is a phase in the evolution of the learning organization. This is at heart a temporal issue and needs to be ana-

lyzed longitudinally. The developmental school raises the question of *when* a market orientation will emerge in the evolution of the firm and how long it will endure as an organizational characteristic. It also raises the possibility that market orientation and/or organizational learning may worsen rather than improve as organizations become older and larger. As Daft and Weick (1984) noted,

New, young organizations . . . try new things and actively seek information about their limited environment. . . . [They] are disbelievers, are unindoctrinated, and have less history to rely on . . . but as the organization grows and time passes, the environment may be perceived as less threatening, so search will decrease. (P. 288)

To what extent are synergies between organizational learning and market orientation contingent on learning phases? Baker and Sinkula (1999b) alluded to the possibility that synergies will be weakened because of learning defects in market-oriented firms. Market-oriented firms “may increasingly prioritize the gathering and distribution of deficient information” (Baker and Sinkula 1999b:413). Furthermore, they may misinterpret distributed information and store it inadequately. The important issue is, Why might these efficiencies or defects arise? The developmental school may provide an answer, in that the reason might have something to do with the organization’s learning phase. It might be possible that the strength of the synergistic effect is dependent on the developmental stage of learning within the organization.

Are there organizational values and norms that are common to both market orientation and organizational learning? Another important aspect of the synergistic relationship between organizational learning and market orientation is the issue of values and norms—something central to the managerial school. The issue is, What are the values and norms relevant for organizational learning that are important for the implementation of market orientation?

An avenue for exploring this question is provided by Senge (1990), one of the leading proponents of the managerial school, in his discussion of the importance of systems thinking for organizational learning. As a means for describing and understanding the interrelationships that govern the behavior of organizational systems and processes, systems thinking has much in common with Narver and Slater’s (1990) notion of interfunctional coordination, a central tenet of a market orientation. Future research might explore additional commonalities between the two research streams.

How do information processing capabilities affect market-oriented behaviors? Market orientation comprises a number of different behaviors, and these vary by theoretical perspective. Kohli and Jaworski (1990) suggested that

market orientation is a function of intelligence generation, information dissemination, and responsiveness. Narver and Slater (1990), on the other hand, described market orientation as having a customer, competitor, and interfunctional coordination perspective. Common to both views is an information-processing capability.

The process school, with its focus on the detail of information processing, may offer additional insight into market orientation behaviors. For example, Narver and Slater’s (1990) interfunctional coordination perspective speaks generally of cooperation between departments within organizations. But how does this cooperation unfold? A process view of information dissemination could detail some of the means by which this broad level of cooperation occurs.

APPLYING THE FOUR SCHOOLS OF ORGANIZATIONAL LEARNING TO NEW PRODUCT DEVELOPMENT

Product development is a particularly salient area for organizational learning inquiry for a number of reasons. First, NPD within organizations is more often a team-based pursuit. Studies outside the NPD discipline have demonstrated positive relationships between team learning and team performance. It is reasonable to expect similar relationships to emerge within the NPD domain. Second, the NPD process requires a high degree of interfunctional coordination. The capabilities required to take a new product from its inception to eventual commercialization are many and diverse. It is probable that superior learning capability will lead to more effective development and deployment of organizational capabilities. Finally, NPD within firms is frequently project based, involving regular formation, dismantling, and reforming of teams (cf. Lynn 1998). This has significant implications for the development and use of organizational memory.

Extant Research in Organizational Learning and NPD

As would be expected, much of the early work on organizational learning and NPD was conceptual. Empirical investigations, however, are becoming more frequent (e.g., Adams, Day, and Dougherty 1998; Baker and Sinkula 1999a; Claycomb and Germain 1997; Lynn, Skov, and Abel 1999). Few studies embrace an economic view of learning. Probably this is because many aspects of NPD require a departure from existing norms and routines (e.g., during invention stages). It is difficult to explain discontinuous or new-to-the-world innovation within an economic framework. However, Lynn (1998) did emphasize the relevance of economic-style learning for accelerated

innovation, where cost reductions and improved efficiencies are paramount.

