Dynamic Capabilities

Understanding Strategic Change in Organizations

Constance Helfat • Sydney Finkelstein • Will Mitchell
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Preface

This co-authored book is a group effort in the best sense of the word. Each of us has brought his or her individual perspectives and knowledge base to a truly collaborative project. Our aim: to create a body of work where the whole exceeds the sum of the parts. We seek to provide a more focused and integrated treatment than a standard edited volume would generally allow and a more detailed analysis than a single journal article could accomplish. The topic of this book – dynamic capabilities – has attracted a great deal of interest among management scholars and has important implications for practitioners. The study of dynamic capabilities to date, however, has raised many unanswered theoretical and empirical questions. The literature also stands to benefit from greater integration of topics relevant to dynamic capabilities. Obviously, no single book on dynamic capabilities can possibly answer all remaining questions or integrate all of the relevant domains of study. Instead, we seek to provide clear definitional foundations, to point the way toward resolving important theoretical issues, and to bring relevant empirical findings to bear on these issues.

The process of writing this book involved many conversations among us, including day-long meetings of the co-authors to discuss key concepts and chapter drafts as the book took shape. Each of us took the lead in writing specific chapters, which enabled us to take advantage of our individual areas of expertise while benefiting from the wise counsel of the other book co-authors. The lead authors on each of the chapters are as follows: chapter 1, Connie Helfat, with substantial input from all of the book authors; chapter 2, David Teece; chapter 3, Margie Peteraf; chapter 4, Syd Finkelstein; chapter 5, Harbir Singh; chapter 6, Will Mitchell; chapter 7, Connie Helfat and Sid Winter; chapter 8, Connie Helfat. A project of this type also requires a chief organizer and integrator, which in this case was Connie Helfat.

This book might never have materialized but for Rosemary Nixon, our editor at Blackwell, who suggested the idea of a co-authored book in the first place. Rosemary's sage advice at many stages of this project was invaluable. We also greatly appreciate the help of co-contributors on selected chapters: Jay Anand (chapter 6), Laurence Capron (chapter 6), Jeff Dyer (chapter 5), Prashant Kale (chapter 5), and

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Chapter 1

Dynamic Capabilities: Foundations

Strategy matters most during times of change. Businesses and people find it far easier to do more of the same than to do something different. But the world does not stand still. As markets become more globally integrated and new forms of technology and competition arise, companies cannot rest on their laurels. Firms must adapt to and exploit changes in their business environment, while seeking opportunities to create change through technological, organizational, or strategic innovation. Creating, adapting to, and exploiting change is inherently entrepreneurial, for large firms and small, for old firms and new. But entrepreneurial activity of this sort does not imply a lack of strategy or organization. Indeed, effective change often requires both. To survive and prosper under conditions of change, firms must develop the "dynamic capabilities" to create, extend, and modify the ways in which they make their living.

Since the concept of dynamic capabilities was first introduced, additional research has elaborated on the initial idea. Many questions remain, however. The core concept requires clarification and development of the conceptual underpinnings along with grounding in empirical observation. This book addresses both the conceptual and empirical grounding of dynamic capabilities. We provide a succinct yet comprehensive definition of dynamic capabilities to serve as the basis for future work. We also provide a starting point for assessing the performance of dynamic capabilities, both conceptually and empirically. Additionally, a substantial portion of the book focuses on empirical observations regarding dynamic capabilities, including case examples and statistical analysis.

A capability, whether operational or dynamic, is the ability to perform a particular task or activity. Operational capabilities enable an organization to earn a living in the present (Winter, 2003). In contrast, dynamic capabilities concern change. A dynamic capability is *the capacity of an organization to purposefully create, extend, or modify its resource base*. Dynamic capabilities come in many forms. Some dynamic capabilities enable firms to enter new businesses and extend old ones through internal growth, acquisitions, and strategic alliances. Other capabilities help a firm to create new products and production processes. Yet others involve the capabilities of the managers

responsible for leading profitable firm change and growth. The types of dynamic capabilities extend even further, far beyond what a single book can incorporate. We focus here on a few in-depth examples of dynamic capabilities involving alliances, acquisitions, and management.

The concept of dynamic capability includes the capacity with which to identify the need or opportunity for change, formulate a response to such a need or opportunity, and implement a course of action. Not all dynamic capabilities serve all three functions. Instead, different dynamic capabilities serve different purposes.

To understand how organizations identify and respond to the need for change, we must examine the underlying organizational and managerial processes. The transformation of an organization (even a nascent one) through additions, deletions, or modifications to its resource base entails processes for achieving these changes. We need to know not only what organizations do – which markets they enter, which products they introduce, how fast they grow, which firms they acquire or ally with – but also how they do it. This book therefore pays close attention to the managerial and organizational processes that are part and parcel of dynamic capabilities.

The benefits that firms obtain from their dynamic capabilities depend not only on the efficacy of the underlying organizational and managerial processes, but also on the context in which the capabilities are employed. That is, how well dynamic capabilities "fit" with the internal and external environment of the firm affects their usefulness as a means for adapting to, exploiting, and creating change in the business environment. Accordingly, we extend the concept of "fit" to begin to develop conceptual yardsticks for evaluating how well or poorly dynamic capabilities perform.

To begin the analysis, in this chapter we elaborate on the concept of dynamic capability and introduce conceptual yardsticks for assessing the performance of dynamic capabilities. The following chapters analyze conceptual issues involving managers and organizational processes in greater detail, and then examine empirical evidence regarding the nature and consequences of dynamic capabilities. The book concludes with an overall assessment and look to the future.

The Dynamic Capabilities Concept

The original definition of dynamic capabilities referred to "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (Teece, Pisano, and Shuen, 1997: 516). In this definition, organizational competencies denoted managerial and organizational processes or "patterns of current practice and learning" (Teece, Pisano, and Shuen, 1997: 518), through which "firm-specific assets are assembled in integrated clusters spanning individuals and groups" (Teece, Pisano, and Shuen, 1997: 516). By altering the organization's resource base, dynamic capabilities could then open new strategic alternatives or "paths" for the firm (Helfat, 1997).

Subsequent work refined and expanded the original definition of dynamic capabilities. Eisenhardt and Martin (2000: 1107) defined dynamic capabilities as "the firm's processes that use resources . . . to match and even create market change." In this conception, dynamic capabilities took the form of organizational processes. Eisenhardt

and Martin (2000) provided examples of dynamic capabilities as processes, such as product development routines, alliance and acquisition capabilities, resource allocation routines, and knowledge transfer and replication routines. In addition to defining dynamic capabilities as processes, Eisenhardt and Martin (2000) extended the original definition of dynamic capabilities to include the creation of market change, as well as the response to exogenous change. These authors further noted that dynamic capabilities can operate in environments other than those experiencing rapid change.

Zollo and Winter next focused on organizational learning as a source of dynamic capability, which they 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" (Zollo and Winter, 2002: 340). This definition implicitly distinguishes dynamic capabilities from operational capabilities. This definition also suggests that, like operational capabilities, dynamic capabilities consist of *patterned* organizational behavior that companies can invoke on a repeated rather than idiosyncratic basis. Unlike some implications of prior research, in this definition dynamic capabilities do not necessarily improve firm performance. Although firms pursue greater effectiveness of their operating routines, they may or may not achieve it. Hence, the definition of dynamic capabilities does not suffer from any sort of tautology with regard to the superiority of performance (see also Winter, 2003).

Zollo and Winter's (2002) definition focuses on dynamic capabilities that modify an organization's operating routines. Not all dynamic capabilities, however, act upon operating routines. Of particular importance are information processing capabilities that may enable the firm to identify the nature of the changing market environment and sense opportunities that it holds (Teece, Pierce, and Boerner, 2002). This ability to identify strategic opportunities in a changing environment provides a potential continuing source of competitive advantage (Denrell, Fang, and Winter, 2003).

Recently, Teece, Pierce, and Boerner (2002) have noted the importance of managerial capability to sense opportunities. Taking account of the role of management more generally, Adner and Helfat (2003: 1012) used the term "dynamic managerial capabilities" to refer to the capacity of managers to create, extend or modify the resource base of an organization. Like dynamic organizational capabilities, dynamic managerial capabilities arise from prior learning and experience.

The foregoing research includes a range of definitions of dynamic capabilities.[1] Although these definitions overlap, they capture different attributes of the phenomenon. In order to provide a solid foundation for subsequent work, we next provide a succinct and comprehensive definition of dynamic capabilities. Additionally, prior research suggests that dynamic capabilities serve two main functions with regard to

[1] Many other authors have utilized similar definitions to those reviewed here, including: Rosenbloom (2000), who highlights the importance of management leadership as a dynamic capability; Zott (2003), who focuses on dynamic capabilities as routine organizational processes that guide the evolution of firm resources and operational routines; Galunic and Eisenhardt (2001), who analyze dynamic capabilities as the processes through which managers manipulate resources into new configurations as markets change; Pisano (2000), who focuses on dynamic routines that regulate the search for improved routines; and Collis (1994), who includes strategic insights that derive from managerial or entrepreneurial capabilities.

the resource base of an organization: 1) search and selection, including resource creation, and 2) deployment. Although the deployment, or implementation, aspect of dynamic capabilities has tended to receive the most attention, search and selection are equally important. In what follows, we elaborate on these different functions of dynamic capabilities as well.

Dynamic Capability: Definition

Building on the prior literature, we provide this definition:

> *A* **dynamic capability** *is the capacity of an organization to purposefully create, extend, or modify its resource base.*

We recognize that a single phrase cannot include everything of importance with regard to dynamic capabilities. This definition, however, captures many of the critical features of dynamic capabilities. The words in this definition have specific meanings, as follow.

The "resource base" of an organization includes tangible, intangible, and human assets (or resources) as well as capabilities which the organization owns, controls, or has access to on a preferential basis. An organization need not own a resource or capability for it to comprise part of the resource base. For example, organizations do not own their employees. Organizations also have access to many other sorts of resources and capabilities on a preferential basis that they do not own. Preferential access through alliances to the resources and capabilities of others clearly falls into this category.

As our use of the term "resource base" implies, we consider capabilities to be "resources" in the most general sense of the word. By this we mean simply that resources are something that the organization can draw upon to accomplish its aims. This usage is consistent with the way in which the most widely used English dictionaries, including the Oxford, Merriam-Webster, and the American Heritage, define the word "resource."[2]

Since dynamic capabilities are themselves capabilities, it follows that dynamic capabilities comprise part of the resource base of an organization. Since dynamic capabilities create, modify, or extend the resource base of an organization and since dynamic capabilities also comprise part of this resource base, this implies that dynamic capabilities can modify or extend dynamic capabilities. At first glance, the latter statement may appear contradictory, but it is not. While it may be difficult for a particular dynamic capability to modify or extend itself (although we cannot rule out such a possibility), we can find many instances where one dynamic capability can and

[2] Consider the following definitions of *resource* according to these online dictionary sources: a) An action or thing resorted to (*Compact Oxford English Dictionary*); b) Means that can be used to cope with a difficult situation; the total means available to a company for increasing production or profit (*American Heritage*); c) A source of support: an available means (*Merriam-Webster*); d) A means of support (*Chambers*).

does alter another dynamic capability (see Helfat and Peteraf, 2003). For example, a dynamic capability for learning frequently helps to extend or modify dynamic as well as operational capabilities of all types. As another example, dynamic managerial capabilities create, modify, and extend many types of capabilities, including dynamic ones such as those for innovation, acquisition, and alliance.

The word "capacity" refers to the ability to perform a task in at least a minimally acceptable manner. Thus, if an organization has a dynamic capability, it can alter its resource base in at least some minimally satisfactory manner. (We return to the issue of what constitutes minimally acceptable performance of a task later in this chapter when we introduce the concept of "technical fitness.") How well the organization alters its resource base is another matter. Neither "capability" nor the related term "competence" implies outstanding ability, according to the *Merriam-Webster Dictionary of Synonyms and Antonyms* (1992). These terms imply only the potential for "adequate performance." In the definition of dynamic capability, we therefore are careful to exclude any sort of tautology with regard to superior performance. Change in the resource base of an organization implies only that the organization is doing something different, but not necessarily better, than before.

The term "capacity" has a second dimension as well. It implies that the function that a dynamic capability performs is repeatable and can be reliably executed to at least some extent. In other words, a dynamic capability consists of patterned and somewhat practiced activity. To qualify as a capability rather than simply as ad hoc problem solving, dynamic capabilities must contain some patterned element (Winter, 2003). It is therefore important to distinguish dynamic capability from a one-time idiosyncratic change to the resource base of an organization. We further distinguish dynamic capability from some sort of innate "talent" that does not derive from the patterned experience of the individuals involved in the decision making or deployment of the capability. Innate talent is not a capability, dynamic or otherwise.

The word "purposefully" also has a specific meaning in our definition. This word indicates that dynamic capabilities reflect some degree of intent, even if not fully explicit. We therefore distinguish dynamic (and other) capabilities from organizational routines, which consist of rote organizational activities that lack intent (Dosi, Nelson, and Winter, 2000). That is, the attribute of intentionality differentiates the patterned aspect of dynamic capabilities from rote organizational activity. The intentionality element also distinguishes dynamic capabilities from accident or luck. Intent does, however, incorporate emergent streams of activity (in the sense of Mintzberg and Waters, 1985) that have some implicit aim, even if not fully planned. Emergent activity within an organization, for example, includes the actions of managers lower down in the organization who make decisions in reaction to changes in the external environment, even when top management has not explicitly directed the managers to take these steps (Mintzberg and Waters, 1985).

As used here, the terms "capacity" and "purposeful" apply not only to dynamic capabilities, but also to operational capabilities that enable firms to perform their ongoing tasks of making a living. The words "create, extend, or modify" in the definition of dynamic capability, however, do not apply to operational capabilities. Unlike operational capabilities, which pertain to the current operations of an organization, dynamic capabilities alter the resource base of an organization. Such

alteration can take many forms. Organizations can create a resource base, or portions of a resource base. In using the word "create," we include all forms of resource creation in an organization, including obtaining new resources through acquisitions and alliances, as well as through innovation and entrepreneurial activity. Organizations also can extend their current resource base in the direction of more of the same, as for example when they seek to promote growth in an ongoing business. And organizations can modify their resource base in order to change their businesses, including in response to change in the external environment.

This definition of dynamic capabilities applies to not-for-profit as well as for-profit organizations. Both types of organizations have resource bases and both may face or initiate change. The definition also applies to newly formed as well as to established organizations. Almost by definition, however, new-to-the-world organizations typically have developed fewer patterned forms of behavior that underpin a capability (Helfat and Peteraf, 2003).

Our definition further incorporates the search and selection aspects of dynamic capabilities. The creation of resources through acquisitions, for example, fundamentally involves search for and selection of acquisition candidates. The creation of resources through new product development similarly involves search for and selection of new products to introduce. Similar logic applies to search and selection through alliances and to any number of other dynamic capabilities directed toward resource creation. Extension of the current resource base also requires an important selection decision regarding whether or not to enhance current assets and capabilities, and which ones to enhance. In addition, modification of a resource base requires search for and selection of any such modifications. As part of resource modification, a firm may choose to destroy part of its existing resource base by selling, closing, or discarding it. Dynamic capabilities apply to exit, not just expansion.

Search and selection entail decision making. Thus, we must incorporate decision making into our analysis, in addition to the change and building processes that support dynamic capabilities. Decision making sometimes occurs in groups, such as top management and other teams, and sometimes falls to individuals. Dynamic capabilities therefore pertain to both an organizational unit (e.g., a firm, a division, other sub-unit, or team) and to an individual decision maker within the organization. The role of individuals suggests the importance of understanding managerial decision making under conditions of change.

Individual dynamic capabilities come in many forms. For example, research on dynamic capabilities has referred to learning, product development, and acquisition as dynamic capabilities, to name a few. But when we seek to understand dynamic capabilities, we must move beyond general typologies of types of capabilities. Consider a dynamic capability of "learning." Learning about what and how? A capability of learning-by-doing differs substantially from learning by observing or learning from written material. To make progress, it is helpful to be as precise as possible about the nature of a particular dynamic capability before proceeding with analysis.

In addition, the context within which organizations utilize dynamic capabilities matters. To continue the example of learning, a capability of learning-by-doing about auto manufacturing at Toyota or Honda differs from a capability of learning-by-doing about supply chain logistics in discount retailing at Wal-Mart and Carrefour.

Dynamic capabilities not only have generic attributes, but also become tailored to the settings in which they function, including different industries, technologies, functional areas, and organizations. For example, consider Dell Computer. Dell has become the fastest growing and most profitable personal computer manufacturer as a result of its low-cost, efficient component assembly and delivery and its low-cost direct sales model. Dell's development of its process for manufacturing personal computers, however, depended on the modular nature of the technology that underlies the personal computer. Dell's development of its direct sales model depended on the growth of Internet usage among potential customers.

The Performance of Dynamic Capabilities and Fit

Having thus far defined dynamic capabilities at a conceptual level, we are now in a position to propose yardsticks for measuring how well or poorly dynamic capabilities perform. To date, we lack such yardsticks. As a starting point, we require a clear conceptualization of how to measure the performance of dynamic capabilities. Then we can begin to translate such a conceptualization into empirical metrics.

As just noted, dynamic capabilities are context dependent. We therefore require a yardstick that accounts for context-dependence. Our primary conceptual yardstick for measuring the performance of dynamic capabilities is what we term "evolutionary fitness."[3] Evolutionary fitness refers to how well a dynamic capability enables an organization to make a living by creating, extending, or modifying its resource base. The analogue to evolutionary fitness for operational capabilities is what has come to be called "external fit." Evolutionary fitness depends on the external "selection" environment: evolutionarily fit dynamic capabilities enable a firm to survive and perhaps grow, and to prosper in the marketplace. Thus, the extent of evolutionary fitness depends on how well the dynamic capabilities of an organization match the context in which the organization operates.

We can identify four important influences on the evolutionary fitness of a dynamic capability: quality, cost, market demand, and competition. We introduce the term "technical fitness" (see figure 1.1) to capture the idea of quality per unit of cost, an internal measure of capability performance. The other two factors of market demand and competition capture important environmental influences on evolutionary fitness (figure 1.2). Each of these factors affects the external fit of operational capabilities as well as the evolutionary fitness of dynamic capabilities.

The term "technical fitness" is introduced to denote how effectively a capability performs its intended function when normalized (divided) by its cost. Thus, technical

[3] This terminology suits our present purposes, but other terms may prove useful for different but related purposes. The population ecology literature has used the term "fitness" with reference to the ability of an organization to survive in the face of Darwinian-like selection by the external environment (see e.g., Hannan and Freeman, 1984). Winter (2005) uses the term "ecological fitness" to incorporate the impact on organizational survival (including net reproduction or growth rates) not only of the technical fitness of an entire organization, but also the technical fitness of individual attributes (e.g., capabilities) of organizations.

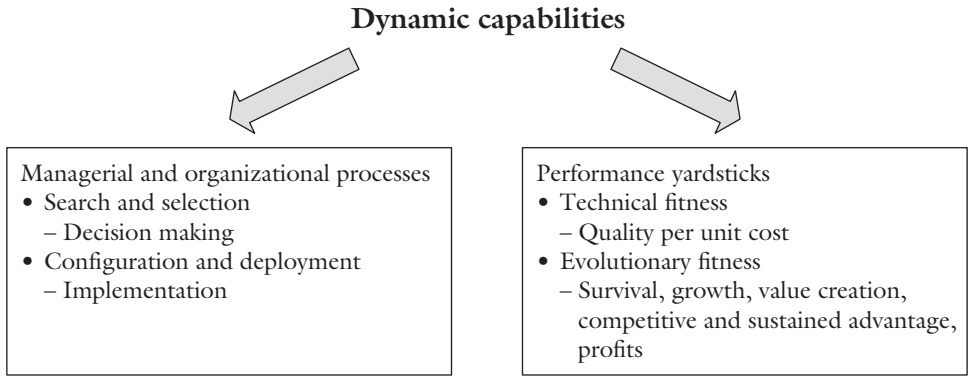

Figure 1.1 Dynamic capabilities: processes and performance yardsticks

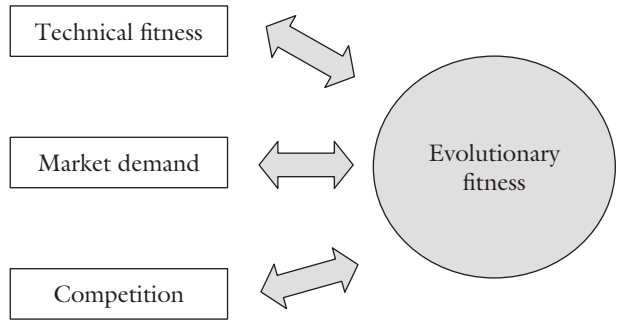

Figure 1.2 Factors that influence evolutionary fitness

fitness has two dimensions. The first comprises what we might think of as the quality dimension of a capability, regardless of the cost of creating and utilizing the capability. The second dimension of technical fitness is the cost of capability creation (or acquisition) and utilization. Quality and cost do not have a one-to-one relationship. Consider a well-known operational capability such as just-in-time delivery. Superior practitioners of this capability, such as Toyota, use just-in-time to accomplish both high quality (the right part at the right time and place) and low-cost delivery. In other instances, high costs accompany high quality. For example, studies of innovation from a wide variety of industries suggest that greater innovative output (a measure of the quality of innovative dynamic capability) is associated with higher research and development spending and therefore higher costs. Since quality and cost do not always move in the same direction, it is important to separate these two dimensions of performance.