Scholars within the NPD domain have not readily embraced developmental views of learning. Nonetheless, Methé, Toyama, and Miyabe (1997) highlighted the importance of “backward compatibility” across a sequence of newly developed products. Their research highlights the potential constraints of organizational routines on subsequent development initiatives.

Both managerial and process views of learning dominate the literature on organizational learning and NPD. Some theorists draw on both schools, emphasizing the importance of a process-based view of learning before developing or testing managerial models (e.g., Baker and Sinkula 1999b; Claycomb and Germain 1997). Empirical studies find the process view particularly suitable given the availability of scales within the information processing literature. Lynn et al. (1999), for example, established a positive impact of information implementation on NPD speed and success. Adams et al. (1998) reported findings that generally support this relationship. Others employ a process view of learning to describe the role of boundary spanning personnel in gleaning lead user feedback for continued product innovation (Pitta and Franzak 1997).

Baker and Sinkula (1999a) adopted a managerial view of organizational learning and demonstrated its positive impact on product innovation. They argued that learning organizations are able to depart from dominant paradigms driving product development, a view supported by Lynn (1998). McKee (1992) highlighted four key “skills” required for organizational learning and NPD, while Ramesh and Tiwana (1999) identified one important element for building organizational knowledge—collaborative teamwork. Below, we consider some key research topics that become apparent when the four schools of organizational learning are applied to NPD (see also Table 2).

Research Directions for Organizational Learning and NPD

What is the trade-off between the pursuit of production efficiencies and product innovation? An important issue within NPD is the speed with which organizations access process efficiencies once an optimal product configuration or “dominant design” (Porter 1985:194) has been reached. Competitive advantage will accrue to those organizations that are able to exploit, faster than competitors, process- and production-related efficiencies relevant to an established product platform. While faster access to production efficiencies leads to advantage within a dominant design, unwavering pursuit of this goal is potentially at the expense of identifying opportunities for paradigmatic change. In other words, a tension exists between *exploitation* and *exploration* (March 1991) within NPD. A key

issue, therefore, is whether it is better to be faster at arriving at process efficiencies or faster at uncovering product innovations.

While other schools of learning will inform the issue of product innovation speed and paradigmatic change, the economic school could be used to provide insight into the speed with which process efficiencies are achieved. The school’s emphasis on cumulative exposure to organizational processes is naturally suited to an investigation of efficiency issues.

What is the effect of NPD speed on organizational learning? The literature on NPD speed has uncovered a number of shortcuts that organizations regularly implement to accelerate NPD. The developmental school helps shed some light on the implications of these tendencies for innovation and learning outcomes. It helps us to understand under what conditions choosing simplified product technology (Ali, Krapfel, and Labahn 1995), avoiding projects that entail unfamiliar processes (Crawford 1992), or simply outsourcing the product development process altogether encourage trivial versus breakthrough innovation.

The developmental school is especially concerned with the paths by which organizations progress from lower to higher level learning. It could be used, therefore, to determine whether organizations that are following a stepwise or recursive path to higher level learning will be disadvantaged by taking shortcuts that involve skipping developmental phases.

To what extent do learning norms apply to different NPD objectives? Organizations vary in their NPD objectives. Some firms concentrate on incremental innovation to leverage existing product platforms or reduce the risk of experimentation. Other firms may seek to achieve radical breakthrough innovations to profit from new market opportunities. Accordingly, firms will differ in terms of the configuration of the NPD processes that facilitate these alternative objectives.

Managerial views of learning can account for firm-specific or industry-specific NPD objectives. Discontinuous innovation requires, among other things, organizational adaptability. Of the various managerial prescriptions for organizational learning, Slater and Narver’s (1995) emphasis on entrepreneurship and organic organizational structure—defined as decentralized structures with fluid job responsibilities, and extensive lateral communication—is most likely to lead to the adaptability required for discontinuous innovation. Incremental innovation, on the other hand, requires a capability for continuous improvement. McKee (1992) pointed to interpersonal skills (e.g., open communication) and analytic skills (e.g., situational analysis, planning), among others, as critical for organizational learning. These skills are likely to contribute to a climate of incremental improvement.