Technical fitness also differs from market demand. The latter term refers to the quantity of output demanded at each price. Demand for a capability is what economists call a "derived demand," meaning that it depends on the demand for the end product or service to which the capability contributes. Thus, in evaluating the market demand component of evolutionary fitness for a dynamic capability, we would like

to know the strength of market demand for the output of the capability. Technical fitness and market demand do not necessarily go together. We can think of any number of high-quality products that consumers in the market simply did not want at the cost that it took to produce it. Firms can clearly overemphasize technical fitness. The well-known stories of the continued development of the steam locomotive and the Model A Ford in the face of dropping demand provide ample evidence of excessive attention to technical fitness.

Finally, the competitive environment, including competition from and cooperation with other firms, affects the evolutionary fitness of dynamic capabilities. If all firms have similar dynamic capabilities and there are many such firms in the market, this will increase competition. Greater competition will make it more difficult for firms to survive and prosper, and therefore will decrease evolutionary fitness. Conversely, when firms cooperate to build a market or product, including through alliances, the firms may jointly increase their evolutionary fitness. Thus, even when firms have technically fit capabilities, whether or not they make money depends on competition from and cooperation with other firms.

Measurement Scale for Fitness

The analysis thus far of evolutionary fitness raises several issues regarding the measurement of fitness that we next address. To begin, we investigate whether fitness can be negative. To answer this question, we first ask whether the technical fitness component of evolutionary fitness can have a negative value. In our definition of the term technical fitness, the answer is "no." We have in mind an analogy to a sports event such as a track race. The technical fitness measure of the individual's capability to run the track is the time that it takes the person to complete the event normalized (divided) by the cost of acquiring and using this capability. This value is always non-negative, since the time it takes to run the track and the amount of effort, time, and money spent to acquire and use the capability (the cost) are non-negative. Technical fitness is an absolute measure of capability. To have some bare minimum level of capability, technical fitness must exceed zero.[4] Thus, the yardstick of technical fitness maps directly onto the definition of a capability as reflecting some minimum capacity to perform a task.

To apply the concept of technical fitness accurately, it is important to define a capability as precisely as possible. Consider the mundane example of driving a car. If we define the capability simply as one of driving, this doesn't differentiate between driving a car with the steering wheel on the right-hand side of the car and driving a car with the wheel on the left-hand side. Most of us have high technical fitness for performing one of these tasks and weaker technical fitness for the other.

As a business example of technical fitness, consider a dynamic capability of new product development. A measure of technical fitness for this capability would

[4] Here we implicitly assume that the cost of capability acquisition and deployment exceeds zero. If these costs instead are zero, then we need not normalize the quality dimension of technical fitness by its cost.

include how well the new product performs its intended function. Attributes of product performance can be measured on an absolute scale and do not depend on the market context. Thus, in their pioneering work on innovation, Mansfield et al. (1971) distinguished the "technical" dimension of innovation success from the issue of whether or not, and to what extent, a new product will succeed in the marketplace.

The argument that the technical fitness of a capability exceeds zero does not rule out the possibility that one capability can have a negative "transfer effect" on the technical fitness of another capability. That is, we may observe a negative interaction between capabilities. The old saying about trying to walk and chew gum at the same time captures this general idea well. If chewing gum decreases the technical fitness of walking, then a person shouldn't do both at the same time. Even where there is a negative transfer effect of one capability on the technical fitness of another capability, however, the technical fitness of a capability cannot become negative.

Unlike technical fitness, evolutionary fitness can take on a negative value. To return to the driving example, low technical fitness of a dynamic capability of learning how to drive a car can result in a car crash and perhaps death – an extreme case of negative evolutionary fitness. Moreover, attempting to use a capability that has high technical fitness in one context, such as driving on the country roads of New Hampshire, in a different context, such as driving on the Daytona speedway, can create equally negative evolutionary fitness.

For organizations, one way of thinking about negative evolutionary fitness is to ask whether a firm would be willing to pay to get rid of a capability. As an economic matter, a firm would never intentionally invest in developing or purchasing a capability that had negative evolutionary fitness. But if the environment changes, the cost of maintaining a capability that no longer serves a useful purpose could become so great that the firm might be willing to pay to get rid of the capability. In order to preclude the possibility of negative evolutionary fitness, organizations would need the ability to mothball or get rid of capabilities without cost. To understand whether or not organizations can do this, we need to consider two issues. The first has to do with whether organizations can possess capabilities at zero cost without using them. The second has to do with the bundled nature of capabilities.

To begin with the first of these issues, unlike in standard economic theory, capabilities often have the property that they function less well if they are not used. Capabilities incorporate the knowledge of individuals and teams of how to perform a task or set of tasks. Most knowledge that resides within an organization has the property that it is remembered by doing. Thus, to maintain a capability and the knowledge that underpins the capability, an organization may need to use it. And using a capability entails costs. For example, consider a product development capability for a particular class of drugs. It might prove difficult to maintain this capability without incurring costs of retaining the researchers and having them continue to maintain their knowledge base through active use, even if the company does not wish to develop products in that particular drug class at present. Capability development in general has a strong element of irreversibility (Dierickx and Cool, 1991). As a result, firms may not be able to easily mothball capabilities at zero cost.

The bundled nature of a capability also may make it difficult to possess a capability without incurring some costs. A capability involves the integration of tangible assets, knowledge, and skills in order to perform a task. For example, a capability of auto assembly utilizes assembly line workers, engineers, computer operators, and their knowledge, as well as the procedures that they follow when assembling a car. Moreover, this capability is useless without the requisite physical assets such as an auto assembly plant. Because a capability is an integrated bundle, it can prove costly to disentangle the constituent parts from one another. For example, suppose that the environment changes such that a capability as an integrated whole no longer contributes to evolutionary fitness, but parts of the capability retain their usefulness in the same or another application. The firm might be willing to pay something to untangle the bundle and extract the value of the useful parts of the capability. In essence, this willingness to pay for unbundling means that a capability can have negative evolutionary fitness.

Relationship of Technical and Evolutionary Fitness

Dynamic capabilities need not perform equally well on both the technical and evolutionary fitness dimensions. A firm might make a very good living and therefore have high evolutionary fitness if it operates in a munificent market environment, despite having less technically fit capabilities. For example, as the personal computer (PC) market took off, many new firms, such as Gateway, entered and prospered for a time. But as the market became more competitive, Gateway could not create or extend or modify its resources successfully. In contrast, competing in the same low-end segment of the PC market as Gateway, Dell proved able to expand its PC business and grow. The Dell example suggests that excellent technical fitness also may enable a firm to prevail even in a less munificent environment.

The Dell versus Gateway example illustrates another important point concerning competition and relative fitness: the technical fitness of a firm's dynamic capabilities relative to the technical fitness of the capabilities of the firm's competitors can affect the evolutionary fitness of the firm's capabilities. If technical fitness is poor relative to that of competitors, competitive pressures will make it harder for the firm to profit from its dynamic capabilities. This is particularly true in a less munificent environment such as a maturing industry. Once again consider the example of Dell Computer. Other companies in the personal computer industry have tried to develop a just-in-time assembly process similar to Dell's, but have had great difficulty doing this nearly as effectively as Dell. In more formal terms, Dell's competitors have less technically fit dynamic capabilities for developing just-in-time manufacturing processes, allowing Dell to grow and profit with greater evolutionary fitness.

When we think about the Dell example, it becomes clear that by virtue of the technical fitness of the company's dynamic and operational capabilities, Dell had a strong impact on the evolutionary fitness of its capabilities. Dell had a clear strategy of using the superior technical fitness of its capabilities to push out less cost-efficient competitors and dominate the PC market. As a consequence, Dell's evolutionary fitness increased.

As Dell's experience illustrates, evolutionary fitness can be endogenous to technical fitness. Market leaders in particular have opportunities to use technically fit capabilities to influence their environment in a manner that promotes the evolutionary fitness of their capabilities. Intel, for example, used its dynamic innovation capabilities to continually preempt competitors by introducing new generations of microprocessors, thus sustaining its evolutionary fitness in the microprocessor market for many years. As another example, Microsoft has used its software development capability to create suites of applications software that it has used to influence its evolutionary fitness in the operating systems market.

Firms do not have unlimited ability to influence the evolutionary fitness of their capabilities, however. Even firms that dominate their markets operate within environmental constraints. To continue with the Intel example, the company chose to repeatedly cannibalize its current generation of microprocessors because it faced the threat of competition (potential and actual). Moreover, Intel eventually encountered limits to customer demand for new generations of microprocessors – that affected the firm's evolutionary fitness in terms of profitability and growth. Microsoft, meanwhile, currently faces challenges from alternatives, such as Linux, that threaten to affect Microsoft's evolutionary fitness in the market for operating systems.

Although firms have the potential to use the technical fitness of their capabilities to influence evolutionary fitness, this potential does not guarantee success. Once again consider dynamic capabilities for innovation, in this case in the auto industry. When developing a hybrid car, General Motors opted for hydrogen fuel, betting that the company could influence its environment in the direction of hydrogen fuel. The United States, however, currently has no infrastructure to deliver and sell hydrogen fuel to the average consumer; nor does the development of such an infrastructure seem imminent. General Motors has attempted to shape the infrastructure through alliances with companies such as Shell, but has not yet succeeded.

Conversely, Toyota viewed the environment as largely exogenous, opting to develop a hybrid car powered by a combination of widely available gasoline fuel and electricity. Toyota's approach has prevailed, at least initially. Not only does this example illustrate the limits to the endogeneity of evolutionary fitness, but it also illustrates once again the importance of managerial decision making with regard to search and selection. Firms whose managers better understand the extent to which an organization can use its dynamic capabilities to influence its environment will end up with greater evolutionary fitness.

Evolutionary Fitness and Market Performance

Thus far we have introduced the concept of evolutionary fitness and linked it to technical fitness. We next elaborate on two aspects of evolutionary fitness in two ways. First, we tie the concept of evolutionary fitness to established concepts of performance in economics and strategy. We then discuss potential empirical metrics for the evolutionary fitness of dynamic capabilities.

Economic logic underlies the most commonly used conceptual measures of firm performance: value creation (willingness-to-pay minus cost), competitive advantage

- Complementary perspectives
- Dynamic capabilities are part of the overall resource and capability base
- But dynamic capabilities are directed toward strategic change
  - What
  - How
  - Performance outcomes

Figure 1.3 Dynamic capabilities and the resource-based view

(relative value creation), and sustained competitive advantage. These concepts are directly linked to one another. To clarify these linkages, we draw on the "resource-based view" of the firm (Wernerfelt, 1984; Barney, 1991; Peteraf, 1993; Amit and Schoemaker, 1993). As noted earlier, like operational capabilities, dynamic capabilities are part of the resource base of an organization. From this perspective, we can use resource-based logic to analyze dynamic capabilities as a possible source of value creation and of competitive and sustained advantage (figure 1.3). To illustrate the analysis, we use an example of a dynamic capability that is critical to an organization's performance, such as the drug development capabilities of a pharmaceutical company.[5]

As a general principle, competitive advantage depends on whether a resource creates relatively more value, defined as willingness-to-pay minus costs, than the comparable resources of competing organizations (Peteraf and Barney, 2003). To understand competitive advantage from dynamic capabilities, we therefore must first ask how much value a dynamic capability creates. Then we can evaluate value creation relative to the dynamic capabilities of other organizations.

Dynamic capabilities create value by conferring upon an organization the ability to perform a particular function, by which we mean a purposeful set of actions. The set of actions could include a wide array of activities, but the function is specific to a clear objective. In the case of drug development capability, the objective is to develop drugs that fulfill an unmet medical need.

The value of a dynamic capability depends on whether or not its function creates value and to what degree. The value of a function is always context dependent. It depends in part on the environmental need (in terms of derived demand and, therefore, willingness-to-pay) for the function to be performed and on any environmental constraints. The value of a dynamic capability varies with time and circumstance, as environmental opportunities change. Environments can change in such a way as to either increase or decrease the value of a particular dynamic capability. Regulatory proscription of drug development activities, for example, would render a firm's innovation capabilities of low value, even if the firm has the technical fitness to

[5] This method may help to resolve some causal ambiguity, although it will not be useful if the causal ambiguity is extreme.

perform such functions in a highly effective manner. Conversely, deregulation of the US banking industry increased the value of certain replication capabilities involved in expanding the number of bank branches within states and across state and national boundaries. In addition, deregulation that allowed national banking increased the value of acquisition-based dynamic capabilities. Banks that developed such capabilities quickly, such as Bank One, gained substantial competitive advantage.

Even when the environmental need for a function is high, a dynamic capability to perform this function may create only passable value. That is, although a dynamic capability may have some degree of value in that it allows an organization to perform some needed function in an adequate manner, the value created may not be high. Moreover, even if a dynamic capability creates high value, the firm may gain no real advantage if it creates no more value than other firms. For example, if all pharmaceutical firms have drug development capabilities that create comparable value, they cannot be a source of competitive advantage. If there is heterogeneity between organizations in the technical fitness of a capability, however, then the dynamic capabilities of some firms may lead to a competitive advantage. In our pharmaceutical company example, some firms may have specialized knowledge of certain therapeutic classes of drugs. If this makes it possible for companies with this specialized knowledge to develop new drugs more efficiently and effectively than firms with less specialized capabilities, the specialized firms will have a competitive advantage in drug development of this type.

As the discussion above suggests, dynamic capabilities do not necessarily lead to competitive advantage. Several conditions must be met before a dynamic capability can confer a competitive advantage. First, there must be heterogeneity in the technical fitness of dynamic capabilities of the same type (Barney, 1991; Peteraf, 1993). Second, there must be demand for their services. Since capabilities only have value in use (or option value for later use), competitive advantage comes from applying the capabilities. Third, dynamic capabilities must be rare in relation to the demand for their services (Peteraf and Barney, 2003). Otherwise, competition between firms with the same dynamic capabilities would level the playing field. Similarly, if a dynamic capability of a different type can meet demand and can create comparable value, no competitive advantage derives from applying the first type of capability, even if it is rare. The two types of capabilities would be equifinal substitutes for one another (see also Eisenhardt and Martin, 2000). Peteraf and Bergen (2003) make a similar argument about how resource substitutes can erode value.

The question of whether the competitive advantage of a dynamic capability is sustainable is yet another matter. Answering this question requires consideration of competitive factors, environmental factors, and internal factors. In the resource-based framework, a *sustainable* advantage is one that persists in the face of competitive efforts to duplicate the advantage. Sustainability derives from barriers to imitation and/or substitution that prevent rival firms from matching the value created by a capability. The types of isolating mechanisms that Rumelt (1984) lists apply to dynamic capabilities just as they do to other types of resources and capabilities.

Since the advantage derived from deploying a capability depends on the need for its function in the external environment, the question of sustainability necessarily concerns environmental matters as well. In relatively stable environments, a

competitive advantage can persist, abstracting from the imitative efforts of competitors.[6] In more turbulent environments, the need for some previously valuable functions can diminish, detracting from the value gained from deploying the capability. In a high-velocity environment, the fact that imitation barriers prevent duplication of a capability's functionality may be immaterial if the capability no longer serves a need. Certainly many dynamic capabilities retain their value in turbulent environments as well. For example, capabilities for environmental scanning retain or even gain value when the environment changes. But as a general proposition, the sustainability of competitive advantage can depend on the extent of stability in the external environment, separate from competitive factors.

A third set of factors affecting the sustainability of an advantage arises within the organization. Abstracting from environmental need, how a capability is managed can affect both the level and the sustainability of its value. Dynamic capabilities can attain higher and more lasting value if firms make appropriate investments in improving and maintaining the capabilities. As an example, consider the long-term focus of companies like Sharp with respect to their R&D capabilities, as well as the efforts that companies such as 3M make in constantly reinforcing their innovation and experimentation activities. On the other hand, mismanagement, lack of investment, and infrequent use can degrade a capability, thereby limiting the sustainability of any prior advantage. As emphasized earlier, managerial decision making with regard to asset selection and deployment affects the evolutionary fitness of dynamic capabilities.

The strategic management literature often uses the term "rents" as yet another indicator of performance. Sometimes researchers have used this term in an imprecise (and even inaccurate) fashion to denote generally high profitability. Technically, however, the term "rent" has many different definitions, depending on the type of rent in question. (See Peteraf (1994) for a comprehensive glossary of terms, as well as additional explanation of some of the terminology in Rumelt (1987) and Winter (1995).) Due to the complexity of the rent concept, we do not discuss it in more detail here, other than to note that rents also can serve as a measure of evolutionary fitness.

The foregoing discussion explains how traditional measures of performance can be applied to dynamic capabilities. With the exception of sustained competitive advantage, however, these measures do not have a time dimension that explicitly incorporates the dynamic aspect of evolutionary fitness. For this reason, we supplement these traditional measures of performance with two additional measures of evolutionary fitness: survival and growth. Survival provides a clear measure of whether a firm can adapt to its external environment at some minimally satisfactory level. Long-term survival implies success in maintaining evolutionary fitness. The second measure of organizational growth presupposes survival and incorporates the extent of evolutionary fitness in the form of increased organizational size over time, whether in terms of revenues, assets, or other measures of size. As metrics for evolutionary fitness, survival and growth lend themselves directly to empirical measurement. Empirically measuring value creation as well as competitive and sustained advantage is more difficult, as we next explain.

[6] Of course the more stable the environment, the less important are dynamic capabilities, which are directed toward change.

Empirical Metrics for Evolutionary Fitness

Generally, researchers have used accounting and stock market measures of financial performance as empirical proxies for value creation and relative advantage (competitive or sustained). Use of financial performance to measure value creation, however, has many problems that current empirical research has yet to address effectively. Technically, economic value equals willingness-to-pay (rather than price) minus the opportunity (rather than the actual) cost of inputs. Empirical measures of financial performance that reflect some aspect of economic return, however, depend on prices received for goods and services rather than on willingness-to-pay for these same goods and services. In addition, as for any other resource, costs to an organization may include returns paid to providers of dynamic capabilities (see Castanias and Helfat, 1991, 2001; Coff, 1999), potentially overstating opportunity cost.

In general, empirical measures of financial performance tend to understate value creation from resources. What we need to know is whether, and to what extent, this measurement bias affects comparisons of financial performance between firms at a point in time (in order to assess current competitive advantage) and over time (in order to assess sustained competitive advantage). As a first step toward further understanding of potential biases, in chapter 7 we examine some of the measurement issues raised by using accounting measures of performance to assess the evolutionary fitness of dynamic capabilities.

Using survival as a measure of evolutionary fitness provides a much clearer benchmark than do financial measures of performance. Although many academic studies have used firm survival as a dependent variable, the vast majority of them do not include explanatory variables that either directly measure or serve as a proxy for dynamic capabilities.

Such omission creates at least two problems. First, at best, extant studies of firm survival cannot provide much help in understanding dynamic capabilities. Secondly, at worst, the studies may incorrectly attribute organizational survival to only the explanatory factors included in the analyses. Without explicitly taking dynamic capabilities into account, it is difficult to know whether the included explanatory factors might be correlated with or endogenous to dynamic capabilities, and therefore serve as proxies for dynamic capabilities. It also is difficult to know whether the included explanatory factors might lose their significance if dynamic capabilities were incorporated into the studies.

Although survival provides a clear empirical measure of evolutionary fitness, it does not tell us much about how well an organization is surviving, other than the length of time since birth. Some long-lived organizations continue to survive in states of near permanent failure by regularly convincing constituents to contribute resources that allow them to linger on. Ongoing public support for unprofitable airlines in the US, Europe, and elsewhere offers one such example. Such "failing survivors" typically do not grow on any meaningful dimension, however.

Firms that not only survive but also prosper tend to grow. Hence, the growth of an organization provides a measure of the extent of evolutionary fitness. Sustained growth in particular suggests that the organization consistently demonstrates

evolutionary fitness. Growth as a measure of organizational performance also has been underutilized in most research on strategy. Moreover, it is a measure that is especially appropriate for an analysis of dynamic capabilities, which sometimes are directed toward growth. Singh and Mitchell (2005), for instance, offer an example of the opportunity to study how alliance-based dynamic capabilities influence growth. For all of these reasons, chapter 7 examines what we can learn from empirical evidence regarding sustained firm growth. As we explain, growth is not an appropriate measure of performance for all types of dynamic capabilities and in all situations. It does, however, provide an extremely useful performance measure in certain environmental contexts.