How do information-processing capabilities affect invention and innovation? The process school can shed light on the relative importance of information-processing capabilities for invention and innovation. Information acquisition capabilities will be paramount for invention to the extent that market, customer, and external information will lead to more varied stimuli for idea generation. The greater the variety of sources, the more productive, potentially, will be the inventive function. The process school could be used to investigate the question of whether information source variety is a key to inventiveness.

For product innovation, interpretation of information (often conceptualized as shared understanding) and information dissemination will be particularly important. Innovation requires organization-wide cooperation in expediting products to market. The process school could also be used to examine the issue of whether information interpretation and dissemination is more important as the product nears commercialization.

CONCLUSION

We have uncovered the schools of thought that have driven the development of organizational learning research, taken stock of these schools, described how they differ from each other, outlined how the different schools can be employed effectively, and specified the implications for future research on key marketing topics—with the ultimate goal of advancing organizational learning knowledge through theoretical diversity. Our discussion of market orientation and NPD shows that the four schools can be used to order and classify the extant literature and to raise fresh perspectives. Of course, examples other than market orientation and NPD could have been used to illustrate the value of considering multiple viewpoints. These might include marketing channels (e.g., Lukas et al. 1996), business networks (e.g., Håkansson, Havila, and Pederson 1999), industrial purchasing (e.g., Hult, Hurley, Giunipero, and Nichols 2000), and marketing strategy (e.g., Frankwick et al. 1994).

Overall, our analysis raises the question, Which learning and when? Indeed, arriving at this question is a natural and logical consequence of the theoretical plurality and diversity that exist across business disciplines concerned with organizational learning. Answering the question will depend on how well researchers are able to appreciate and leverage the insights that each of the four schools provide.

ACKNOWLEDGMENTS

We thank the three anonymous reviewers and the editor P. Rajan Varadarajan for their helpful comments on earlier drafts of this article.

NOTES

1. As summarized by Palmer and Hardy (2000), lower level learning is routine learning that occurs through repetition with a given set of organizational rules and structures to produce behavioral outcomes including the institutionalization of formal rules, adjustments in management systems, and the development of problem-solving skills. By contrast, higher level learning takes place within an ambiguous context and involves changing rules and norms that govern behaviors and activities through the use of heuristics and insights to produce new missions, new agendas, and problem-defining skills.

2. It is perhaps noteworthy that the more manageable organizational learning is to the firm, the less capable it is of conferring sustainable competitive advantage. In other words, simple managerial frameworks may be more easily replicated by competitors, allowing competitive businesses to attain learning capabilities.

3. Single-loop and double-loop learning are akin to lower level and higher level learning, respectively, as outlined in Note 1.

4. A learning organization is one that consistently achieves higher order learning.

5. See Desphandé and Webster's (1989) discussion of comparative management and contingency management views of organizational culture for a more detailed consideration of management's role in implementing strategy and change.

6. "The accident at Chernobyl occurred when engineers were experimenting with a new way to generate electricity while the plant was going into outage for refueling. Normal operating procedures and critical assumptions were suspended to learn from this process" (DiBella, Nevis, and Gould 1996: 378).

REFERENCES

- Adams, Marjorie E., George S. Day, and Deborah Dougherty. 1998. "Enhancing New Product Development Performance: An Organizational Learning Perspective." *Journal of Product Innovation Management* 15 (5): 403-422.
- Alberts, William W. 1989. "The Experience Curve Doctrine Reconsidered." *Journal of Marketing* 53 (3): 36-49.
- Ali, Abdul, Robert Krapfel, Jr., and Douglas Labahn. 1995. "Product Innovativeness and Entry Strategy: Impact on Cycle Time and Break-Even Time." *Journal of Product Innovation Management* 12 (1): 54-69.
- Anand, Vikas, Charles C. Manz, and William H. Glick. 1998. "An Organizational Memory Approach to Information Management." *Academy of Management Review* 23 (4): 796-809.
- Argote, Linda. 1993. "Group and Organizational Learning Curves: Individual, System and Environmental Components." *British Journal of Social Psychology* 32 (1): 31-51.
- Argyris, Chris and D. Schön. 1978. *Organizational Learning*. Reading, MA: Addison-Wesley.
- Arrow, Kenneth. 1962. "The Economic Implications of Learning by Doing." *Review of Economic Studies* 29:155-173.
- . 1974. *The Limits of Organization*. New York: Norton.
- Baker, William E. and James M. Sinkula. 1999a. "Learning Orientation, Market Orientation, and Innovation: Integrating and Extending Models of Organizational Performance." *Journal of Market Focused Management* 4 (4): 295-308.
- and ———. 1999b. "The Synergistic Effect of Market Orientation and Learning Orientation on Organizational Performance." *Journal of the Academy of Marketing Science* 27 (4): 411-427.
- Barkema, Harry G., John H. J. Bell, and Johannes M. Pennings. 1996. "Foreign Entry, Cultural Barriers, and Learning." *Strategic Management Journal* 17 (2): 151-166.
- Barney, Jay B. 1991. "Firm Resources and Sustained Competitive Advantage." *Journal of Management* 17 (1): 99-120.
- Boisot, Max H. 1995. *Information Space: A Framework for Learning in Organizations, Institutions and Culture*. London: Routledge.