Implications

In this chapter, we have provided a general framework to serve as a basis for future research. We view this as the start to a complex research agenda, of which we can only scratch the surface. In addition to providing a succinct definition of dynamic capabilities and clarifying several of their attributes, we have introduced the concepts

Theoretical underpinnings	Chapter 1	Foundations
	Chapter 2	Management
	Chapter 3	Organizational processes
	Chapter 8	Extensions
Empirical applications	Chapter 4	Top executives • Management and organizational processes • Acquisitions, innovation, and internal change
	Chapter 5	Relational capabilities • Organizational processes • Alliances
	Chapter 6	Acquisition-based dynamic capabilities • Organizational processes • Cross-border acquisitions
	Chapter 7	Firm growth • Evolutionary fitness • Potential avenues for growth include alliances, acquisitions, and internal growth

Figure 1.4 Dynamic capabilities: theoretical underpinnings and empirical applications

of evolutionary fitness and technical fitness. We also brought interactions into the analysis, including potential negative transfer effects on technical fitness as well as potential endogeneity of evolutionary fitness with regard to technical fitness. We then dealt at some length with the measurement of evolutionary and technical fitness, and the potential for negative values of evolutionary fitness. The analysis further linked evolutionary fitness to more traditional measures of economic performance, both conceptual and empirical.

The next two chapters of this book elaborate on two aspects of dynamic capabilities that have received less sustained attention in prior research but that are fundamental to an improved empirical understanding of dynamic capabilities, namely, managerial and organizational processes. Chapter 2 first provides an economic analysis of managers and dynamic capabilities, arguing that the economic theory of the firm must take into account the importance of managers who orchestrate strategic change. Chapter 3 then focuses on the organizational processes that underpin dynamic capabilities. This chapter explains the linkages between research on dynamic capabilities and research on what has been termed "strategy process," as well as the potential for synergies between these two areas of research. Subsequent chapters then discuss empirical applications of these ideas. Chapter 4 provides empirical evidence regarding managerial capabilities and strategic decisions, including the impact of managerial decisions on technical and evolutionary fitness. Chapter 5 deals with relational capabilities in alliances, focusing in particular on the organizational processes that underpin effective relational capabilities. Chapter 6 then analyzes relational capabilities in the form of acquisition-based dynamic capabilities, focusing on the acquisition of new resources in geographically distant locations. Both alliances and acquisitions are possible routes to growth, the subject of chapter 7. This chapter analyzes the empirical evidence on growth persistence and draws implications regarding evolutionary fitness of dynamic capabilities. The final chapter draws together many of the themes in the book and suggests fruitful avenues for additional research.

Chapter 2

Managers, Markets, and Dynamic Capabilities

Introduction

The concept of dynamic capabilities highlights organizational and managerial competences. Key ingredients of dynamic capabilities include organizational processes directed toward learning and innovation, the basic manner in which a business is designed, as well as the decision frames and heuristics that inform firms' investment choices over time. Once assets come within the orbit of management rather than the market, their effective utilization and orchestration becomes essential. Indeed, orchestration directed at achieving new combinations and co-alignment of assets is central to the dynamic capabilities framework. Such orchestration requires astute decision making and entrepreneurial capacity. Managers play a critical role in such orchestration and therefore have particular importance for dynamic capabilities.

Dynamic capabilities of all types perform an economic function: they affect how well business enterprises function within an economic system. An analysis of dynamic capabilities would be incomplete if it did not address this economic function. In this chapter, we analyze what economic theory and logic does and does not tell us about (strategic) managers in general and the asset orchestration function that they perform in particular. We also suggest promising directions for an economic theory of the firm that incorporates the dynamic capabilities of managers in a central way. This economic approach to understanding the managerial processes that underpin dynamic capabilities complements the following chapter, which focuses on organizational research on managerial and organizational processes. Together these two chapters provide a backdrop for the empirical analyses of managerial and organizational dynamic capabilities in subsequent chapters.

Understanding the Fundamental Economic Problems "Solved" by Strategic Managers

It is an understatement to say that economic theory underplays the role of the manager; in fact, the strategic manager simply does not exist in any recognizable

form. True, shareholders appoint agents (managers) to stewardship roles in the enterprise, but economic theory says little about what executives actually do and the economic function, if any, that they perform.[1] Sometimes executives manage workers through the employment relationship; but otherwise the executive in economic theory is rather a lackluster being who is almost completely invisible, and doesn't really perform an economic function, other than standing in for the owner/investor.

At least one well-known economist has commented on this lacuna. William Baumol notes that in economic theory:

> "There is no room for enterprise or initiative. The management group becomes a passive calculator that reacts mechanically to changes imposed on it by fortuitous external developments over which it does not exert, and does not even attempt to exert, any influence. One hears of no clever ruses, ingenious schemes, brilliant innovations, of no charisma or of any of the other stuff of which outstanding entrepreneurship is made; one does not hear of them because there is no way in which they can fit into the model." (Baumol, 1968: 67)

The cavalier treatment of entrepreneurship and management in economics stems in part from a failure to understand the importance of managing organizations, and the absence of well-developed and well-functioning markets for intangibles and other idiosyncratic assets, particularly those of the co-specialized variety. Because markets are often viewed, at least in the neoclassical paradigm, as working rather frictionlessly, the special role that managers play in transactions and in asset deployment, business model design, strategy formulation and implementation, and leadership seems quite unnecessary. In a perfectly competitive world with homogeneous inputs and outputs and technology that are ubiquitously available for all, the functions identified above aren't needed. The manager is left simply as a calculator, setting marginal revenue equal to marginal cost. Of course, if this is all managers do, a reasonably simple software program and a set of rules for the organization would void the need for managers and management.

On closer examination, however, executive management performs several distinctive and important roles, which help the economic system overcome special problems, problems that might otherwise result in "market failures." That is, but for the actions of astute managers, competitive markets wouldn't function very well. Moreover, business organizations couldn't function either. Seven particular classes of economic functions can be assigned in economic theory to management. They are: 1) orchestrating co-specialized assets; 2) selecting organizational/governance modes and associated incentive systems; 3) designing business models; 4) nurturing change (and innovation) processes/routines; 5) making investment choices; 6) providing leadership, vision, and motivation to employees; and 7) designing and implementing controls and basic operations. None of these functions can be performed well, if at

[1] Oliver Williamson has noted that supplying a coherent theory of effective coordination and resource allocation, and of entrepreneurship and technical progress is a "tall order" (Williamson, 1991: 19). This chapter endeavors to make progress towards this goal, which has important ramifications for management theory and the theory of the firm. It implies a very different set of economic activities as the essence of the enterprise than the literature has heretofore featured.

all, by computers or by naked market processes. Managers are needed to make markets work well, and to make organizations function properly.

The first six classes of decisions are "strategic" and/or entrepreneurial and must be performed astutely for firms to compete effectively. They relate to issues of strategic "fit" between the company and its competitive environment, as well as between and amongst the assets that comprise the resource base of the firm. We do not discuss the seventh set of decisions at length in this chapter, as it focuses on more operational issues. The management skills required for successful execution of operational decisions are conceptually different from those required for strategic management. The fact that they are not at the essential core of this book does not make them unimportant. Operational capabilities can provide a strong point of differentiation and advantage for a particular company. Nevertheless, we largely ignore these considerations in this chapter, which focuses on strategic management in general and decisions around resource allocation and asset alignment in particular.

If managers did not perform strategic functions within and among business enterprises, the entire adjustment and resource allocation function in the economy would fall on the price system. However, it is also generally accepted that a complete set of contingent claims markets does not exist, and even when markets do exist, trading volumes are often thin. If certain assets are rarely if ever bought and sold, then how can the economic system be restructured and assets brought into alignment?

The economics literature contains some general recognition that "internal organization" solves the problem. Exactly how internal organization solves the problem is never explained very well, if at all. Williamson and others have suggested that, with internal organization, "managerial fiat" allocates resources. Unfortunately, the extant literature doesn't go much further. In this chapter, we seek to identify the functions of the executive that matter in a fundamental economic sense, and with regard to dynamic capabilities in particular. In this manner, we may better understand the distinctive role of managerial activity.

Asset Orchestration (In the Face of Thin Markets)

In early management scholarship, Chester Barnard and others stressed the role of management in limiting conflict and effectuating cooperation inside the firm. Barnard saw formal organization and the business firm as a system of consciously coordinated activities of two or more persons. In Barnard's view, achieving successful cooperation should by no means be taken for granted, as it is by no means the norm. As he notes, "most cooperation fails in the attempt, or dies in infancy, or is short lived" (Barnard, 1938: 5). The particular functions of management that Barnard recognizes include control, supervision, and administration (Barnard, 1938: 6), which are operational activities that relate to the business of keeping an organization functioning. Although these (managerial) functions must be performed, they ignore the importance of the strategic functions that managers perform in dynamic environments.[2]

[2] It is perhaps of interest to note that Barnard's perspectives were no doubt shaped by his experience as an executive in the Bell System. Barnard served as President of New Jersey Bell. At the time, it was a regulated telephone company.

Today, many of the firm's assets are intangibles, and flexibility, entrepreneurship, and adjustment and adaptation to competition and changing consumer needs is paramount. We address these functions in more detail below.

General considerations regarding asset orchestration

One of the most touted virtues of a private enterprise economy is its ability to achieve the coordination of disparate actors external to the enterprise itself – both consumers and producers – without central planners (Hayek, 1945). The price system of course serves as the mechanism that supposedly facilitates coordination. Prices act as signals of scarcity or abundance. Consumers adjust to price increases by reducing consumption; producers react to the same signal by increasing production, and the market clears. This simple mechanism means that a good deal of resource allocation can take place via market mechanisms – quickly and efficiently. Prices rise and resources will move to the higher valued activity; ditto when prices fall. Commodity markets usually behave in this fashion; and if all markets were commodity like, then the role and importance of (strategic) management would be limited.

A very large proportion of goods, assets, and services, however, are not exchanged in open, organized, and well-developed markets. For many transactions – forward, contingent, term, and spot – markets do not exist or are occasional at best. In these circumstances, markets are "thin," offering limited liquidity for asset holders. Assets are not automatically allocated to their first best use. As we discuss below, this creates the opportunity for managers to use the firm's financial and other resources to build value inside firms. These functions are also socially desirable in most instances because they assist in aligning certain types of complementary assets – alignment which is necessary for systemic innovation and enhanced competition. If the economic system fails in these functions, firm performance and the economy at large will suffer.

Thin markets are exposed to transactional complexity and contractual hazards; or even if not exposed to hazards, may experience liquidity discounts – the difference between "bid" and "ask" prices is likely to be large. Frequently, transactions in these markets don't occur at all because the services that an idiosyncratic asset provides may be difficult to describe, to define, and to access. If the asset is a competence, the valuation may be difficult to assess if the value of the competence depends on complementary and/or co-specialized assets owned by the seller, the buyer, or third parties. All of this is to say that certain assets tend to be built rather than bought (because there may not be a market) and to be deployed and redeployed inside the firm rather than sold (because sale in a market is not a good way to extract value). Because assets are bundled together and often tightly linked inside incumbent firms, it may be difficult to obtain assets in the desired configurations through asset purchase or sale in mergers and acquisitions. This is not to say that mergers and acquisitions (M&A) are not an important component of asset reconfiguration. Indeed, Capron, Dussauge, and Mitchell (1998) argue that market failures that constrain the exchange of discrete resources create incentives to use mergers and acquisitions in order to accomplish asset reconfiguration. Put differently, asset purchases/sales are often

infeasible, absent purchasing or selling corporate entities in which many such assets are bundled together.

A striking example of thin or nonexistent markets is the market for know-how and for intangible assets more generally. As Teece (1981) noted more than two decades ago, "unassisted markets are seriously faulted as institutional devices for facilitating trading in many kinds of technological and managerial know-how. The imperfections in the market for know-how for the most part can be traced to the nature of the commodity in question." The same is true with respect to intellectual property and other intangibles. Mutually beneficial trades frequently don't happen because the property rights may be poorly defined (fuzzy),[3] the asset difficult to transfer, or its use difficult to meter. When arm's-length market trading is impaired, internal resource allocation and asset transfer within the firm achieves greater significance. This is of course a managerially directed activity.

Accordingly, resource allocation inside the firm substitutes and complements resource allocation by markets when markets for particular assets are thin or nonexistent. Relatedly, because of co-specialization, or because of differing perceptions about future demand and technological innovation, or because of differing asset positions of buyer and seller, there may be wide disparities between how the existing owner of an asset values it and the manner in which another agent or potential owner might value it.

Because many intangible assets are idiosyncratic, they may be more valuable when they can co-evolve in a coordinated way with other assets. The ability to assemble unique configurations of co-specialized assets therefore can enhance value. In short, managers often create great value by assembling particular constellations of assets inside an enterprise, because by employing such assets, they frequently can produce highly differentiated and innovative goods and services that consumers want. This process of assembling and orchestrating particular constellations of assets for economic gain is a fundamental function of management.

Effectuating systemic innovation (Teece, 2000) provides a good example of asset orchestration. Systemic innovation occurs when deep co-specialization exists between parts of a system requiring in turn the tight coordination across subsystems for innovation to occur. Systemic innovation contrasts with autonomous innovation, in which technological development can occur without immediate and direct coordination with other elements of a system.

Consider the automobile. New types of tires (such as tubeless tires, and later radial tires) have over time been developed without immediate regard for other developments in the automobile. Notwithstanding that some "components" can be developed independent of other parts of the system, it is frequently the case that innovation in one component will facilitate innovation elsewhere. For example, radial tires permitted cars to be designed for higher speeds, without compromising safety.

Systemic innovation, on the other hand, almost always requires common managerial control of the parts for success, since innovation activity must be highly coordinated

[3] See Teece (2000) for a discussion of the fuzzy boundaries associated with intellectual property rights.

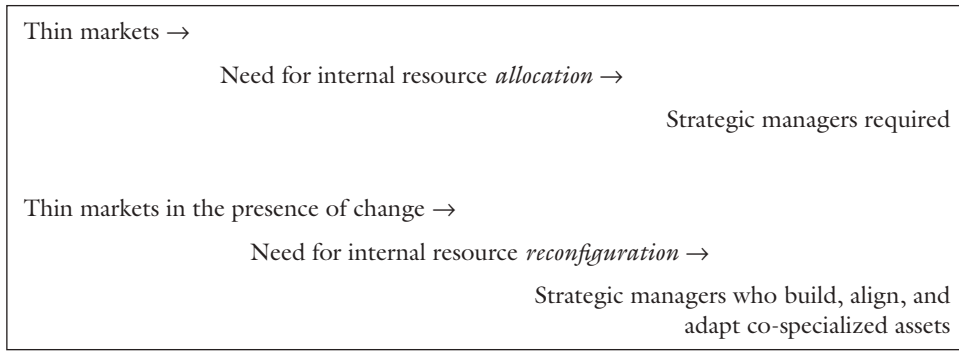

Figure 2.1 Thin markets and strategic managers

across subsystems. Contractual mechanisms will rarely suffice to achieve the necessary coordination between or amongst firms (Teece, 1980; 1988b). For instance, the Lockheed L1011 wide-bodied aircraft's late entry into the market was caused by the inability of Rolls-Royce to develop the RB211 engine on time – and the aircraft design was co-specialized to the new, still undeveloped, engine. Indeed, the failure of Rolls-Royce to develop the RB211 on time was a major contributing factor not only to the slow launch of the L1011, but also to the bankruptcy of the Lockheed Corporation.

In short, fuzzy property rights (as with intangibles), appropriability issues, and co-specialization are among the reasons why asset markets can be thin. This renders market transactions difficult. Whenever this occurs, managers have a distinctive role that differs from the role of traders and arbitrageurs.

Asset Orchestration Versus Coordination and Adaptation

Coordination as an economic problem is only necessary because of change (Hayek, 1945). In a static environment, a short period of "set up" would be required to organize economic activity; but absent change in consumer tastes or technology, economic agents (both traders and managers) would sort out the optimal flows of goods and services (together with methods of production). Thereafter, there would be no need for their services.

Now introduce change. If there were a complete set of forward and contingent claims markets, adjustments would occur automatically; absent a complete set of futures and contingent claims markets, there is the need for economic agents to engage in trading activities, and for managers/entrepreneurs to "integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece, Pisano, and Shuen, 1997). That is why what Adner and Helfat (2003) termed "dynamic managerial capabilities" hold particular importance.

Dynamic managerial capability *is the capacity of managers to purposefully create, extend, or modify the resource base of an organization.*

Dynamic managerial capabilities include **asset orchestration**.

Coordinating and adapting effectively to changing environments (Cyert and March, 1963) is an important managerial function that is an element of a firm's dynamic capabilities. Barnard (1938) and Richardson (1960) developed this theme early. Chester Barnard viewed the firm fundamentally as a structure to achieve coordination and adaptation. But as Williamson (1995) observes, Barnard did not compare the firm with markets in terms of their coordinative or adaptive capabilities. As noted above, one key difference is that the firm, by employing astute managers and good incentive design, can achieve coordination and adaptation with respect to nontraded or thinly traded assets; the market on the other hand enables rapid adaptation with respect to assets that are actively traded in thick markets.

However, the strategic management function involves much more than "coordination" and "adaptation." The functions of the (strategic) executive go well beyond what Barnard and Williamson identified. In particular, "coordination" and "adaptation" as management functions do not fully capture the essence of critical managerial activity in dynamic markets. Such managerial activity involves, inter alia, orchestrating complementary and co-specialized assets, inventing and implementing new business models, and making astute investment choices (including with regard to R&D and M&A) in situations of uncertainty and ambiguity.[4] Nor do traditional perspectives convey the importance of asset alignment, opportunity identification, and accessing critical co-specialized assets. These are all important managerial functions that create value.

Put another way, the importance of strategic management stems in a fundamental sense from what can be thought of as "market failures."[5] The "market failures" arise not just from high transaction costs and contractual incompleteness.[6] Rather, they have to do with the thinness of asset markets, and the need to identify, "build," align, adapt, and coordinate activities and assets, especially complementary/co-specialized assets. Managers perform these important functions in the economic system.

G. B. Richardson (1960) has remarked on the information problems associated with achieving coordination and investment decisions. However, he focused on industry-level coordination of investment. He identified situations where limited information about competitors' investment decisions may impede efficient investment. In contrast, the essential coordination task identified here involves assembling and reassembling often idiosyncratic firm assets (including through strategic alliances with other firms).

[4] Milgrom and Roberts (1990: 525) also note that "non-convexities and significant complementarities provide a reason for explicit coordination between functions such as marketing and production."

[5] The use of the term "market failure" is only relative to the theoretical norm of absolute static and dynamic efficiency. Of course, a (private) enterprise economic system as a whole achieves an efficient allocation of resources, as strategic managers and the organization they lead are an inherent part of the economic system. However, the framework does highlight the fact that management systems and corporate governance must function well for a private enterprise market-oriented system to function well.

[6] To the extent that transaction costs are relevant, they are of the dynamic variety (see Langlois, 1992).

Asset orchestration
→ A fundamental function of management
→ Particularly important in dynamic settings
→ Assembling and "orchestrating" configurations of co-specialized assets

Needless to say, the proficient achievement of the necessary coordination by no means occurs automatically. Decision makers need information about changing consumer needs and technology. Such information is not always available; or if it is available, decision makers must collect information, analyze it, synthesize it, and act on it inside the firm. Situations are dealt with in many ways, sometimes by creating rules, which specify how the organization will respond to the observations made (March and Simon, 1958). If this path is chosen, then rules may become codified and routinely applied (Casson, 2000: 129) whenever certain changes are detected.[7] However, such rules need to be periodically revised, which entails dynamic capabilities.

The coordinating and resource allocating activities performed by managers shape markets[8] as much as markets shape the business enterprise (Chandler, 1990; Simon, 1993). Put simply, the business enterprise and markets co-evolve. Managers shape this co-evolution. The need for asset coordination and orchestration and associated investment choices is a fundamental economic problem that the firm's managers help address. In this regard, the evolutionary fitness of a business enterprise may be endogenous to its technical fitness. By using technically proficient asset orchestration capabilities, managers may be able to shape the external environment to the firm's advantage, leading to evolutionary fitness.