- Brown, John S. and Paul Duguid. 1991. "Organizational Learning and Communities-of-Practice: Toward a Unified View of Working, Learning, and Innovation. Special Issue: Organizational Learning: Papers in Honor of (and by) James G. March." *Organization Science* 2 (1): 40-57.
- Cangelosi, Vincent E. and William R. Dill. 1965. "Organizational Learning: Observations Toward a Theory." *Administrative Science Quarterly* 10 (2): 175-203.
- Chandler, Alfred D. 1990. *Scale and Scope: The Dynamics of Industrial Capitalism*. Cambridge, MA: Belknap.
- Claycomb, Cindy and Richard Germain. 1997. "Organizational Learning and Performance: An Empirical Test." In *1997 AMA Winter Educators' Conference Proceedings*. Eds. Debbie Thorne LeClair and Michael Hartline. Chicago: American Marketing Association, 96-100.
- Cohen, Michael D. and Paul Bacdayan. 1994. "Organizational Routines Are Stored as Procedural Memory: Evidence From a Laboratory Study." *Organization Science* 5 (4): 554-568.
- Conner, Kathleen R. 1991. "A Historical Comparison of Resource-Based Theory and Five Schools of Thought Within Industrial Economics: Do We Have a New Theory of the Firm?" *Journal of Management* 17 (1): 121-154.
- Crawford, Merle. 1992. "The Hidden Costs of Accelerated Product Development." *Journal of Product Innovation Management* 9 (3): 188-199.
- Crossan, Mary M., Henry W. Lane, and Roderick E. White. 1999. "An Organizational Learning Framework: From Intuition to Institution." *Academy of Management Review* 24 (3): 522-537.
- Cyert, Richard M. and James G. March. 1963. *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice Hall.
- Daft, Richard L. and Karl E. Weick. 1984. "Toward a Model of Organizations as Interpretation Systems." *Academy of Management Review* 9 (2): 284-295.
- Day, George S. 1994a. "The Capabilities of Market-Driven Organizations." *Journal of Marketing* 58 (4): 37-52.
- . 1994b. "Continuous Learning About Markets." *California Management Review* 36 (4): 9-31.
- Day, George S. and David B. Montgomery. 1983. "Diagnosing the Experience Curve." *Journal of Marketing* 47 (2): 44-58.
- Dechant, Kathleen and Victoria J. Marsick. 1991. "In Search of the Learning Organization: Toward a Conceptual Model of Collective Learning." In *Eastern Academy of Management Proceedings*. Ed. A. Herd. Hartford, CT: Eastern Academy of Management, 225-228.
- Deshpandé, Rohit and Frederick E. Webster. 1989. "Organizational Culture and Marketing: Defining the Research Agenda." *Journal of Marketing* 53 (1): 3-15.
- DiBella, Anthony J. 1995. "Developing Learning Organizations: A Matter of Perspective." *Academy of Management Journal (Best Papers Proceedings)* 38 (Special Issue): 287-290.
- , Edwin C. Nevis, and Janet M. Gould. 1996. "Understanding Organizational Learning Capability." *Journal of Management Studies* 33 (3): 361-379.
- Dixon, Nancy M. 1994. *The Organizational Learning Cycle: How We Can Learn Collectively*. London: McGraw-Hill.
- Durkheim, Emile. 1964. *The Rules of Sociological Method*. New York: Free Press.
- Fiol, C. Marlene and Marjorie A. Lyles. 1985. "Organizational Learning." *Academy of Management Review* 10 (4): 803-813.
- Frankwick, Gary L., James C. Ward, Michael D. Hutt, and Peter H. Reingen. 1994. "Evolving Patterns of Organizational Beliefs in the Formation of Strategy." *Journal of Marketing* 58 (2): 96-110.
- Friedlander, Frank. 1983. "Patterns of Individual and Organizational Learning." In *The Executive Mind: New Insights on Managerial Thought and Action*. Ed. Suresh Srivastva. San Francisco: Jossey-Bass, 192-220.
- Galer, Graham and Kees van der Heijden. 1992. "The Learning Organization: How Planners Create Organizational Learning." *Marketing Intelligence & Planning* 10 (6): 5-12.
- Garvin, David A. 1993. "Building a Learning Organization." *Harvard Business Review* 71 (4): 78-91.
- Gupta, Anil K. and Vijay Govindarajan. 1991. "Knowledge Flows and the Structure of Control Within Multinational Corporations." *Academy of Management Review* 16 (4): 768-792.
- Håkansson, Håkan, Virpi Havila, and Ann-Charlott Pederson. 1999. "Learning in Networks." *Industrial Marketing Management* 28 (5): 443-452.
- Hedberg, Bo. 1981. "How Organizations Learn and Unlearn." In *Handbook of Organizational Design*. Eds. P. Nystrom and W. Starbuck. Oxford, UK: Oxford University Press, 3-27.
- Hodgetts, Richard M., Fred Luthans, and Sang M. Lee. 1994. "New Paradigm Organizations: From Total Quality to Learning to World-Class." *Organizational Dynamics* 22 (3): 5-19.
- Huber, George P. 1991. "Organizational Learning: The Contributing Processes and the Literatures." *Organization Science* 2 (1): 88-115.
- Hult, G. Thomas M. and O. C. Ferrell. 1997a. "A Global Learning Organization Structure and Market Information Processing." *Journal of Business Research* 40 (2): 155-166.
- and ———. 1997b. "Global Organizational Learning Capacity in Purchasing: Construct and Measurement." *Journal of Business Research* 40 (2): 97-111.
- , Robert F. Hurley, Larry C. Giunipero, and Ernest L. Nichols, Jr. 2000. "Organizational Learning in Global Purchasing: A Model and Test of Internal Users and Corporate Buyers." *Decision Sciences* 31 (2): 293-325.
- Kim, Daniel H. 1993. "The Link Between Individual and Organizational Learning." *Sloan Management Review* 35 (1): 37-50.
- Kogut, Bruce and Udo Zander. 1992. "Knowledge of the Firm, Combinative Capabilities and the Replication of Technology." *Organization Science* 3 (3): 383-397.
- Kohli, Ajay K. and Bernard J. Jaworski. 1990. "Market Orientation: The Construct, Research Propositions, and Managerial Implications." *Journal of Marketing* 54 (2): 1-18.
- Kolb, D. A. 1984. *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs, NJ: Prentice-Hall.
- Kuhn, Thomas S. 1970. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Lawson, Robert B. and Curtis L. Ventris. 1992. "Organizational Change: The Role of Organizational Culture and Organizational Learning." *Psychological Record* 42 (2): 205-219.
- Leonard-Barton, Dorothy. 1992. "Core Capabilities and Core Rigidities: A Paradox in Managing New Product Development." *Strategic Management Journal* 13 (Special Issue): 111-125.
- Levitt, Barbara and James G. March. 1988. "Organizational Learning." *Annual Review of Sociology* 14:319-340.
- Lieberman, Marvin B. 1987. "The Learning Curve, Diffusion, and Competitive Strategy." *Strategic Management Journal* 8 (5): 441-452.
- Lukas, Bryan A., G. Tomas M. Hult, and O. C. Ferrell. 1996. "A Theoretical Perspective of the Antecedents and Consequences of Organizational Learning in Marketing Channels." *Journal of Business Research* 36 (3): 233-244.
- Lynn, Gary S. 1998. "New Product Team Learning: Developing and Profiting From Your Knowledge Capital." *California Management Review* 40 (4): 74-93.
- , Richard B. Skov, and Kate D. Abel. 1999. "Practices That Support Team Learning and Their Impact on Speed to Market and New Product Success." *Journal of Product Innovation Management* 16 (5): 439-454.
- Mahoney, Joseph. 1995. "The Management of Resources and the Resource of Management." *Journal of Business Research* 33 (2): 91-101.
- March, James G. 1991. "Exploration and Exploitation in Organizational Learning." *Organization Science* 2 (1): 71-87.
- and Johan P. Olson. 1975. "The Uncertainty of the Past: Organizational Learning Under Ambiguity." *European Journal of Policy Research* 3 (2): 147-171.
- McKee, Daryl O. 1992. "An Organizational Learning Approach to Product Innovation." *Journal of Product Innovation Management* 9 (3): 232-245.
- Menon, Anil and P. Rajan Varadarajan. 1992. "A Model of Marketing Knowledge Use Within Firms." *Journal of Marketing* 56 (4): 53-71.
- Méthé, David T., Ryoko Toyama, and Junichiro Miyabe. 1997. "Product Development Strategy and Organizational Learning: A Tale of Two PC Makers." *Journal of Product Innovation Management* 14 (5): 323-336.