The emergence/development of competitive markets is thus important for strategic management. As markets become developed and highly efficient, managers have less room to build competitive advantage (Barney, 1986). The emergence of competitive intermediate product markets in petroleum and chemicals, for example,

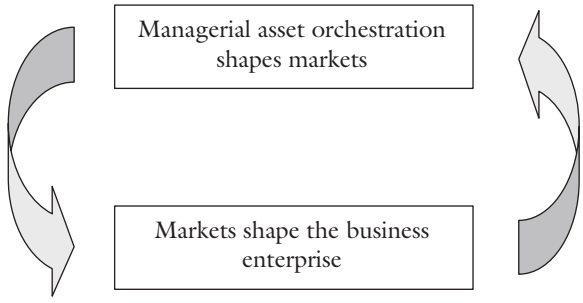

Figure 2.2 Co-evolution of markets and the business enterprise

[7] Casson argues that rule making is entrepreneurial, but that rule implementation is routine, and is characterized by managerial and administrative work.

[8] For example, both Priceline and eBay set out to alter the structure of existing markets, and to some extent did so.

has been identified as a major leveler in global competition (Teece, 2000). Competitive advantage is illusory when all markets are highly competitive. However, change and technological innovation create new market opportunities. As long as idiosyncratic assets abound, this will create thin market situations and provide opportunities for competitive advantage.

Towards a Dynamic Capabilities (Economic) Theory of the Firm

Ronald Coase in his classic (1937) article on the nature of the firm described firms and markets as alternative modes of governance, the choice between them made so as to minimize transaction costs. The boundaries of the firm were set by bringing transactions into the firms so that at the margin the internal costs of organizing equilibrated with the costs associated with transacting in the market.

Initiated by Coase's (1937) seminal paper, a substantial literature has emerged on the relative efficiencies of firms and markets. This literature, greatly expanded by Oliver Williamson (1975; 1985) and others, has come to be known as transaction cost economics. It analyzes the relative efficiencies of markets and internal organization, as well as intermediate forms of organization such as strategic alliances.

Contractual difficulties associated with asset specificity are at the heart of the relative efficiency calculations in transaction cost economics. When specific assets are needed to support efficient production, then the preferred organizational mode is internal organization. Vertical and other forms of integration are preferred over contractual arrangements when efficient production requires investors to make irreversible investments in specific assets. The structures used to support transactions are referred to as governance modes. Internal organization (doing things inside the firm) is one such governance mode.

The dynamic capabilities approach is very consistent with Coase in some ways but not others. It is accepted that it is useful to think of the firm and markets as alternative modes of governance. Relatedly, the selection of what to organize (manage) internally versus via alliances versus the market depends on the nontradability of assets and what Langlois has termed "dynamic transactions costs."

But it is not enough to convert the notion of nontradability entirely into the concept of "transaction costs," defined by Arrow (1969: 48) as the "costs of running the economic system." Others have tried to operationalize the concept of transaction costs, with Alchian and Demsetz (1972) proposing technological nonseparabilities and Williamson (1985) focusing on specific assets. There is indeed a strong relationship between specific assets and nontraded or thinly traded assets.

However, there are reasons why assets are not traded (or are thinly traded) that do not relate to asset specificity. For instance, the land on the corner of Park Avenue and 59th Street in New York City rarely comes onto the market. The ability to write highly creative and efficient software for computer operating systems is not widely distributed. Brands that signal particular values (e.g. Lexus) are likewise thinly traded. Uniqueness and asset specificity aren't quite the same. In addition, the concept of co-specialization is important (Teece, 1986). Assets that are co-specialized to each

Search and selection
→ Design business models → Select configurations of co-specialized assets → Select investments (e.g. R&D, M&A) under conditions of uncertainty and ambiguity → Select organization, governance, and incentive structures
Configuration and deployment
→ Orchestrate and coordinate co-specialized assets → Nurture change and innovation processes

Figure 2.3 Elements of asset orchestration

other need to be employed in conjunction, often inside the firm.[9] This isn't the emphasis of Coase, Alchian and Demsetz, or of Williamson.

Assembling co-specialized assets inside the firm in the dynamic capabilities framework is not done primarily to guard against opportunism and recontracting hazards, although in some cases that may be important. Instead, because effective coordination and alignment of these assets/resources is difficult to achieve through the price system, special value can accrue to achieving good alignment within the firm. This is different from what Barnard (1938) has suggested with his emphasis on the functions of the executive as rooted in cooperative adaptation of a conscious and deliberate kind. Here the focus is on the "orchestration" of co-specialized assets by strategic managers. It is a proactive process designed to: 1) keep co-specialized assets in value-creating co-alignment, 2) select new co-specialized assets to be developed through the investment process, and 3) divest or run down co-specialized assets that no longer help yield value. Rather than stressing opportunism (although opportunism surely exists and must be guarded against), the emphasis in dynamic capabilities is on change processes, inventing and reinventing the architecture of the business, asset selection, and asset orchestration.

One might reasonably ask the reasons for this significant difference in emphasis. Clearly, in dynamic capabilities, a comparative institutional framework is adopted. "Small numbers" bargaining is at the core, as in Williamson (1975). However, the emphasis on dynamic capabilities is not just on protecting value, but also on creating it. Barnard wouldn't naturally see the importance of this emphasis, because his laboratory was the regulated Bell operating companies.

Alchian and Demsetz and Williamson have all emphasized opportunistic free riding. Indeed, their human actors are assumed to be boundedly rational, self-interest seeking, opportunistic, and full of guile. The dynamic capabilities framework adds other (arguably less ubiquitous) traits of human nature: 1) intrapreneurship and entrepreneurship, and 2) foresight and acumen. Williamson appears to recognize

[9] Dynamic capabilities centrally concern the strategic management function, which transcends the question of optimal firm boundaries. Value can be created by astutely organizing assets both inside and outside the firm. In this sense, one should not expect a theory of dynamic capabilities to uniquely provide a theory of the firm.

that such skills ought to influence the theory of economic organization, when he quotes businessman Rolf Sprecket: "Whenever I see something badly done, or not done at all, I see an opportunity to make a fortune." Williamson comments: "Those instincts, if widely operative, will influence the practice and ought to influence the theory of economic organization" (1999: 1089). This statement opens the door to dynamic capabilities.

There are other differences as well. Williamson makes the transaction the unit of analysis; in dynamic capabilities, the currency of interest includes complementary and co-specialized assets. The utility of transaction cost economics and related frameworks to make–buy–ally decisions and related governance decisions are not in dispute. But transaction cost economics leaves us without an understanding of the distinctive role of strategic management. Executives must not only choose governance modes (as between market arrangements, alliances, and internal organization), but they must also understand how to design and implement different governance structures, and to coordinate investment activities.

Just as the governance of markets is not preordained by the economic system, nor is the selection of governance modes. Many elements of internal organization, business model design, and alliance structure require managers to select and design methods of governance. For example, as chapter 5 explains in more detail, a relational capability for alliances includes selection and design of alliance governance. Again, dynamic capabilities come to the fore.

Conclusion

In this chapter, we have argued that any robust economic theory of the firm must include a primary role for strategic managers and their dynamic capabilities. Critical dynamic managerial capabilities include asset orchestration, frequently involving co-specialized and complementary assets within the resource base of an organization. Not only must managers assemble these bundles of resources, but also they must design appropriate governance and incentive structures.

Chapter 3

Dynamic Capabilities and Organizational Processes

With Catherine A. Maritan

Dynamic capabilities provide an organization with the capacity to purposefully create, extend, or modify its resource base. Dynamic capabilities are about change. To identify the need or opportunity for change and to accomplish this change, the organization uses processes – search processes, decision-making processes, change-management processes, and others. There is an inextricable link between dynamic capabilities and the organizational and managerial processes that underpin them. However, the relationship between process and dynamic capabilities is often left unstated or implied. In this chapter we explore the relationship between dynamic capabilities and organizational process. Further, we suggest that because process is an integral part of dynamic capabilities, research on dynamic capabilities will benefit from combining approaches from both the content and process sides of the strategy field to develop a more complete understanding.

Processes as Mechanisms

What is the relationship between dynamic capabilities and process? There are two ways in which managerial and organizational processes are part of the functioning of dynamic capabilities: processes are mechanisms by which dynamic capabilities are put into use, and mechanisms by which organizations can develop dynamic capabilities. In chapter 2, we provided an economic basis for understanding the managerial processes of asset orchestration. Here we broaden our focus to include the organizational processes that underpin dynamic capabilities as well.

A dynamic capability is a capacity to modify the resource base of an organization. If we recall from chapter 1, dynamic capabilities include capacities for identifying the need or opportunity for change, formulation of a response, and implementation of a course of action. There are processes associated with each of these functions. For example, identification of a need or opportunity involves problemistic search or opportunity recognition processes. Formulation of a response involves internal selection processes and resource allocation processes, and implementation involves a

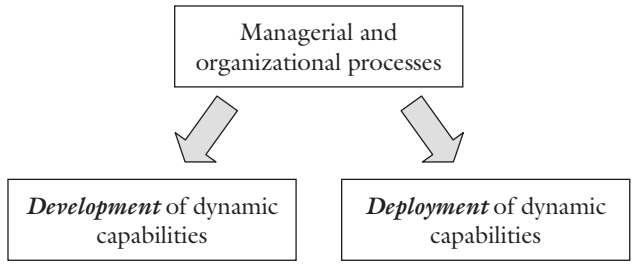

Figure 3.1 Dynamic capabilities and organizational processes

variety of managerial and organizational processes, depending on the nature of the objective and the specific tasks required.

The benefits from dynamic capabilities depend on the efficacy of the underlying organizational and managerial processes that are invoked. Therefore, it is essential to understand these processes to understand the operation of dynamic capabilities. Perhaps because the performance of a dynamic capability depends on the performance of the processes used to apply them, dynamic capabilities have sometimes been characterized in the literature as *being* processes (e.g., Eisenhardt and Martin, 2000). It is difficult to observe a dynamic capability that an organization possesses unless it is put into use and processes are the mechanisms that make it happen. When we observe a dynamic capability in use, we are observing the underlying processes.

Processes are also used to develop dynamic capabilities. As we noted in chapter 2, capabilities, operational or dynamic, generally cannot be acquired in factor markets; therefore they have to be developed. This development, both origination of new dynamic capabilities and improvement of existing ones, can occur through organizational learning processes (Zollo and Winter, 2002) and investment processes (Maritan, 2001). Although capabilities in isolation are generally nontradable and therefore must be developed, previously developed capabilities embedded in another organizational unit can be acquired through the acquisition of that organizational unit, such as a firm or a division. Alternatively, the services of an existing capability can be acquired through an alliance with the organizational unit in which it resides. These means of capability acquisition also rely on processes, in this case, acquisition or alliance management processes, which themselves consist of more microprocesses such as search processes for target or partner identification, acquisition integration processes, partner relationship management processes, etc.

Because managerial and organizational processes are inextricably linked to dynamic capabilities, to understand dynamic capabilities it is essential to understand those processes. There are many, many types of processes that operate in an organization. We have provided some indications of types of processes that operate in the application of dynamic capabilities; however, it is very difficult to present a list of which ones are relevant to dynamic capabilities and which ones are not. Some types of processes, such as resource allocation (e.g., Bower, 1970; Burgelman, 1983; Gilbert, 2005), practice transfer (e.g., Szulanski, 1996; Maritan and Brush, 2003), and patching (e.g., Brown and Eisenhardt, 1998; Siggelkow, 2002), are clearly relevant to dynamic

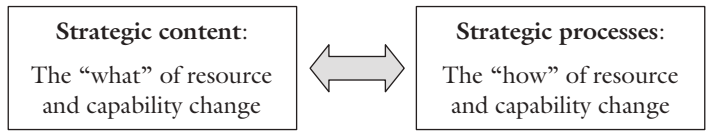

Figure 3.2 Dynamic capabilities: content and processes

capabilities because they directly deal with changes to the resource position of an organization. However, what about decision-making processes, political processes, or coordination processes? The answer to this question depends on the answers to further questions. What is the decision about? What do the goal conflicts concern? What is being coordinated? If the "what" in each case is related to the resource position of the organization, then these processes are certainly relevant to dynamic capabilities. If the "what" concerns other organizational issues, then these processes do not relate to dynamic capabilities. The "what" or the content to which the process relates cannot be isolated from the process itself.

This need to combine content and process to understand the functioning of dynamic capabilities in an organization reflects the larger issue of combining strategy content and strategy process. We now turn to this issue of bringing together strategy process and content and propose dynamic capabilities as a domain in which to do so.

Linking Process and Content

It is a long-standing belief in the field of strategic management that the divide between the "process side" and the "content side" of strategy is an artificial one. As Schendel (1992b: 2) has argued, "the dichotomy is not real because strategy process is itself an integral part of content; the two cannot be separated." That belief notwithstanding, process and content research continue to reside in largely separate realms with little intercourse or intellectual exchange between them.

In their account of the history of the field, Rumelt, Schendel, and Teece (1994a) note that the content–process dichotomy began to develop in the 1970s as some scholars began to take more positivist approaches to research and to conduct more deductive analyses of the relationship between strategy and performance. That work has developed into the content side of strategy research, while more descriptive studies of how strategies are formed and implemented have developed into the process side. This development of parallel, separate streams of work was also encouraged by changes in business schools around the same time that "forced those interested in strategic management to 'take sides' and adopt a discipline" (Rumelt, Schendel, and Teece, 1994b: 545), with process research being based primarily on behavioral theories and content research being based on economic theories.

There have been repeated calls for integration of process and content research (e.g., see Jemison, 1981; Zajac, 1992), yet the divide remains. Bringing together these two sides of strategy research that have developed quite separately presents a formidable challenge. There are fundamental differences in the domains of these two

research areas, with different types of questions asked, different theoretical lenses used to investigate questions (Jemison, 1981), and marked differences in researchers' schools of thought about the nature of strategies (Mintzberg, Ahlstrand, and Lampel, 1998). Relating research findings from one side to the other is impeded by differences in perspectives as well as by differences in researchers' training and preferences (Jemison, 1981).

As long as the two sides remain separate, the false dichotomy between process and content is perpetuated, along with the development of separate streams of research. More importantly, it misses the opportunity to combine insights and to provide complementary views of phenomena of interest to both sides. Combining process and content research can create a more holistic view of strategy issues. Our goals for this chapter are far more modest than to try to unite the field of strategic management. However, we do argue that the study of dynamic capabilities provides a way to bring the two sides of strategy together.

Defining strategy process

In chapter 1, we defined and elaborated the concept of dynamic capabilities. However, before we can investigate how the study of dynamic capabilities brings the issues of strategy content and process together, we need to identify what we mean by strategy process.

There is a long and rich tradition of research on strategy process. Its roots can be traced to early work on administrative systems (e.g., Barnard, 1938; Chandler, 1962) and decision making (e.g., Simon, 1945; Cyert and March, 1963). Despite the decades of work, there is no universal agreement among scholars about what strategy process is. This is because the domain of strategy process is broad and the phenomena investigated are diverse. Strategy process research has examined topics such as the process of formulating strategy, strategy implementation, strategic decision-making, resource allocation, patterns of managerial actions, and managing strategic change. There are also different notions of what the term "process" means in strategy research. Van de Ven (1992) identified three distinct uses of the term in the literature: 1) process as a logic that explains a causal relationship, 2) process as a category of concepts referring to actions, and 3) process as a sequence of events describing change over time.

Although the domain is broad, the phenomena of interest are diverse, and notions of process are varied, there is a common perspective in all this work. What the various treatments of strategy process in the literature have in common is that they address "how" questions, namely one or more aspects of "how strategies are formed, implemented, and changed" (Chakravarthy and White, 2002: 182). Strategy process is concerned with mechanisms, and invariably these mechanisms involve administrative systems and organizational practices. There is also a prominent role for managerial behavior, in the form of decisions and actions. Because strategy process is about mechanisms, it is inherently dynamic. Regardless of which of Van de Ven's (1992) conceptions of process one uses, time is an important element, either implicitly as part of a logic that incorporates temporal flows, or explicitly as a feature that is studied.

Are all aspects of strategy process directly relevant to studying and better understanding dynamic capabilities? Given the breadth of the strategy process domain, the answer is no. It is therefore important to consider specific processes and the purposes served by those specific processes to discern which are relevant for dynamic capabilities.

Although strategy process is by its nature dynamic, not all strategy process concerns change. Chakravarthy and White note that strategy process is both about change and "about being," arguing that "even maintaining a steady state requires a process" (2002: 186). This distinction between processes to maintain the steady state and processes that contribute to change parallels the distinction between operational and dynamic capabilities. Just as there are operational capabilities that enable firms to perform their ongoing tasks of making a living, there are processes that, while dynamic (as all processes are), are used to maintain the status quo. In contrast, there are processes that help bring about change. It is this latter group that underpins dynamic capabilities and that concerns us in this chapter. We turn our attention next to the issue of bringing together process research and research on dynamic capabilities.

Complementary research streams

Research progress often comes from the application of multiple lenses to the same phenomenon (Kuhn, 1962). Sometimes, the progress is due to anomalies that are uncovered, spurring further theory development (Gilbert and Christensen, 2005). Other times, new insights spring from the complementarities inherent in related perspectives (Peteraf, 2005). Just as product innovation often comes from recombining existing capabilities (Kogut and Zander, 1992), the same is true for innovative research.

As we've argued, dynamic capabilities depend on organizational and managerial processes to function. Consequently, understanding dynamic capabilities requires an understanding of process. Yet, despite its attention to organizational dynamics, research on dynamic capabilities has been oriented, paradoxically, toward the content side of strategy (Peteraf, 2005). The tight links between dynamic capabilities and organizational processes, along with the separateness of their research traditions, suggest the presence of significant unexploited complementarities. The notion that issues of content and process are complementary is not new (Huff and Reger, 1987; Zajac, 1992). What has been missing are vehicles for bringing the two sides together, vehicles that have not only the potential for synergy, but also broad appeal to both sides of the process/content divide. Dynamic capabilities is one such vehicle. But a vehicle without direction is unlikely to advance research very far, particularly when moving into unexplored terrain. To steer the research along a productive course, we provide a road map for finding and exploiting the potential complementarities between the research domains of dynamic capabilities and strategy process in the sections that follow. We discuss first what the process side of strategy research can bring to the research on dynamic capabilities. Then we explore how the research on dynamic capabilities can contribute to strategy process research.

Bringing a process perspective to dynamic capabilities

Strategy process research differs from content research in at least three respects: disciplinary base, methodology, and focus (Chakravarthy and Doz, 1992). This suggests three routes to seeking out complementarities between the areas of research concerned with strategy process and dynamic capabilities.

Discipline bases: *organizational sociology, organizational psychology, political science, decision science*
Data sources and methods: *inductive theoretical tools, qualitative data, qualitative empirical analysis*
Research focus: *the "how" of strategic change*

Discipline base While strategy process and strategy content both draw on multiple discipline bases, they are distinguished by where the emphasis is placed. Historically, the disciplinary divide between content and process was fairly stark. Research on the content side drew heavily from economics (Rumelt, Schendel, and Teece, 1991). In contrast, research on strategy process drew from a much wider set of disciplines, including sociology, psychology, decision science, and political science (Chakravarthy and Doz, 1992).

Today, the disciplinary divide remains, but has become more muted. While most strategy content research remains grounded in economics, organizational sociology has increasingly become a basis for such research. This trend has been driven, in part, by the rise of the new economic sociology (Guillen, Collins, England, and Meyer, 2002). The trend has also been driven by increasing interest in the implications of social networks on strategy content issues (e.g., Ahuja, 2000; Gulati, 1995b).

To a lesser degree, organizational psychology is being drawn upon to support work on strategy content issues as well. Examples are Peteraf and Shanley's (1997) work on strategic group identity, and Tripsas and Gavetti's (2000) illustration of the importance of managerial cognitive abilities to organizational adaptation. These examples notwithstanding, the disciplinary basis of strategy content research is still narrow compared with that of strategy process research.

Like resource-based theory more generally, the dynamic capabilities concept is content-oriented. A central concern since the introduction of the concept has been its connection to wealth creation and capture (Teece, Pisano, and Shuen, 1997). It is not surprising, then, that its disciplinary foundation is economics. What differentiates it is that it is based not on mainstream economics, but on evolutionary economics (Nelson and Winter, 1982a; Winter, 2003).

Evolutionary economics is a behavioral approach to economics that is focused on routines, capabilities, and change. Unlike most forms of economics, it attends to process issues and other phenomena deep within organizational boundaries. Even so, as an economic theory it can at best tell only a part of the full story about dynamic capabilities. The concern of dynamic capabilities with such process issues as resource allocation, change management, and other mechanisms suggests the utility of other disciplinary lenses as well. Process scholars have developed models of these process issues that draw on behavioral theories. For example, March's (1991)

distinction between exploitation and exploration search can inform study of the capacity for identifying opportunities for change. Bower's (1970) model of the resource allocation process can inform study of the capacity to formulate a response to an opportunity. Likewise, Poole, Van de Ven, Dooley and Holmes' (2000) models of change processes can inform the study of the capacity to implement a course of action. None of these examples of process research directly addresses dynamic capabilities. However, the models and insights can be applied to studying the processes underlying dynamic capabilities and, in turn, can enhance our understanding of those dynamic capabilities.

In this respect, taking a strategy process perspective on dynamic capabilities can add value. The deep connection between dynamic capabilities and organizational process research has not been adequately appreciated. Seeing dynamic capabilities in terms of the processes on which they depend may lead researchers to turn to a broader set of disciplines for theoretical development. Inside the firm, the social science disciplines associated with strategy process add lenses not provided by either evolutionary or mainstream economics. Thus, broadening the disciplinary base will lead to insights on dynamic capabilities that have received insufficient attention for lack of both focus and appropriate conceptual frames. Doubtless, this will enrich and enliven research on dynamic capabilities in a complementary fashion.

Methodology Methodologically, the divide between strategy content and process can be characterized in several ways. Research in the strategy content domain often employs empirical tools associated with economics. Thus, there is heavy reliance in the content domain on econometric studies, using large sample archival data. In contrast, research in the process domain makes greater use of interviews and surveys, along with associated methodologies, to collect and analyze primary, often qualitative, data.

Content research relies more on deductive methods as opposed to the inductive research methods more common in strategy process research. Case-based research is more prevalent on the process side. What process research is known for most, however, is its use of longitudinal field studies of intra-organizational phenomena. Very little content-oriented research takes this form.

Just as recognition of the connection between process research and dynamic capabilities may encourage a broader disciplinary approach to dynamic capabilities, the same may be true with respect to methodology. If longitudinal field research is a fruitful way to understand strategy process, then there will be appreciable benefits from taking a similar approach to the study of dynamic capabilities. Case-based approaches and other methods used to study strategy process will increase our depth of understanding of dynamic capabilities as well. At present, there are some studies starting to do this. Szulanski's (2000) work on routinization and replication is drawn from a case study of Bank One. Chapter 4 in this book provides a further illustration in its use of case studies to develop insights into the role of managers, and managerial processes in the operation of dynamic capabilities. Maritan and Brush's (2003) study of practice transfer as a dynamic capability also suggests the promise of field studies as an approach to studying and documenting the development and application of dynamic capabilities.

Focus Strategy process and strategy content differ with respect to their core issues. Content, for example, has long been concerned with matters regarding scope of the firm and competition within markets (Montgomery, Wernerfelt, and Balakrishnan, 1989). This focus parallels some of the primary concerns of the dynamic capabilities literature. Consider, for example, Helfat and Eisenhardt's (2004) work on dynamic economies of scope, and King and Tucci's (2002) study of dynamic capabilities associated with market entry. In contrast, questions concerning decision making and change management dominate research in the process domain (Pettigrew, 1992). As Zajac (1992: 70) noted, ". . . issues of content . . . can be complemented, extended, and clarified by a concomitant emphasis on . . . issues of process." Topics as complex as dynamic capabilities are particularly likely to benefit from a more integrative approach.

The focus of strategy process and content differs in another respect as well. Content issues center on the "what" questions of strategy, while process research investigates the "how," as we indicated earlier. To date, most research on dynamic capabilities has addressed the questions of *what* defines dynamic capabilities, *what* distinguishes them from other types of capabilities, and *what* their effect is on organizational outcomes. Attention to the issue of "how" is only starting to gain momentum. This is particularly curious, given the common understanding of dynamic capabilities as producers of strategic and organizational change (Collis, 1994; Teece, Pisano, and Shuen, 1997; Winter, 2003). A key question is *how* this occurs.

The "how" and "what" questions that distinguish the areas of strategy process from strategy content are intimately related (Schendel, 1992a). As two parts of a whole picture, their complementarity is clear. In this respect, bringing a process perspective to bear on the "how" questions related to dynamic capabilities can help build a more complete picture. The need for a process approach to dynamic capabilities, however, extends beyond this. Research on dynamic capabilities fundamentally concerns how organizations emerge, develop, grow, change, decline, and rejuvenate over time. As Van de Ven and Huber (1990: 213) argue, such questions would benefit from "a 'process theory' explanation of the temporal order and sequence" of events. With the guidance of an appropriate process theory, our understanding of how dynamic capabilities produce change may advance in unanticipated ways.

A capability, dynamic or otherwise, implies a potential for action. This follows from chapter 1, where we defined a capability as the *ability* to perform a particular task or activity. The word "ability" refers to the power or capacity to act.[1] But until the capability is exercised, the action remains latent. Approaching research on dynamic capabilities from a process perspective can provide the needed link to action. As Pettigrew (1992: 6) argues, the domain of strategy process includes a "generalized concern with action, dynamism, time, development, and outcomes." This focus provides an almost perfect complement to research on dynamic capabilities coming from the content side, since the concerns are one and the same. It provides a way to delve into the micromechanisms that support and guide dynamic capabilities in action. It facilitates answering the "how" questions with the fine-grained detail of a process-based approach.

[1] *Webster's Universal College Dictionary* (1997) defines "ability" as "power or capacity to do or act. . . ."

A more subtle issue is that, in some cases, it may be difficult to separate the "what" from the "how." That is to say, content decisions may be contingent upon a consideration of alternative ways that events might unfold. Khanna, Gulati, and Nohria (1998) provide an example of this that relates to dynamic capabilities, concerning allocating resources to learning within an alliance. In their example, the "what" questions could not be addressed adequately without considering the costs and benefits of different routes to the desired end.

Given the concern of the dynamic capabilities literature with evolutionary paths, routines, and learning, it would seem as if there is already a process focus. There is a difference, however, between an understanding of process through the lenses of the content side and an understanding more firmly rooted in the traditions of process-oriented research. Without the benefits of a process approach, including its broader disciplinary lenses and methodological traditions, the potential for research synergies will remain unexploited.

As an example, consider the framework on capability lifecycles, developed by Helfat and Peteraf (2003). While this framework describes the developmental and evolutionary paths of both ordinary and dynamic capabilities, including how they emerge and change over time, it is grounded firmly in evolutionary economics. It is more closely aligned with the literatures on industry lifecycles and technological diffusion than with more traditional literature on strategy process. The concept, however, has high potential for development in terms of articulating the processes that underlie the lifecycle paths (Peteraf, 2005).

Additionally, empirical work to test this framework or elaborate upon it can be conducted productively by studying the processes at work within entrepreneurial units as they form, develop, and change over time. Such work can reveal the role of managerial decision processes and organizational power dynamics in the speed and path of capability development. It can provide a detailed account of the micro-mechanisms at work and the specific nature and sequence of actions at different times and along different parts of the lifecycle trajectory. It can shed light on the dynamic interrelationships among context, actions, timing, and positions along the path.

The broad interest in dynamic capabilities has much to do with their anticipated effects on important organizational outcomes over time. Yet, outcomes are differentially shaped by processes (Pettigrew, 1992). Understanding why and how is critical. The special focus of strategy process on causal chains provides a particularly valuable complement to dynamic capabilities research. Taking a process perspective can clarify the dynamic interrelationships among actions taken, processes employed, and outcomes achieved in a way that addresses some of the complexities and unresolved issues in the dynamic capabilities domain. As Eisenhardt and Martin (2000) have observed, process research brings a ready-made empirical base to the topic of dynamic capabilities that also sheds light on its nature. By applying the methods and approaches of process research to the unique questions raised by dynamic capabilities, even further progress can be made.

From dynamic capabilities to strategy process

Just as new insights can come from importing the disciplinary lenses, methods, and focus of process research into the realm of dynamic capabilities, so the reverse may

be true. This may be somewhat surprising, since strategy process is an extremely broad area, while dynamic capabilities constitutes only one of many topics within the domain of strategy content. With respect to disciplinary base and methodology, the topic of dynamic capabilities largely reflects the content area of strategy of which it is a part. It is sharply differentiated from this larger area, however, by its focus. In that respect, it is most like its sister topic – the resource-based view (Penrose, 1959; Wernerfelt, 1984). Much of the potential for dynamic capabilities research to complement ongoing process research comes from its distinctive focus. We first discuss potential applications of the more general discipline base and methodology.

Discipline bases: *evolutionary and behavioral economics*
Data sources and methods: *deductive theoretical tools, quantitative data, statistical empirical analysis*
Research focus: *organizational performance and strategic outcomes*

Discipline base Of the many disciplines applied to strategy process research, economics is the least often used. This may be due more to the paradigmatic divide between content and process than because of the unsuitability of economics for addressing process questions. It is not uncommon for process school researchers to express an aversion to economic approaches to research. (See, for example, Hirsch, Friedman, and Koza, 1990; Bromiley and Papenhausen, 2003.) The widespread interest in dynamic capabilities across the strategy field may help lessen this aversion and break down the divide.

The broad appeal of dynamic capabilities may be partially due to the type of economic thinking associated with it. Evolutionary economics, with its focus on change, is neither static nor equilibrium-based. In consequence, the dynamic capabilities framework has been exempted from the criticisms otherwise aimed at the resource-based view. Consider, for example, the views expressed in Bromiley and Fleming (2002) or Priem and Butler (2001). With its behavioral underpinnings, evolutionary economics may be more amenable to process school approaches than neoclassical economics. As scholars become more familiar with the disciplinary grounding of dynamic capabilities and see its connection to process, they may be more willing to consider the potential for applying evolutionary economics to other strategy process topics. Greater familiarity with one form of economics may make process researchers more willing to experiment with other forms as well as a basis for their work. This could even extend to more mainstream approaches to economics, such as game theory.

The benefits from applying an economic lens to process questions can be substantial. Approaching a subject with a new disciplinary lens can allow one to view that subject from a different angle. It may suggest entirely new ways of thinking about the phenomena at hand. Khanna, Gulati, and Nohria (1998; 2000) provide an example. In an innovative paper, they use formal economic reasoning in an attempt to gain new understandings about learning processes within alliances. Their approach allows them to appreciate the effects of cooperative and competitive behaviors on strategy process that would otherwise remain unaccounted for. Moreover, it permits them to assess process choices in terms of costs and benefits. This kind of thinking comes directly from the disciplinary lens applied. The insights that

it yields provide a ready complement to those generated by more common approaches to strategy process.

One impediment preventing the use of economics from gaining ground within the process school is that there is resistance to viewing such work as belonging to the realm of strategy process. Consider, for example, Inkpen's (2000: 775) reaction to Khanna et al.'s (1998) work, in which he complains that the "reliance on simple models from economic theory leaves the framework somewhat disconnected from the process of alliance management." This suggests three most likely routes to the increased application of economics to process issues. The first route is through researchers identified with the content school, as they become interested in issues that span both process and content. Chapters 5 and 6 in this volume on relational capabilities and on acquisition-based dynamic capabilities are illustrative. Research areas closely related to dynamic capabilities, such as knowledge management and learning, provide other likely avenues for applying economics methods or concepts to process issues. See, for example, the papers by Zollo and Singh (2004) and Hatch and Dyer (2004) on interorganizational knowledge-transfer processes.

A second route is from the collaborative efforts of content-oriented and process-oriented scholars. A recent special issue of the *Strategic Management Journal* (McEvily, Eisenhardt, and Prescott, 2004) that focused on how managers acquire, leverage, and protect technological competencies provides an example. This collaboration includes efforts at increasing the conversation and exchange of ideas among the two schools of thought. As a second example, consider the invited commentaries by Roberts (2005) and Peteraf (2005) on the resource allocation process in Bower and Gilbert (2005). Consider also the volume edited by Baum and Dobbin (2000), encouraging interaction among economists and sociologists in strategic management.

The third route is from researchers whose work and interests straddle the areas of process and content. This type of work is being pursued increasingly in the strategy field today. From organizational sociology, it includes work on how organizations and industries evolve (e.g., Barnett and Hansen, 1996), on how patterns of competition and cooperation are shaped (e.g., Baum, Li, and Usher, 2000), and on networks and information transfer (e.g., Podolny, 2001). From evolutionary economics (which itself straddles content and process), it includes work by Dosi and Lovallo (1997) on the evolutionary role of decision biases and by Winter and Szulanski (2001) on replication strategies. As we have made clear in the introductory chapter, much of the work in this book similarly straddles issues of process and content. Over time, as the power of economics to sharpen understandings and shed new light on process issues becomes more apparent, such work may pave the way for other scholars to follow. This will enable the full complementary potential to be realized.

Methodology Using economics as a discipline base, especially in its more behavioral forms, suggests that research may benefit from the methodologies of economics as well. This includes theoretical tools, such as game theory, which could be applied toward topics such as interorganizational learning or competitive dynamics. It also includes a rich set of statistical and empirical techniques. The possibilities are many, but as with the application of economic principles, it may require content-oriented scholars, collaborative efforts, and process/content "straddlers" to lead the way.

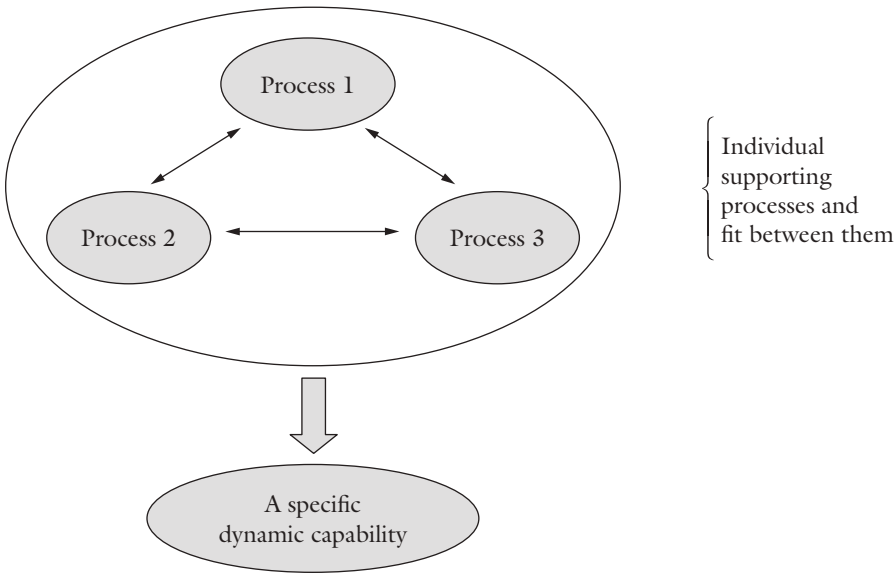

Figure 3.3 Dynamic capabilities and processes

As an example, consider some recent work on the topic of "internal fit" (Siggelkow, 2001). Internal fit, sometimes called internal alignment (Collis and Montgomery, 1997), refers to the alignment among processes, systems, and other organizational elements within the firm. This notion is to be distinguished from the fitness measures introduced in chapter 1, which are performance metrics. In contrast, internal fit is a state of consistency among a set of organizational elements. A strong form of internal fit implies not only consistency, but reinforcing complementarities among the organizational elements as well.

The topic of internal fit (or alignment) is one that has long been part of the strategy process repertoire in the form of configuration studies (Miller and Friesen, 1982; Miller, 1986). It has been viewed more recently as having significance for dynamic capabilities as well (Peteraf and Reed, 2005). An important lesson of resource-based theory is that resources and capabilities come in bundles (Penrose, 1959; Rumelt, 1984). How these bundles form, how they change, and how they are managed by means of various integration and coordination processes presents an important set of questions that dynamic capabilities brings to the fore. Thus, achieving internal fit under conditions of change is an important aspect of the managerial orchestration of co-specialized assets examined in chapter 2.

Recent theoretical work on "complements" within economics provides a new set of applicable tools (Milgrom and Roberts, 1990; 1995). Strategists on the content side have begun to work out the implications of these models for the issue of "fit" (Porter, 1996). This conceptual work has spurred empirical work, applying methods from economics, such as simulations and advanced econometrics to the topic. Peteraf and Reed (2005), for example, apply sophisticated statistical techniques to examine how issues of internal alignment affect costs. They also look at managerial choices with respect to internal fit over time.

Managing internal fit over time is an important dynamic managerial capability (Adner and Helfat, 2003). It involves a set of critical processes. What the above examples illustrate is that methods and tools from economics may provide new ways to approach even classic topics in strategy process research.

Focus Like the resource-based view and the strategy content area more generally, research on dynamic capabilities is centrally concerned with organizational performance. This was the focus of Teece, Pisano, and Shuen's (1997) seminal article[2] and it has remained a core issue. The question of whether and how dynamic capabilities affect firm performance has also spurred some debate. Eisenhardt and Martin (2000), for example, have characterized dynamic capabilities as equifinal: that is to say, they lead to no distinction among firms in terms of performance outcomes. Zott's simulation results (2003), in contrast, suggest that dynamic capabilities may be associated with significant intra-industry performance differences. Others continue to investigate the question empirically (e.g., Kor and Mahoney, 2005; Pavlou and Sawy, 2005; and Arthurs and Busenitz, 2006).

In this book, we contribute to the debate in several ways. In chapter 1 we introduced a new set of yardsticks for measuring the performance of dynamic capabilities, separating out a quality measure (technical fitness) from one that links more directly to organizational performance (evolutionary fitness). We elaborated on how evolutionary fitness links to established concepts of performance in economics and strategy, such as value creation, competitive advantage, and sustained advantage. In chapters 4, 5, and 6, we discuss some examples of research on executives, alliances, and acquisitions that links performance outcomes to dynamic capabilities. Finally, we expand the range of organizational performance measures that can be linked to dynamic capabilities in chapter 7 on firm growth, capabilities, and change.

The focus of dynamic capabilities research on organizational performance stems naturally from its content-side origin, where this is a fundamental issue (Rumelt, Schendel, and Teece, 1991). The linkage between dynamic capabilities and the resource-based view, with its economic underpinnings, also drives the concern with such issues. Not surprisingly, the theory explaining how dynamic capabilities affect organizational performance is largely couched in an (evolutionary) economic logic.

Perhaps due to differences in orientation and disciplinary foundation, research on the process side has focused much less on organizational outcomes. There are notable exceptions, of course. These include the efforts of process researchers such as Burgelman (1983) and Szulanski (1996) to connect elements of strategy process to firm performance ends. Nevertheless, such research on process remains in the minority. To the extent that the focus of process research has been on outcomes, the concern has been more on relating process characteristics to the quality of process outcomes, rather than on strategic outcomes, in competitive terms.

While linking process characteristics to process outcomes is important to understanding how to manage processes, there is a further opportunity to explore additional links between process and firm performance in a competitive context (Chakravarthy and White, 2002). Establishing relationships among process characteristics, process

[2] Although their paper was not published until 1997, it was first presented at the Academy of Management Annual Conference in 1989.

outcomes, and competitive outcomes has tremendous potential to contribute to understanding how competitive advantages develop. This is where there is an opportunity to apply theoretical understandings developed in the literature on dynamic capabilities and the resource-based view to the arena of strategy process.

Dynamic capabilities can bring strategy content, along with the link to performance outcomes, into the realm of strategy process. It can connect process directly to performance outcomes via its economic underpinnings. This is natural, given the intimate relationship between dynamic capabilities and organizational processes. Given the connection between dynamic capabilities and performance, it is difficult to consider process outcomes without at the same time considering performance outcomes in a competitive context.

Processes and Organizational Outcomes

Utilizing the performance yardsticks

There may be a variety of ways to analyze the effect of processes on organizational outcomes. As suggested above, one approach is to employ a theoretical lens drawn from dynamic capabilities to examine the effects of the processes associated with these capabilities. A starting point is to begin with a specific process in mind – the more specific the better. An example might be the search heuristics a firm uses for learning across R&D projects.

To analyze the effectiveness of these heuristics, it may be possible to apply the yardsticks developed for analyzing the performance of dynamic capabilities. The fact that processes are the underlying mechanisms employed in applying (or developing) the capability suggests the reasonableness of this approach. Consider, then, the question of technical fitness. Recall that technical fitness is essentially a quality dimension, reflecting how well a capability performs its function. This yardstick can just as easily be applied to a process, such as the set of search heuristics in question.

In general, processes comprise a systematic series of actions directed toward some specific end.[3] They take place in a definite, repeatable manner, with a particular objective in mind. Like dynamic capabilities, then, they can be assessed as to the degree of their effectiveness. Technical fitness is the yardstick to measure this. In our example, the question is how well the search heuristics facilitate the desired learning.

The second yardstick for assessing the effect of dynamic capabilities on organizational outcomes is evolutionary fitness. The question is, to what degree can this metric be applied to individual processes as well? The answer will depend on the specific process under consideration.

Recall that there are four elements determining evolutionary fitness. The first is the quality dimension of technical fitness, which is clearly applicable to individual processes, as we have argued above. The second is the cost dimension of technical fitness. As with capabilities, a highly efficacious process may come at high or low cost. Well-defined processes do have identifiable costs of implementation, which can

[3] This is the definition of process, as found in the *Webster's Universal College Dictionary* (1997).

be assessed. The third factor is competition. By this we mean that the evolutionary fitness of a process depends on a comparison with the comparable processes of rival firms. Again, the factor applies. The fourth and final factor is market demand. As with dynamic capabilities, the demand for a process is a derived demand. What is different is that, as inputs into dynamic capabilities, processes are more deeply embedded in the organization and their connection to the market may be less apparent. It is in this sense that evolutionary fitness may be easier to assess for some processes than others. For some processes, such as product R&D, it may be relatively straightforward to assess the derived demand. For others, such as search heuristics, the connection may be more indirect and therefore less easily assessed. In any case, both yardsticks are as applicable, in theory, to organizational processes as to dynamic capabilities. How applicable they are in practice will vary with the specific process under consideration.