- Meyers, Patricia W. 1990. "Non-Linear Learning in Large Technological Firms: Period Four Implies Chaos." *Research Policy* 19 (2): 97-115.
- Miller, Danny. 1996. "A Preliminary Typology of Organizational Learning: Synthesizing the Literature." *Journal of Management* 22 (3): 485-505.
- Mills, Daniel and Bruce Friesen. 1992. "The Learning Organization." *European Management Journal* 10 (2): 146-156.
- Montgomery, Cynthia A. 1995. *Resource-Based and Evolutionary Theories of the Firm: Towards a Synthesis*. Boston: Kluwer Academic Publishers.
- Moorman, Christine and Anne S. Miner. 1997. "The Impact of Organizational Memory on New Product Performance and Creativity." *Journal of Marketing Research* 34 (1): 91-106.
- and Rebecca J. Slotegraaf. 1999. "The Contingency Value of Complementary Capabilities in Product Development." *Journal of Marketing Research* 36 (2): 239-257.
- Narver, John C. and Stanley F. Slater. 1990. "The Effect of a Market Orientation on Business Profitability." *Journal of Marketing* 54 (4): 20-35.
- Nonaka, Ikujiro. 1991. "The Knowledge-Creating Company." *Harvard Business Review* 69 (6): 96-104.
- Palmer, Ian and Cynthia Hardy. 2000. *Thinking About Management: Implications of Organizational Debates for Practice*. London: Sage.
- Penrose, Edith T. 1959. *The Theory of the Growth of the Firm*. Oxford, UK: Basil Blackwell.
- Pitta, Dennis and Frank Franzak. 1997. "Boundary Spanning Product Development in Consumer Markets: Learning Organization Insights." *Journal of Product & Brand Management* 6 (4): 235-249.
- Polanyi, Michael. 1958. *Personal Knowledge: Towards a Post-Critical Philosophy*. London: Routledge & Kegan Paul.
- Porter, Michael E. 1985. *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.
- Pucik, Vladimir. 1988. "Strategic Alliances, Organizational Learning, and Competitive Advantage: The HRM Agenda." *Human Resource Management* 27 (1): 77-93.
- Ramesh, Balasubramaniam and Amrit Tiwana. 1999. "Supporting Collaborative Process Knowledge Management in New Product Development Teams." *Decision Support Systems* 27 (1-2): 213-235.
- Sawyer, Malcolm C. 1979. *Theories of the Firm*. London: Weidenfeld and Nicolson.
- Senge, Peter M. 1990. *The Fifth Discipline*. New York: Doubleday.
- . 1993. "Transforming the Practice of Management." *Human Resource Development* 4 (1): 4-32.
- Sinkula, James M. 1994. "Market Information Processing and Organizational Learning." *Journal of Marketing* 58 (1): 35-45.
- , William E. Baker, and Thomas Noordewier. 1997. "A Framework for Market-Based Organizational Learning: Linking Values, Knowledge, and Behavior." *Journal of the Academy of Marketing Science* 25 (4): 305-318.
- Slater, Stanley F. and John C. Narver. 1995. "Market Orientation and the Learning Organization." *Journal of Marketing* 59 (3): 63-74.
- Sligo, Frank. 1996. "Disseminating Knowledge to Build a Learning Organization." *The International Journal of Human Resource Management* 7 (2): 508-520.
- Spender, J. C. 1996a. "Making Knowledge the Basis of a Dynamic Theory of the Firm." *Strategic Management Journal* 17:45-62.
- . 1996b. "Organizational Knowledge, Learning and Memory: Three Concepts in Search of a Theory." *Journal of Organizational Change* 9 (1): 63-78.
- Stiglitz, Joseph E. 1987. "Learning to Learn, Localized Learning and Technological Progress." In *Economic Policy and Technological Performance*. Eds. P. Dasgupta and P. Stoneman. Cambridge, UK: Cambridge University Press, 125-153.
- Teece, David J., Gary Pisano, and Amy Shuen. 1997. "Dynamic Capabilities and Strategic Management." *Strategic Management Journal* 18 (7): 509-533.
- Tobin, Daniel R. 1993. *Re-Educating the Corporation: Foundations for the Learning Organization*. Essex Junction, VT: Oliver Wright.
- Torbert, William R. 1994. "Managerial Learning, Organizational Learning: A Potentially Powerful Redundancy." *Management Learning* 25 (1): 57-70.
- and Dalmir Fisher. 1992. "Autobiographical Awareness as a Catalyst for Managerial and Organisational Development." *Management Education and Development* 23 (3): 184-198.
- Van de Ven, Andrew H. and Marshall Scott Poole. 1995. "Explaining Development and Change in Organizations." *Academy of Management Review* 20 (3): 510-540.
- Wacker, Gerald. 1981. "Toward a Cognitive Methodology of Organizational Assessment." *Journal of Applied Behavioral Science* 17 (1): 114-129.
- Walsh, James P. and Gerardo R. Ungson. 1991. "Organizational Memory." *Academy of Management Review* 16 (1): 57-91.
- Watkins, Karen E. and Victoria J. Marsick. 1993. *Sculpting the Learning Organization: Lessons in the Art and Science of Systematic Change*. San Francisco: Jossey-Bass.
- Weick, Karl E. and Karlene H. Roberts. 1993. "Collective Mind in Organizations: Heedful Interrelating on Flight Decks." *Administrative Science Quarterly* 38 (3): 357-381.
- Wernerfelt, Birger. 1984. "A Resource-Based View of the Firm." *Strategic Management Journal* 5 (2): 171-180.
- Williamson, Oliver E. 1964. *The Economics of Discretionary Behavior: Managerial Objectives in a Theory of the Firm*. London: Prentice Hall.

ABOUT THE AUTHORS

Simon J. Bell is a lecturer in marketing in the Faculty of Economics and Commerce at the University of Melbourne.

Gregory J. Whitwell is an associate professor of marketing in the Faculty of Economics and Commerce at the University of Melbourne.

Bryan A. Lukas is an associate professor of marketing and director of the Master of Applied Commerce Program in the Faculty of Economics and Commerce at the University of Melbourne.