Although we suggest that technical and evolutionary fitness performance measures can be applied to processes as well as to dynamic capabilities, it is important to recognize that having a technically fit process does not necessarily mean that the dynamic capability it supports is also technically fit. This is because there is not a one-to-one mapping of processes and dynamic capabilities. Consider the example of relational capabilities used in the context of alliances (which is the focus of chapter 5). There are four processes identified as supporting a relational capability. Suppose that one of those processes, say coordination of partner activities, is technically fit. The relational capability might still not reach a high level of technical fitness if the other three processes that operate alongside the coordination process have a low level of technical fitness. In similar fashion, a particular process may exhibit evolutionary fitness even though the dynamic capability that it supports does not. Again, this is because the evolutionary fitness of a dynamic capability is dependent on the performance of the entire set of processes that underpin it.

The fact that the fitness of a dynamic capability depends on a set (or bundle) of processes brings up another performance issue of interest. Complementarities among the processes in the bundle may make the fitness of the resulting capability superior to the fitness level of any one of its underlying processes. Alternatively, there may be negative "transfer effects" within the process bundle similar to the sort discussed with respect to dynamic capabilities in chapter 1. Again, the implication is that the fitness of a dynamic capability cannot be inferred by looking only at the fitness levels of each of its process inputs separately.

Processes as resources

Another way to analyze the relationship between processes and organizational outcomes is to view processes as resources. They are part of an organization's resource base, as are capabilities, as explained in chapter 1. That is to say, they are something that the organization can draw upon to accomplish its aims.

As resources, their effect on organizational performance can be analyzed using basic resource-based logic. There are many closely related approaches that can be applied. See, for example, Amit and Schoemaker (1993), Barney (1991; 1997), Collis and Montgomery (1997), Peteraf (1993), and Peteraf and Barney (2003).

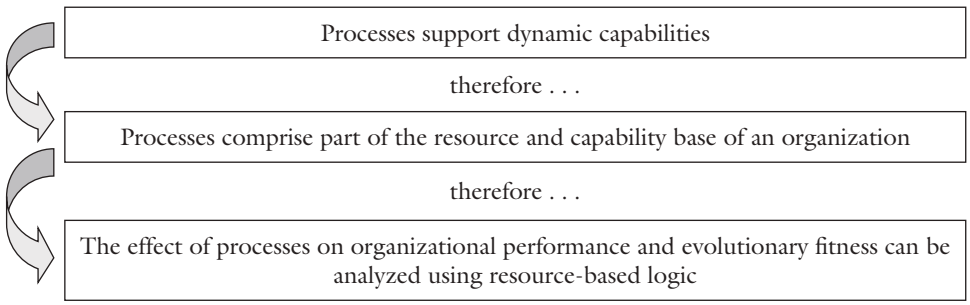

Figure 3.4 Organizational processes and the resource-based view

For example, a process can lead to a competitive advantage if it creates more value than the comparable processes of competing organizations (Peteraf and Barney, 2003). To assess the amount of value created by a process, it is necessary to compare the benefits it produces against its costs. A process can be a source of a competitive advantage only if its net benefits exceed those of rival firms.

If the process in question is widely used, as part of best practice, then it cannot be a source of advantage. If a dynamic capability depends only on processes of this sort, then it too will be a matter of best practice. Unless the processes are combined in a superior and not widely used manner, a dynamic capability that depends on best practice processes cannot contribute to competitive advantage. The outcome results of such processes and capabilities will be equifinal, as Eisenhardt and Martin (2000) suggest.

For either processes or dynamic capabilities to be the source of competitive advantage, they must be heterogeneous across firms (Barney, 1991; 1997; Peteraf, 2005). If there are differences in technical fitness, this condition will be met. Applying Barney's (1991) VRIN framework can determine whether they are the source of sustainable competitive advantage.[4]

In this framework "valuable" means that they must be a source of greater value, in terms of relative costs and benefits, as we have described above. "Rareness" implies that they must be rare in the sense that they are scarce relative to demand for their services (Peteraf and Barney, 2003). This depends not just on rareness in terms of process or capability type, but on their functionality as well. This excludes processes and capabilities for which there may be functional substitutes (Peteraf and Bergen, 2003). Finally, for processes or dynamic capabilities to be the source of sustainable advantage, they must be "inimitable" or difficult to imitate. This is likely to be the case for processes that are bundled together as capability inputs and for dynamic capabilities that involve complex bundles of complementary processes.

These examples suggest some of the ways that the frameworks and conceptual logic of the resource-based view can be used to understand how processes affect organizational outcomes. Other related frameworks and resource-based insights may be used as productively. We seek only to show that there are unexplored avenues for research based on unexploited but potentially fruitful complementarities.

[4] The VRIN framework says that resources must be *valuable*, *rare*, *inimitable* and *nonsubstitutable* to serve as a basis for a sustainable competitive advantage.

Chapter 4

Executives, Dynamic Capabilities, and Strategic Change

Clearly, the "how" of dynamic capabilities matters as much as the "what." That is, rather than focus solely on the key capabilities that organizations possess, and whether or not they add value to the firm, scholars are beginning to take on the challenging questions of where capabilities come from and how they change. But even here, with few exceptions (e.g., Adner and Helfat, 2003), there is an essential missing piece to the puzzle. In a word, people! In this respect, work on resources and capabilities has followed quite closely earlier work on competitive analysis, in that the role of the strategist – as opposed to the strategy – has typically garnered relatively short shrift. Like chapter 2, the purpose of this chapter is to bring the strategist into the picture more explicitly; indeed, to even encourage other scholars to consider how strategists can sometimes hinder, and sometimes promote, organizational change and the development of dynamic capabilities in organizations. But in contrast to chapter 2, we bring a more behavioral perspective to the study of dynamic managerial capabilities. We also directly address the call in chapter 3 to link managerial and organizational processes to performance outcomes.

This is not to suggest that works on tacit knowledge (Nonaka, 1994), employee skills (Schroder, Bates, and Junttila, 2002), managerial experience (Kor and Mahoney, 2005), and organizational routines (Winter, 2003) do not address the "people" dimension of organizations. However, our interest here is not the actual skills and capabilities individuals possess, but their actual behaviors, and especially how senior executives behave in dynamic environments. Stated differently, rather than assume that executives will act in ways that enhance their firm's capabilities, we treat the very act of executive behavior as a variable, worthy of study in its own right. The clear implication of this approach is that without considering whether and how executives act in ways that purposefully create, extend, and modify its resource base in a value-creating manner, discussion of dynamic capabilities risks remaining in the abstract, removed from the lifeblood of organizational life.

In truth, the possibilities are endless. Entire fields of scholarly endeavor seek to identify patterns of managerial behavior that account for organizational decisions and outcomes. Within organizational behavior, researchers have considered such topics as executive motivation (Goleman, 1995), aspirations (March and Simon, 1958),

charisma (Waldman, Ramirez, House, and Puranam, 2001), and creativity (Amabile, 1996), to name a few. Strategy scholars have examined various attributes and processes of top management teams (Finkelstein and Hambrick, 1996), and the nature of managerial work itself (Mintzberg, 1973; Hambrick, Finkelstein, and Mooney, 2005). Behavioral decision-making research in psychology (Kahneman and Tversky, 1979) and finance (Thaler, 1994) has also weighed in in important ways. Even nascent research on how the brain affects behavior may be relevant (e.g., Glimcher, 2003).

What will differentiate the present effort to consider a people-based view of dynamic capabilities and organizational change from other related work is our insistence on a clear link between leadership and strategy. It is true, as is well known to organizational scholars, that people (managers) can affect organizations in myriad ways. However, when it comes to the creation and adjustment of firm strategies, senior executives play a particularly critical role, both for what they choose to do, and what they choose not to do. So, the question we address in this chapter is, what are some of the most important ways in which executives aid or hinder the development of dynamic capabilities in organizations?

Central to this undertaking is the recognition that processes of search and selection are inextricably connected to the creation, extension, and modification of a firm's resource base. And it is managers who play a critical role in these processes. Organizations take the form they do in part because of resource allocation processes, something akin to the "big bang" of strategy. Decisions on which products and services to offer, in what form, and to which customers, are made directly or indirectly by managers, each resulting from search processes that are at the heart of organization science (e.g., Cyert and March, 1963). In this chapter, we consider how managerial behavior affects a firm's ability to create, extend, or modify its resource base, paying special attention to environmental contexts that sometimes can select, or deselect, which dynamic capabilities are evolutionarily fit.

We rely on inductive studies of executives managing the process of organizational change as primary empirical background, supplementing these data with relevant

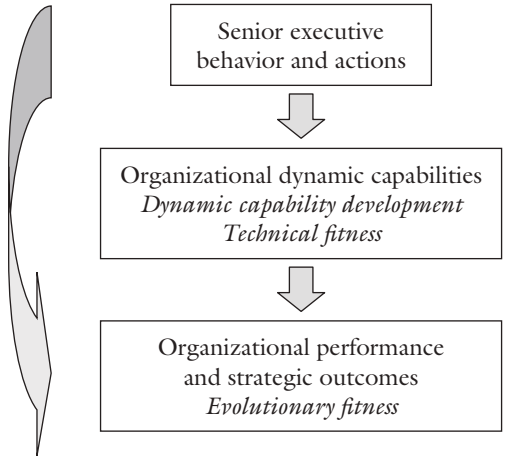

Figure 4.1 Dynamic capabilities and managerial processes

research from the extant literature. Because one of our major goals is to encourage further research on the role of executives in strategic and organizational change, we present a series of "snapshots" of executives in action, or inaction, to draw out patterns of behavior that might trigger new and more nuanced inquiries. In each instance, we tie these behaviors back to the core precepts of dynamic capabilities to help assess the importance of executives to the creation, extension, and modification of firm resources.

Executives and Strategic Change

This book documents some of the complex and powerful ways in which organizations accomplish strategic change via such mechanisms as mergers and acquisitions, and alliances. While executives play a role in our treatment of these topics in chapters 5 and 6, for the most part the focus will be on other factors, such as the strategic imperatives and organizational processes that govern change. In this chapter, we consider the executives themselves, and especially how their behaviors affect strategic change.

All organizations have forces of inertia and change that operate almost independently of the everyday actions and inactions of executives. Standard operating procedures (Cyert and March, 1963), organizational routines (Nelson and Winter, 1982), and core rigidities (Leonard-Barton, 1992) all play a role in inertia and change. However, especially when there are major discontinuities, dynamic environments, and complex situations – far from atypical scenarios for senior executives, and circumstances that appear to be even more common in recent years – managerial behaviors likely play a significant role in the strategy and performance of firms.

If executive behavior is important for organizational outcomes, it stands to reason that executives can both aid and hinder firm success. While specification of the full range of potential ways in which executive behaviors are meaningful is beyond the scope of any one article or chapter, it is possible to consider several interesting instances where executive behaviors are critical to the development of dynamic capabilities in firms. Our collection of examples will inevitably be more ad hoc than we might like, but again, the very eclecticism they embody lends itself to a wider set of follow-on empirical and conceptual inquiries than might otherwise be the case.

We consider two general situations where managerial behavior is critical to the realization of strategic and organizational change. For each, we briefly describe the phenomena, provide some examples of how they play out in organizations, and then suggest linkages to the wider set of work on the resource-based view in general, and dynamic capabilities in particular. Each example represents a major change opportunity and challenge, in one instance confronting the need to reconfigure existing strategy, and in the other exploring the extension of strategy into new arenas.

Leadership Dynamics In Competency Traps

Much has been written about managers' myopic tendencies and how this diminishes their ability to adapt to changing conditions (e.g., Levitt, 1960; Peteraf and Bergen,

2003). Constrained by bounded rationality (Cyert and March, 1963), executives often don't "see" what is changing and, hence, don't respond in a timely fashion to new environmental stimuli. While such patterned behavior is well established in the literature, another aspect of organizational change has not drawn as much attention and yet may be just as important in understanding why some firms are inflexible. Namely, for many executives, while significant data on how their environments are changing are well known to them, they still do not adjust. Rather than missing the change (as is most commonly depicted in the literature (e.g., Porac and Thomas, 1990)), executives sometimes choose to ignore the data. They choose not to cope with change. The following case study of Rubbermaid helps to illustrate these ideas.

Rubbermaid

Rubbermaid is a leading US manufacturer of plastic housewares and office products. The company grew for decades by expanding both distribution (from department stores to supermarkets, and discount and grocery stores) and product breadth (through internal innovation and external acquisitions of such companies as Little Tikes and Seco Industries). This diversification – accelerated under CEO Stanley Gault – fueled consistent and dramatic growth during the 1980s. Sales more than tripled from $350 million in 1981 to $1.45 billion in 1989.

Under the reign of CEO Stanley Gault during the 1980s, Rubbermaid evolved into a best-in-class "new product machine," ranked number one in its industry group of rubber and plastic products by *Fortune* for 14 consecutive years, even being named America's Most Admired Company in 1993. Gault infused the organization at all levels with a *raison d'être* – to meet consumer needs with new products and continuous improvement in product design.

Rubbermaid's trademark and core capability – product innovation – was at the root of the company's success. Innovation and speed of rollout gave Rubbermaid a monopoly in many product categories, allowing it to firmly establish its products before competitors could even copy the designs. By the late 1980s, Rubbermaid produced over 365 products per year, a track record that was testimony to a fine-tuned and optimized product development process that allowed Rubbermaid to quickly bring new ideas to market. The core of that process – consumer contact, little market testing, and cross-functional teams – enabled a killer combination of speed and innovation.

Cross-functional teams representing marketing, manufacturing, R&D, and finance specialize in a specific product line to gain expertise and speed. Product improvement ideas spring from interaction with consumers and observation of the products being used in a natural setting. "Take the commercial food-service team, whose purview is products sold to restaurants. Its members work for weeks in places like McDonald's or kitchens of hospital cafeterias in the US and abroad."[1] As a result of such activities, Rubbermaid believed R&D teams were so close to products and consumers that minimal market testing was needed prior to the launch of a new product. This dramatically reduced the time to market as well as the likelihood of

[1] *Fortune*, "How to grow a new product every day," November 14, 1994, p. 270.

having competitors quickly come out with copycat versions of Rubbermaid's new products. In effect, this focus on speed and innovation gave Rubbermaid a virtual monopoly in many product categories, boosting margins and their power with retailers.

In 1991, Stanley Gault retired from the organization, and a year later Wolfgang Schmitt became CEO. Schmitt continued the focus on product innovation, winning the coveted "America's Most Admired Company" distinction in 1993, but the business environment was beginning to change dramatically. Consumer expectations were increasing as the "shop-till-you-drop" 1980s gave way to the "more-for-less" 1990s. Consumers were seeking out "a good value" and retailers were responding with strategies like "every day low prices."

The 1990s also brought a shift in power from manufacturers to retailers as consolidation took hold. Powerful retailers like Wal-Mart – which accounted for 14 percent of Rubbermaid's total sales – were demanding, and getting, lower prices, higher service levels and just-in-time delivery from other companies. At the same time, Rubbermaid's bargain-priced competitors were making substantial strides in product quality and moving more quickly to replicate the company's new, innovative products, giving retailers a real alternative to Rubbermaid. In contrast to the speed with which its new-product machine could work, however, Rubbermaid was much slower in reacting to these changes.

A series of operational problems plagued Rubbermaid at a time when the company was under attack from customers and competitors alike. These problems involved pricing, manufacturing, and distribution, and were the most visible signs of key management breakdowns at the company.

Rubbermaid's prices were too high relative to competitors Rubbermaid was the industry's high-cost producer. For years the company's near-monopoly position and imposing brand name insulated it from severe competition and the need to focus on costs. Passing on price increases to retailers was standard practice for the industry leader. All that changed when the 1990s environment gave rise to enhanced retailer power and reinvigorated competition that finally saw the game shift away from Rubbermaid's core capability of rapid product innovation toward a new playing field driven by reliability and low prices.

Rubbermaid was slow to catch on. Wal-Mart and other big discounters pushed for lower wholesale prices but when resin prices soared in 1995, the company raised prices month after month. The big discounters retaliated by giving the best shelf space to Rubbermaid's rivals and warned, "You will kill your business if you don't do something about your prices."[2] With little talent in cutting costs in-house, Rubbermaid looked to shift responsibility elsewhere. Suppliers were prodded to cut their own prices, alienating some of the best, low-cost vendors in the process. CEO Schmitt, convinced that bargaining power still resided with Rubbermaid, pressured managers to negotiate more effectively with retailers. Referring to a senior manager who left the company as a result of this approach, Schmitt said, "It was clear there

[2] Warren Flick, senior manager at K-Mart, quoted in Deutsch, Claudia, "A giant awakens to yawns," *New York Times*, December 22, 1996, p. C1.

was a philosophical difference. We felt there should have been more focus on making sure the customer understood the necessity of these price increases. In the past we have always had a good history of implementing price increases."[3]

As Rubbermaid struggled with internal strife, competitors streamlined manufacturing processes and kept prices low. With Rubbermaid's attempts to browbeat customers into accepting higher prices ineffective, margins began to erode. Not unrelatedly, retailers were awakening to the quality of the competitors' products and expanding the shelf space they allocated to these firms as a result. With less differentiation in quality or features, the basis of competition turned to price, which Rubbermaid was not prepared for. The days of selling a "laundry basket for $7 if there's one that looks as good for half the price" were over.[4]

Manufacturing and distribution were neglected After years of product proliferation, Rubbermaid's production and distribution systems became a morass of complexity and inefficiency. Numerous stock-keeping units for the same basic product minimized economies of scale and kept operating costs high, while little new money was put into modernizing manufacturing facilities. Warehouse space "looked like spaghetti with lines going all over and multiple handling of products and pallets."[5] Synergies across business units were nonexistent, with even support functions like purchasing and payroll decentralized; information systems varied across every division.

Delivery and fulfillment were equally inept. Rubbermaid's computer systems were unable to replenish retailer stocks on the basis of actual sales, relying on a more unreliable forecasting system instead. On-time deliveries were as low as 75–80 percent, disrupting customers' just-in-time inventory management systems. The company paid a steep price for such inefficiency. Wal-Mart, for instance, frustrated with late and incomplete deliveries, cleared many of Rubbermaid's Little Tike's toys from its shelves, giving the space to Fisher Price. Another executive at a major retail customer said, "They've been such lousy shippers. Not on time, terrible fill rates, and their products cost too much. They show you a new product line and then tell you they can ship only a third of what you want."[6] To pacify retailers, Rubbermaid's salespeople eventually offered deep price discounts, a practice that further eroded margins.

When it finally became clear that improvements in operations were critical to remain competitive, Rubbermaid top executives pressed for rapid change. Dramatic changes in customer-support systems and information systems were mandated in spite of warnings by business unit managers about the risks of hasty implementation and the possibility of alienating customers and suppliers. The pressure from top

[3] Yerak, Becky, "Superstar stumbles," *Cleveland Plain Dealer*, July 9, 1995, p. H1.

[4] Deutsch, Claudia, "A giant awakens to yawns," *New York Times*, December 22, 1996, p. C1.

[5] David Gibbons, President of Rubbermaid's Home Products Unit, quoted in "Walking a tightrope," *Cleveland Plain Dealer*, September 15, 1996, p. 11.

[6] Colvin, Geoffrey, "How Rubbermaid managed to fail," *Fortune*, November 23, 1998, p. 32.

executives to implement changes caused a mass exodus of managers in nearly all of Rubbermaid's businesses in the 1990s. In spite of these changes, and the hundreds of millions of dollars in reorganization charges taken, Rubbermaid continued to struggle and was acquired by the conglomerate Newell Corporation in October 1998 for $5.8 billion.

Here is one insider's eulogy:

> "We were really rigid. When retailers would ask for a different color we would say, 'No, you get it in blue or you get it in white.' While the retailers of yesterday would say OK because it was Rubbermaid, the retailers of today say, 'No, I want it in bright yellow,' and they go to a competitor and give them the business, and when a customer like Wal-Mart or Target gives a competitor business, all of a sudden the competitor gets very big, very quickly. We probably put five or six competitors into business because of our lack of flexibility with customers."[7]

Executive leadership at Rubbermaid While the build up to crisis at Rubbermaid had a long genesis, at the critical juncture when executives needed to respond, they did not. Why? The answer – in the case of Rubbermaid – was a desensitized leader who consistently missed the most telling signs of change in the industry and allowed his organization to become slow, unresponsive, and stagnant. A successful company driven by a single-minded devotion to product innovation lived for decades in a world of premium prices, ineffective competition, and malleable customers. Its new CEO – brought up under this hegemony – knows of no other world and has been royally rewarded for adhering to the dominant logic (Prahalad and Bettis, 1986). The pillars of the strategy fall apart over time as newly powerful customers demand better prices and services that newly energized competitors are more than happy to meet. That which made the company successful is no longer valued in the same way; rather, the rules of the game shift to highlighting areas where the company has little competence.

In the language of dynamic capabilities we have adopted here, Rubbermaid's innovation strategy met the goal of technical fitness, but not evolutionary fitness. There is no evidence to suggest that the company became less adept at product innovation (technical fitness), only that this technical fitness became less attuned to the marketplace with the rise of big-box retailers (lack of evolutionary fitness). In this regard, a very real possibility is that Rubbermaid's continued attention to product innovation reduced the time and attention executives directed toward building alternative capabilities (low-cost production; process innovation; logistics; delivery). Hence, over-attention to technical fitness may sometimes engender deterioration in evolutionary fitness – another example of how evolutionary fitness can be endogenous to technical fitness. In contrast to our example of Intel in chapter 1 – where Intel was able to use its dynamic innovation capability to preempt competitors and sustain its evolutionary fitness – environmental pressures on Rubbermaid were too onerous to succeed with a somewhat analogous strategy.

[7] Interview with David Klatt, President, The Rubbermaid Group of Newell Corp., October 31, 2001.

The comparison of Rubbermaid with Intel is instructive for it points out alternative consequences from apparently similar strategies of continually enhancing the technical fitness of a dynamic capability. What these examples have in common is crucial – both firms continued to bulk up their dynamic innovation capability to maintain market power, a form of evolutionary fitness. However, this single-mindedness of strategy represents something of a gamble, since it implicitly assumes a monotonic relationship between technical fitness and evolutionary fitness that seldom, if ever, is sustained in competitive marketplaces. While Rubbermaid paid a huge price for this miscalculation, even Intel was forced to confront limits to customer demand for microprocessors that eventually had a deleterious effect on profitability.

This analysis highlights a key theme of this entire book: search and selection are critical aspects of dynamic capabilities. The dynamic capabilities that emerge over time in an organization are enabled by a series of decisions managers make on resource investments – an important component of managerial "asset orchestration," in the terminology of chapter 2. Building the dynamic innovation capability at Rubbermaid was nontrivial, and no doubt involved significant managerial time, managerial energy, and financial resources. But each of these investments was the result of managerial decisions, and it is simply not possible to develop a theory of dynamic capabilities and organizational change without examining the nature of these managerial decisions. Both in the initial development of routines of product innovation, and in the ongoing effort to enhance this dynamic capability, managers at Rubbermaid made choices, and these choices had consequences for the evolutionary fitness of their dynamic capabilities.

While the story is in its own way not much different from others in such industries as telecommunications, the CEO here chooses to deny the reality of the changes and actually tries to accelerate the strategies of the past. In the end, we're left with a story of failed leadership, the story of why Wolfgang Schmitt was unable to navigate Rubbermaid through the dramatic but not unforeseen changes in the plastics products business.

Few leaders would want to find themselves running an organization that is unable to deal with a changing landscape because its core capabilities have become less valuable over time. It is seldom the case that such changes are so sudden that they totally disrupt established business processes overnight. Hence, it is remarkable that Rubbermaid left itself so vulnerable to customers and competitors for so long, making little headway in meeting these challenges for years. But the mistake at Rubbermaid is not only that the company was *unable* to respond, it was also *unwilling* to adapt to the new environment. The company was untroubled for years with its high-cost position in the industry, and apparently believed that there was little risk of losing its dominating market share to slipshod competitors. Rubbermaid tried to push price increases on major customers while these customers shook their heads incredulously and opened their shelf space to lesser-known brands. The company's customer fulfillment track record was abysmal in a time of increasing customer demands for better service, yet it didn't start investing in the resources it needed to meet these pressures for years. It was almost as if time stood still for Rubbermaid, that the changes of the 1990s never took place and that the company was still living in the near-monopoly world it enjoyed a decade earlier.

Why did Rubbermaid choose to live in the past? CEO Schmitt: "Our success had its own form of seductiveness. It made us pretty self-satisfied and not inclined to ask the tough questions."[8] Underestimating the ability of competitors to improve product quality, as well as retailers' seriousness in resisting price increases, are serious shortcomings that really make one think that top management believed its own press clippings. Perhaps this is not surprising when *Fortune* magazine not only labeled Rubbermaid as "Most Admired" but also elevated its management practices to an art form and concluded, "It's a mistake to bet against Rubbermaid."[9] The overconfidence engendered by this idolatry almost certainly had something to do with the company's eerie complacency in the face of massive industry changes, but doesn't explain it all.

Dell Computer is once again an instructive counter-example. Michael Dell (Chairman) and Kevin Rollins (CEO) have actively worked toward creating a culture of open-mindedness, questioning, and even doubt. In fact, the Dell approach to dealing with change demonstrates how the Rubbermaid-like risks of over-attention to technical fitness (in this case, along the lines of manufacturing processes and logistics) can be mitigated by a culture that refuses to allow such attention to technical fitness to overtake wider concerns on how markets and competitors are changing. For example, Dell and Rollins have said, "We think about failure all the time. We've been able to simulate failure in our minds – before it happens – and avoid extinction or disastrous consequences because we've thought through all the bad things that could happen."[10] As far back as 1998 Michael Dell noted that, "We are 99 percent focused on what is going to happen and what could change the business in the future. We ask ourselves what are the risks to the business, what could go wrong."[11] The culture behind these sentiments is a particularly robust dynamic capability that has been built by, and is continuously reinforced through, a pattern of executive behaviors along the lines just described.

One of the toughest challenges companies in trouble must deal with is letting the unadulterated truth break through the defensive layers that surround executives and their jobs. Sometimes erected on their own, and sometimes accumulated from yesterday's scar tissue, there are barriers protecting a company's core made up of history, culture, bureaucracy, and organizational routines that are every bit as daunting to break through as the strongest of physical or strategic entry barriers. When the CEO – by wont of personality, insecurity, or arrogance – has an affinity to avoid dealing with tough realities, the entry barriers become almost impermeable, and that is what happened at Rubbermaid in the 1990s. Schmitt's managerial repertoire consisted predominantly of pushing new product innovations, and when this was no longer as valued by the market, he closed down. He maintained his beliefs in the

[8] Deutsch, Claudia, "A giant awakens to yawns," *New York Times*, December 22, 1996, p. C1.

[9] Farnham, Alan, "America's most admired company: It's Rubbermaid," *Fortune*, February 7, 1994, p. 54.

[10] Michael Dell and Kevin Rollins, quoted in Stewart, Thomas A., and O'Brien, Louise, "Execution without excuses," *Harvard Business Review*, March, 2005, p. 107.

[11] Michael Dell, quoted in *Industry Week*, November 16, 1998, p. 58.

face of contrary evidence; new executives brought in to effect change were not heard and left almost as fast as they came on board; he chose to ignore warning signs of impending collapse delivered by customers, competitors, and internal advisors; and he became more "brusque and confrontational"[12] in the face of challenge. In the end, the assessment of former senior executives is telling. John Mariotto, former president of Rubbermaid's office products unit, put it this way, "Wolf's [Schmitt's] problem is he will not listen and really hear people telling him things he doesn't agree with, and he has few left who will dare to disagree with him anyway."[13]

Discussion

The story of Rubbermaid is not unique. Motorola went from a 60 percent market share in the cellphone business in 1994 to less than 20 percent in 2005 by mismanaging the transition from analog to digital technology. In that case, the refusal to cope with change could be traced to the tremendous power of incumbent and successful managers who had built the analog business into a potent force within Motorola, as well as a company history of failure in developing second-generation consumer products that demanded a deeper knowledge of customers than the engineering-driven firm possessed.

Perhaps one of the classic examples of this type of managerial inaction is the response of the American Locomotive Company (ALCO) to the introduction of the diesel locomotive into the US in the early 1930s. ALCO was the dominant firm in the industry – solid financial condition, good relations with customers, and decades of experience in the production of steam locomotives. With the introduction of the diesel locomotive, however, ALCO began a long, slow decline, with market share sinking from 70 percent to 11 percent between 1935 and 1957. What happened? ALCO continued to invest in steam locomotive technology and production, even though a superior technology had clearly entered the market. So wedded was the company to steam technology that it adopted promotion norms that forced out anyone not committed to steam; in public, ALCO was an outspoken supporter of the status quo as well. The result was not hard to foresee: by 1969, the once dominant ALCO was forced to exit the locomotive production industry. What is particularly relevant about this story for our discussion is that ALCO saw it coming. The company knew what was going on in the industry, and it even had clear examples of the consequences of not adapting its technology: by 1957, two major steam competitors – Baldwin Locomotive Works and Lima Locomotive Works – were bankrupt. There can be little else to conclude other than that ALCO chose not to respond to their challenges, and chose not to observe and learn from the mistakes and failures of others.

Researchers, particularly in organizational theory and behavior, as well as the "process side" of strategy, have addressed aspects of this phenomenon. For example, Meyer, Goes, and Brooks (1993) found that California hospitals were less likely to change the more successful they have been, and Miller and Chen (1994) found that

[12] Interview with Paul Stupinski, former VP Commercial Products at Rubbermaid, April 12, 1999.

[13] Yerak, Becky, "Superstar stumbles," *Cleveland Plain Dealer*, July 9, 1995, p. H1.

airlines made fewer competitive changes in the post-deregulation period when they were successful. Haveman (1992) and Zajac and Kraatz (1993) found similar patterns for savings and loan institutions and American liberal arts colleges, respectively.

Conceptually, there are several reasons why changes such as these are fraught with so much difficulty. Persistence in a failing strategy may arise because organizations develop systems to reinforce past successes (Hannan and Freeman, 1984), it is sometimes viewed as more efficient to retain existing competencies than venture to create new ones (Leavitt and March, 1988), there is little motivation to change when targets are being met (Greve, 1998), and people often respond to threats by accelerating what they have done in the past (Staw, Sandelands, and Dutton, 1981). What all of these explanations have in common is that people making judgments about what to do or not do are central to organizational action. A theory of dynamic capabilities and organizational change cannot proceed very far without some reckoning of this "soft side" of strategy.

Managerial Knowledge and Strategic Change

Firm-specific managerial knowledge has been recognized as a critical resource because it increases the likelihood that investments will be made in opportunities that best fit the firm's own strengths and weaknesses (Kor and Mahoney, 2005). But of course this opens up the risk of managers' over-attention to internal fit issues, and under-attention to changes in the wider environment. So, history is very important, but we must guard against assuming that historical experiences are necessarily value creating for a firm. This is a classic functional bias that exists in many theories, with the story of Rubbermaid highlighting some of the risk in assuming that managers will (usually) do the right thing. In this section, we consider managerial knowledge more directly, particularly in the context of how managers use knowledge in changing circumstances.

Firms often rely on past acquisition experience as a source of learning on how to conduct subsequent acquisitions (Penrose, 1959). However, the strategic management literature in general (e.g., Fowler and Schmidt, 1989), and work in the resource-based view in particular, tend to assume that such learning is beneficial for firm performance. While that may well be the case, some scholars have also examined whether acquisition experience might actually have negative consequences (e.g., Finkelstein and Haleblian, 2002). Implicit in studies that focus on the diseconomies of experience is attention to the lessons executives draw from past deals, and the inferences that follow. For example, in Finkelstein and Haleblian's (2002) study comparing firms' first and second acquisitions, they found that higher returns accrued from the first deal than from the second. Borrowing from psychology, these authors used the term "negative transfer" to describe how relatively inexperienced acquirers sometimes rely on past acquisition and integration actions when making their next acquisition even when the latter deal is substantively different from the former.

A closer look at the role of executives in acquisition deal-making yields further insights along this theme. One of the best-known, and least successful, acquisitions of the 1990s was the Quaker Oats purchase of Snapple Beverage Company.

Quaker Oats' acquisition of Snapple

Snapple was founded in 1972 by two window-washing brothers-in-law, Leonard Marsh and Hyman Golden, and a health food store owner, Arnold Greenberg. These New York City natives began distributing fruit juices, all natural sodas and seltzers, and fruit drinks to local health stores in 1986, emphasizing a wholesome image through their slogan, "Made from the best stuff on earth." The partners entered the developing iced tea market the next year with a brewed, high quality, "new age" ready-to-drink (RTD) tea, which turned out to be a major success.

After a leveraged buyout, Snapple went public in 1993. Looking to propel the brand to national distribution, Snapple emphasized a "regular people" theme via employee Wendy Kaufman, who quickly became the "face" of Snapple on TV with her friendly "Greetings from Snapple!" salute and her penchant for answering fan mail on the air. Snapple also enlisted the support of offbeat personalities, including radio stars Howard Stern and Rush Limbaugh, to create an individualist image that wooed a cult-like following. The popular company was regarded as innovative, pioneering the hot package process for teas, which would later become the category standard, and developing novel glass-front vending machines and coolers to display its unique wider-mouth bottles.

The secret ingredient to Snapple's success was its extensive and dependable network of independent co-packers and distributors, who prepared, bottled, warehoused, and sold its products. Snapple cultivated the distributors, and it paid off. As one distributor described it: "They sent people here to work with us, help sell the product alongside the salesmen. They spent a lot of time and energy at the retail level – the small guy – because they knew that's where the root of their business was."[14] The combination of innovative product, ingenious marketing, and hyper-loyal and effective distributors transformed Snapple into a moneymaking machine in the early 1990s.

Two years after the leveraged buyout, however, the market turned. By the end of 1994, the RTD tea market growth rate was beginning to slow down, for the first time breaking out of the 50–100 percent range. The RTD tea products joint ventures created by Coca-Cola (with Nestlé) and PepsiCo (with Lipton) were quickly becoming major forces in the segment. New entrants, such as Arizona Iced Teas, Nantucket Nectars, and Mystic, started carving away at Snapple's market-leading position through various niche strategies and innovations as well. Finally, the cooler than expected summer and fall of 1994 created serious inventory problems for Snapple. The company's stock price reflected these difficulties, having fallen 50 percent from its highs a year earlier.

It was at this point that Quaker made the deal. On December 6, 1994 Quaker bought Snapple for $1.7 billion, representing a premium of 28.6 times earnings and 330 percent of revenues. Not long afterwards, to help pay down the resulting debt, Quaker divested a number of businesses that had historically provided a steady stream of earnings and global reach. Selling off its pet-food and candy businesses, however, brought further troubles as hefty capital gains taxes on those sales were

[14] Interview with Bryan Briggs, Division VP of Sales and Marketing, Colonial Distributors, March 19, 2001.

incurred. It quickly became clear that Quaker's investment in Snapple was going to be an uphill battle.

One of Quaker's first integration activities was to create a new beverage division consisting of both Snapple and Quaker's long-time winner Gatorade, with a plan to build a hybrid distribution system whereby Snapple distributors would have the right to deliver cold, single serve Gatorade via its Direct Store Delivery system if they turned over part of their unrefrigerated Snapple business to Gatorade's warehouse distribution system. The trade fell flat for two reasons. First, some old-line distributors didn't trust Quaker, in part because as soon as Quaker acquired Snapple, the company tried to renegotiate contracts that were in-perpetuity. Second, trading Snapples for Gatorades was bad for business. Distributors told Quaker that Snapple's "$4-per-case margins are roughly double what they could make on Gatorade"[15] and also significantly outperformed the $1–$2 margin in soft drinks: "We just saw loss. We saw business going away that was not going to be offset by something else. We were not willing to give up that right that we built over the years."[16]

With distributors unwilling to cooperate, the "exploit the synergies" strategy fell apart. Compounding the problem were the "unexpected" surprises that always turn up after a deal – manufacturing was much slower than anticipated, outdated Snapple cans were stuck in inventory, and the exodus of salesmen (another blow to relationships with distributors who had depended on them at times) and management (including two of the three founders) ensued. It took Quaker until May 1996, almost a year and a half, to make the distribution system workable and introduce a new marketing campaign. By this time, however, competition in RTD teas and fruit drinks had been intensifying so strongly since 1994 that Quaker could not see how to win back lost market share.

Finally, with the sale of Snapple to Triarc in 1997, the experiment was over. Snapple was not Gatorade, and thinking that it was so turned out to be a billion dollar mistake.[17]

Executive leadership at Quaker It may well be human nature to want to relive your greatest successes all over again, and this may be nowhere more true than for CEOs of large, complex businesses – people who remember clearly the accolades for a past success and the personal satisfaction that came with that success. Yet it is by looking to the past that many companies stumble, particularly when they believe that the lessons of the past will apply equally well to the present. The past for

[15] Burns, Greg, "Will Quaker get the recipe right?" *Business Week*, February 5, 1996, pp. 140–5.

[16] Interview with Bryan Briggs, Division VP of Sales and Marketing, Colonial Distributors, March 19, 2001.

[17] Snapple was bought for $1.7 billion and sold for $300 million. Quaker recorded a $350 million tax benefit with the sale (which offset some of the capital gains from the Snapple-related sale of the pet food and candy businesses). Hence, after two and one-half years, the Snapple mistake cost Quaker somewhere between $1 and $1.5 billion, depending on how one chooses to account for tax issues and the opportunity cost of selling the pet-food brands, which doubled in operating profit after being sold to Heinz. Smithburg resigned soon after the sale, and PepsiCo eventually acquired Quaker in December 2000 for $13.4 billion in stock.

Quaker was the highly successful expansion of the Gatorade brand after 1983. Quaker CEO William Smithburg rightly saw this as his greatest triumph:

> "Our people built Gatorade from a small $90 million business in 1983 to over $2 billion today and it still delivers double digit growth and better than an 80 percent share despite Coke and Pepsi entering the market in the early 90s. They couldn't beat us, so one of them had to buy the company to get Gatorade."[18]

Could Snapple provide the opportunity for a repeat? There seems little doubt that Quaker management saw Snapple as a high-potential brand like Gatorade was a decade earlier, and that the same marketing expertise that helped Gatorade explode into a megabrand could be applied to Snapple. Equally important was the belief that "there would be great synergies with Gatorade."[19] What followed – from due diligence to integration – was wholly predicated on these beliefs, yet the underlying premise was wrong. Snapple was an "image" drink, while Gatorade was a "fluid replacement product"; Snapple's success to that point was based on "quirky" marketing that created a "cult" drink, while Gatorade was aggressively segmented and promoted in a more traditional fashion; Snapple relied on entrepreneurial distributors while Gatorade used a warehouse system. These fundamental differences played out in critical areas:

1. *Realizing synergies* – The success of the Snapple acquisition depended on realizing synergies by integrating the distribution of Snapple with Gatorade. While this is exactly what Quaker CEO William Smithburg was banking on, it turned out to be unworkable:

   > "We went to the distributors and said, 'we at Quaker are very good at warm channels . . . we will give you all of Gatorade's cold channels'. The distributors responded, 'it's brilliant, it makes sense, no way!' The distribution synergies turned out to be a flawed strategy . . . it was not synergistic as we thought. We could see it six months into the acquisition."[20]

2. *Due diligence* – The Snapple deal is a classic example of failed due diligence. The hybrid distribution system rejected by the independent distributors was the key to the deal, yet Quaker never realized the distributors held all the cards – their contracts with Snapple gave them ironclad in-perpetuity rights to the product – or how different the old-line Quaker company was to the entrepreneurial distributors. As one top Snapple distributor said, "[Quaker] just didn't know our business."[21] Smithburg acknowledges the problem: "I am not critical of the distributors. Our error was not understanding them or their business and culture as well as we should have."[22]

[18] Interview with William Smithburg, former CEO of Quaker Oats, January 18, 2001.
[19] Interview with William Smithburg, former CEO of Quaker Oats, January 18, 2001.
[20] Interview with William Smithburg, former CEO of Quaker Oats, January 18, 2001.
[21] Burns, Greg, "Will Quaker get the recipe right?" *Business Week*, February 5, 1996, pp. 140–5.
[22] Interview with William Smithburg, former CEO of Quaker Oats, January 18, 2001.

When one considers the various capabilities that are needed in acquisitions, and tries to reconcile this with what went wrong in the Quaker–Snapple deal, an important insight emerges. Quaker did know how to market and distribute a product like Gatorade – the company had these operational capabilities – but lacked the key acquisition-based dynamic capabilities (examined in more detail in chapter 6) that were arguably even more important. Its marketing and distribution capabilities were valuable, to be sure, but because Quaker's capability to effectively engage in due diligence before the deal, and integration afterwards, was lacking, the company had a failed acquisition experience. Analogous to the relationship capabilities we analyze in chapter 5, an acquisition-based capability is one of the most important dynamic capabilities underwriting firm growth strategies. An operational capability that might lead to competitive advantage was, in this instance, contingent on an acquisition-based capability that effectively served as the necessary condition for success.

Was Quaker blinded by the Snapple opportunity and its own self-confidence as a brand builder? Consider the evidence: Quaker's track record in building Gatorade to mega-brand status, coupled with a perception that Snapple was this quirky brand that had somehow made it big, created momentum and excitement that quickly outpaced a mundane need for careful due diligence. Triarc CEO Michael Weinstein, who spearheaded the Snapple turnaround after buying the company from Quaker, put it this way: "Quaker believed three guys from Brooklyn stumbled onto this thing that became a great success. Bringing on board some 'smart guys' would make it all work better. Quaker just didn't understand the entrepreneurial nature of the business"[23] Several years after selling Snapple to Triarc, Smithburg recognized the flaws in due diligence. "There was so much excitement about bringing in a new brand, a brand with legs. We should have had a couple of people arguing the 'no side' of the evaluation."[24]

3. *Dynamic capabilities and knowledge* – If the Gatorade experience and strategy was seen by Quaker as the right solution for Snapple, there would be little reason to rely on management at Snapple for insight, and this is precisely what happened. Yet Snapple's core capability can be almost said to reside in its store of tacit knowledge – about customers, about distribution channels, and about product promotion. When Quaker tried to "Gatorize" Snapple, it effectively disregarded this knowledge in favor of its own set of beliefs on how to sell a bottled drink, eviscerating the very thing it had acquired. Some of that tacit knowledge was embodied in Leonard Marsh, the only one of the three Snapple co-founders who stayed on with Quaker. Yet, as Marsh put it, "I was the Executive Vice President in charge of nothing,"[25] a recollection in line with Smithburg's own view: "none of Snapple stayed on . . . Marsh did a little bit, but pretty minor."[26]

[23] Interview with Michael Weinstein, CEO of Triarc Beverage Group, November 10, 1999.
[24] Interview with William Smithburg, former CEO of Quaker Oats, January 18, 2001.
[25] Interview with Leonard Marsh, co-founder of Snapple Beverage Company, February 1, 2001.
[26] Interview with William Smithburg, former CEO of Quaker Oats, January 18, 2001.

It appears that much of what went wrong with Snapple could have been avoided if Smithburg and Quaker had chosen not to try to impose the Gatorade strategy on Snapple. As Triarc CEO Weinstein noted, "Quaker believed the Gatorade model could be applied to Snapple, but this just scared the system. Smithburg never got it."

Discussion

The story of Quaker Oats' acquisition of Snapple is all about the limits to resource value in changing conditions. One of the essential components to a resource-based theory is knowledge, especially tacit knowledge, which is often difficult to imitate and highly valuable. However, the value of such knowledge may be limited, bringing up the possibility that knowledge used in a context that it may not be meant for is a source of competitive disadvantage.

The theory of negative transfer from psychology may be helpful in addressing this issue. According to this work, a prior event is influential in the performance of a subsequent event, because individuals tend to rely on what has happened in the past as a guide for future behavior (Cormier and Hagman, 1987). When that prior event is structurally similar to the subsequent event, relying on the past is often a good thing. However, when one's search for an analogous condition from the past leads to a reliance on a situation that is superficially but not structurally similar to the current situation, negative transfer occurs (Novick, 1988). Hence, the essential element in negative transfer is that people rely on past events, making their evaluation of the relevance of past events a critical component in explaining subsequent behavior.

It is not hard to see how such negative transfer can ensue in merger and acquisition processes. There is some evidence that the degree of knowledge transfer between two merging firms enhances acquisition performance (Capron, 1999), especially when this knowledge is codified by the acquiring firm (Zollo and Singh, 2004). However, particularly for less experienced acquirers (i.e., acquirers that have not developed a mergers and acquisitions capability), it is often difficult to accurately assess how similar a target is to previous targets. There is significant risk – and often incentive – in believing that because the target is from the same industry as past deals, or has similar customers to other targets, or some other point of apparent overlap with history exists, that the integration process will go smoothly. Such firms tend to overestimate the value of their knowledge base.

Negative transfer is not limited to instances of mergers and acquisitions. For example, the supermarket chain Food Lion's expansion from the Southeastern United States to the Southwest region fell flat when the company tried to apply the same formula that had been successful in its home market. Food Lion traditionally emphasized cost controls and low prices. While this formula proved successful in its home market, when the company expanded to the Southwest region it came up against customers who expected service and product variety from their supermarkets (Dess and Picken, 1999). The Food Lion story in the Southwest is not only a classic illustration of negative transfer in action, it also highlights one of the key underlying reasons for the negative transfer effect. The company's expansion to the Southwest followed a traditional model of leveraging a core capability – in this case a capability in cost control – except that this core capability turned out to be of considerably less

value in the newer marketplace. Indeed, the apparent similarity in customer groups between the Southeast and Southwest masked a deeper difference in their relative expectations for customer service and product variety.

In a similar vein, Marks & Spencer found that its formula of captive supply chain, employee paternalism, and 100 years of history as a retailer in the UK was considerably less valuable in Continental Europe and Canada when it expanded to those markets. Research by Hu (1995) suggests that such cross-national expansion strategies can stumble because of the immobility of core capabilities. Such nontransferable advantages might include a superior workforce, a monopoly position, a superior reputation, or close relationships with customers and suppliers. Also, tacit knowledge is difficult to transfer: thus, firms can more easily transfer abroad the exploitation (manufacture) of a new technology but not its creation (innovation).

Each of these cases also illustrates the usefulness of distinguishing technical fitness from evolutionary fitness. Quaker adopted a marketing and distribution approach characterized by state-of-the-art methods and processes – very high technical fitness of these operational capabilities – but had low technical fitness of the dynamic capabilities needed to select appropriate marketing and distribution for the new context. Hence, Quaker implemented its existing methodology in an inappropriate context – almost the definition of inadequate evolutionary fitness. Similarly, Food Lion and Marks & Spencer had operational capabilities with remarkable technical fitness that were not well-attuned when transferred to their respective new environments, leading to a lack of evolutionary fitness. It is almost as if one of the most powerful types of dynamic capabilities involves the capacity to select an appropriate context in which to apply a set of well-developed operational capabilities. As these examples suggest, this is not quite as easy at it may seem, because organizational inertia and individual tendencies toward commitment to the status quo lead firms to naturally double-down on a narrow set of proven activities even in the face of contrary data.

In sum, Quaker's acquisition of Snapple, as well as other examples such as Food Lion or Marks & Spencer, helps clarify the implicit limits to a firm's capability set. Capabilities that are valuable in one circumstance may not necessarily be valuable in another. Furthermore, attempts to change where capabilities are employed may also require changes to how capabilities are employed. That is why it is so important to consider how executives manage change in organizations that have historically relied on the same routines – whether they are around distribution systems in the case of Snapple, or low-cost product mixes at Food Lion, or long-established employment and supply chain practices at Marks & Spencer – to guide past strategic action. Creating, extending, and modifying a resource base is very much dependent on how executives view those resources and capabilities.

Conclusion

The idea that capabilities emerge from a series of path-dependent learning experiences is a central one (Dierickx and Cool, 1991; Teece, Pisano, and Shuen, 1997). Further, competitive advantage requires that these capabilities are valued by customers,

and are difficult to imitate by competitors (Peteraf, 1993). But the transition from a set of assets and resources to sustainable competitive advantage is nontrivial. Miller (2003) describes several "discovery paths" that firms might follow on their way toward competitive advantage, including experimentation, insight, search, and leveraging, but from our point of view the essential point is that managers must take some type of initiative in converting discovery paths to real actions. Stated simply, managers must take action.

This is just as true when we consider how organizational change occurs. One of the bedrock ideas in the literature on resources and capabilities comes from Nelson and Winter's (1982) depiction of organizations as mechanisms of "learning-by-doing" that eventually yield routines that govern organizational life. These routines not only emerge from historical path dependence, but also are necessarily coupled or augmented by resource allocation decisions made by executives (Zollo and Winter, 2002). Once embedded in an organization, it would not be surprising to find the analogous capabilities (that are defined by routines and investments) to be key drivers of managerial decision-making. However, while such capabilities may well be advantageous to a firm's success, they need not be. It is the way in which managers interpret and use the capabilities at their disposal that is critical. The case of Quaker and Snapple clearly highlights the danger of relying on capabilities in a context where they are not as valuable, but even the earlier story of Rubbermaid is suggestive of how dynamic capabilities – when left unchanged in a dynamic environment – can destroy rather than create value. Technical fitness may give firms the confidence to proceed, but, without evolutionary fitness, dynamic capabilities in competitive environments can be counter-productive. The upshot is that it seems important in empirical work to consider what managers actually do – their specific actions and inactions – with the resource endowments their firms enjoy. Even valuable and scarce resources may be value destroying when used inappropriately.

Hence, it seems important to give greater prominence to the importance of context – both in terms of time and place. In this respect, we are very much in line with perhaps the most robust idea in all of organizational science – the concept of fit. Resources are valuable when they fit the requirements of customers in a particular place (country, market, industry) and a particular time (yesterday, today, tomorrow). This is, in essence, the idea of evolutionary fitness we have introduced in this book.

Why do some firms invest in resources that do not, and some might argue cannot, result in valuable and inimitable capabilities? The typical answer at a macro level is that competitive advantage arises from some combination of luck and superior knowledge (Barney, 1986; Rumelt, 1984). But beyond luck, and superior knowledge for that matter, is a series of judgments (themselves based on countless antecedents – human capital, social capital, specific experiences, intuition, and others) that are sometimes right and sometimes wrong. And it is these judgments, these decisions, which are at the heart of a managerial perspective on strategic and organizational change.

This brings us back to the question this chapter has sought to address: how do executives aid or hinder the creation, extension, and modification of a firm's resource base? We have certainly not exhausted this question, to be sure, but several concluding statements are possible. First, studies of how executives behave in the

context of a theory of dynamic capabilities should consider specific executive decision-making situations, and not just in the abstract, since the nature of managerial action may well vary with context. Second, studies of the role of executives should not be undertaken in a vacuum – the importance of history and routines, organizational resources and capabilities, and competitive dynamics will not become less relevant when one more explicitly considers executive action and inaction. Third, the interplay between technical and evolutionary fitness seems a key criterion on which to assess the managerial role in how dynamic capabilities affect organization change. Finally, while there is abundant research in psychology, organizational behavior, and strategy on executives – and this work will need to be carefully tapped into – the question of how executives perceive, act on, and evaluate resources and capabilities remains a central, intriguing, and potentially informative inquiry that scholars from the resource-based and dynamic capabilities view of the firm may be particularly well placed to address. Hopefully, this chapter provides some food for thought in this regard.

Chapter 5

Relational Capabilities: Drivers and Implications

With Jeffrey Dyer and Prashant Kale

From the perspective of dynamic capabilities, one of the most important "how" questions concerns how firms can build or acquire new capabilities. The "how" of dynamic capabilities extends beyond the decisions and actions of top managers examined in the previous chapter to capabilities and processes that reside within organizational teams. In this chapter, we focus on relational capabilities and the associated organizational processes that can enable firms to access the resources and capabilities of others through alliances. The next chapter then examines acquisition-based dynamic capabilities, which provide another mode of acquiring new resources.

The past decade has been characterized by a large number of interfirm partnerships as firms have coped with a rapidly changing environment. Pressures from globalization along with changes in regulation and technological factors have resulted in firms reaching out to partners to access their complementary capabilities. Yet the success rates of alliances[1] continue to be modest, with most studies reporting rates of less than 50 percent. The limited success rates on investments that take significant corporate resources have prompted many firms to explore how they can be more successful at such relationships. While the average success rate in alliances is disappointing, some firms have enjoyed substantially higher performance. This raises an interesting question: what factors distinguish between more and less effective alliance partners?

There has been a concomitant rise of interest in academia in understanding why some firms are better at partnering than others. Factors that create stress in alliance relationships are among those capturing attention. Problems associated with opportunism on the part of an alliance partner can limit the benefits that may be available

[1] We define an alliance as a cooperative relationship between two or more organizations that is designed to achieve a shared strategic goal. Such a definition excludes contractual relationships that do not have an intended impact on competitive advantage of the firms involved via the shared strategic goal. Studies vary considerably on average success rates, but the average of the success rates – defined mostly as achievement of strategic objectives – is about 40 percent.

from an alliance. This has prompted some authors to characterize alliances as "learning races," where an effective safeguard against leakage of critical assets such as knowledge is to win the race to learn from one's partner (Hamel, 1991; Khanna, Gulati and Nohria, 1998). Such arguments are presented more at the level of the firm's stance towards alliances than towards the actual meta-capabilities that may be needed for the firm to learn at a differential rate. More recently there has been an interest in identifying the factors that lead to higher levels of trust in alliances (Zaheer, McEvily, and Perrone, 1998). This work makes the distinction between interpersonal trust between representatives of the firms in an alliance, and trust that can be imputed to the corporate entities themselves. They find that trust has to operate at both levels for firms to truly obtain positive performance results from the alliances and that there are important distinctions between these levels of analysis. The experience of firms with alliances has been varied enough that studies can be found to illustrate both the positive stories (of firms generating positive synergies and learning substantially from each) and the negative ones. Recent work is starting to point to systematic differences between firms in their success rates from alliances, controlling for factors related to the industry and the transaction itself (Anand and Khanna, 2000).

There has been increasing interest in the characteristics of firms that have created superior alliance capabilities to generate advantage by managing alliances effectively, including the more challenging and complex relationships. The opportunity to create competitive advantage and rents from alliance relationships and the key factors driving them have been discussed in Dyer and Singh's (1998) article on the relational view of the firm. Firms that are able to systematically earn rents from their alliances have very different approaches to managing alliances than others. Using the definition of dynamic capabilities in this book, *relational capability* can be viewed as a type of dynamic capability with the capacity to purposefully create, extend, or modify the firm's resource base, augmented to include the resources of its alliance partner. This definition accords with our use of the term "resource base" in this book (see chapter 1), which includes preferred access to resources and capabilities outside of the boundaries of the firm. In particular, the augmented resource base could result in value creation specific to the assets and resources involved in the transaction. We also will argue that creation of relational capability is a purposeful process that is more likely to succeed if particular structural decisions within the firm are made and if there is support for creation of the capabilities in senior management. In this chapter, we explore the drivers of relational capabilities and discuss recent work highlighting the conditions under which they help create value.

There is an increasing body of work on strategic networks,[2] suggesting that there is value in thinking about the firm as embedded in a larger network of relationships. This work is based on the premise that firms exist in an ecosystem of relationships that can be characterized as a network of interconnected firms. The position of the

[2] We view a network as the set of relationships between firms that reflects their transactions with other organizations within an industry or scientific field. The relationships between firms can affect the competitive position of each player within the network. Researchers on networks use the network as one unit of analysis and then the transactor (or firm) as another unit of analysis.

firm in the network and the quality of its ties with others allows it to access the resources and capabilities of others within the network. At one level, the network view of the firm suggests that one should consider the set of the firm's alliance partners as part of the extended enterprise. At another level, using network concepts in more detail, one can imagine the location of the firm within the network and the quality of its direct and indirect ties with other firms can also be drivers of advantage (Gulati, 1998). Such concepts include network location, density of ties, and quality of ties. In our view, relational capabilities are a precondition for firms to access the benefits from their network ties.

The field of strategic management is primarily concerned with factors that might explain how firms develop and sustain competitive advantage. We bring this lens to the question of how firms can develop advantage through access to the resources of other organizations. We start by understanding the key drivers of relational advantage and then explore how firms may build relational capability.

Drivers of Relational Advantage

To understand how firms create value from alliances, we first note that typical arm's-length relationships between firms are characterized by: 1) nonspecific investments in the relationship, 2) minimal informational exchange between the firms involved, 3) separable resources and capabilities of the partners, and 4) very standardized governance mechanisms operating between the firms involved. Such relationships may be necessary to execute ongoing activities that require access to another firm's resources, but do not create a competitive advantage for either of the partners. Such arm's-length relationships lack an impact on relational rents because the interfirm exchange, although useful in its own right, is not characterized by any idiosyncratic feature that generates competitive advantage for the combination of firms' resources and capabilities.

On the other hand, firms can create value from their alliance relationships only if they move these away from generic, arm's-length relationships, and purposefully focus on creating an idiosyncratic combination of resources and capabilities. This requires the partners to view investment in the relationship as a basis for competitive advantage. Examining the extant literature on alliances, relationships that generate advantage are characterized by: creation of relationship-specific assets, access to complementary capabilities, substantial flow of knowledge between the partners, and the presence of effective governance mechanisms that can limit transaction costs between the firms involved. Research evidence on alliances suggests that such characteristics of partnerships are systematically created by firms not only through careful selection of partners, but also through deliberate investment in these features of their relationships. We now address each of the factors driving relational rents from alliances.

The term relationship-specific assets refers to the assets of a partner that are customized to the relationship with another partner, so that the combination of assets is idiosyncratic. Such customization would create some barriers to imitation by competitors. We also note that relationship-specific assets are built over time by systematic investment in the partnership. In this sense, the specificity of the relationship assets

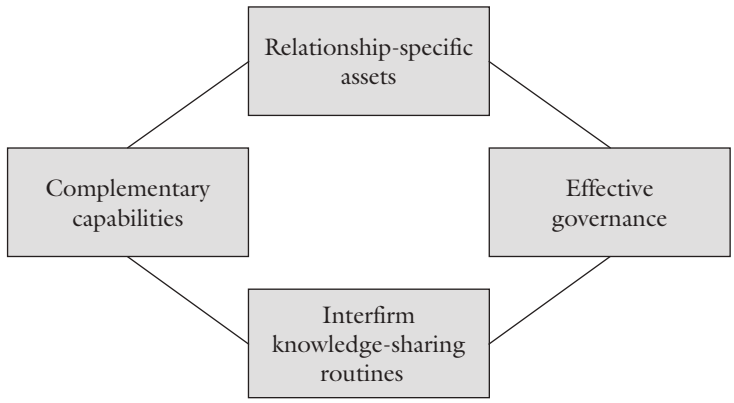

Figure 5.1 Sources of advantage from alliance-based relational capabilities

is subject to time compression diseconomies that Dierickx and Cool (1991) presented in their more general discussion of drivers of competitive advantage. There are many empirical examples of creation of relationship-specific assets. Asanuma (1989) documented how relation-specific skills developed between Japanese suppliers and their automakers generated competitive advantages for collaborating firms. Dyer (1996) extended and deepened our understanding through his discovery of a positive relationship between relation-specific investments and performance in a sample of automakers and their suppliers. Dyer also reported a more detailed set of evidence on different types of specificity in the relationship and their impact on competitive advantage of the firms. In particular, site-specific investments (plants located in close proximity) significantly lowered inventory costs for both automakers and suppliers.

A tradeoff involved in the development of relationship-specific assets is the exposure to hold-up, or to the costs of redeploying the assets to their second-best application. The situation is further complicated by the fact that both firms have to be invested in the creation of relationship-specific assets to actually result in exposure to hold-up. It is possible for some variations to be present where the nature of the specificity is not symmetrical, resulting in asymmetric exposure to hold-up. On balance, however, partnering firms would need to increase their interfirm asset specificity to get the most out of their relationships. Asset specificity can take several forms, including site specificity, physical asset specialization, and human asset specificity. Human co-specialization allows partners to work together more efficiently and effectively, reducing communication errors and increasing the quality of the output of the relationship.

There is typically a fixed, up-front cost associated with making a particular type of relationship-specific investment (such as in specialized equipment, a dedicated plant, or creation of a shared distribution channel). Some relationship-specific investments (e.g., a dedicated plant) are more durable and costly than others. These fixed investments drive alliance partners to assess whether or not they will make the necessary return on the investment during the lifetime of the governance agreement.

More importantly, these features also drive alliance partners to assess in more detail whether the other side is inclined to make the investment that is needed for the relationship to create the idiosyncratic features that will generate advantage. Such investments are often related to time and scale of the relationship.

Complementary capabilities have been advanced by several scholars as a driver of strategic partnerships, most visibly by Teece (1988a). The argument is quite intuitive: firms create greater relational rents when they find highly complementary strategic partners. However, placing a value on the complementary capabilities of a potential alliance partner is complex due to informational asymmetries and differences in prior experience in alliances (Balakrishnan and Koza (1993) provide a detailed explanation of why such assessments are difficult). Firms may be able to improve the chances of identifying complementary partners by having an ongoing activity of screening alliance partners and by having an alliance function in which there are resources dedicated to partner identification and assessment. Reputation and prior experience play an important role in partner assessment (Gulati, 1995a; Powell, Koput, and Smith-Doerr, 1996). The position a firm has in the network of relationships within an industry can also contribute to the identification of alliance partners. An information-rich position in the wider strategic network of the industry can enable the firm to identify more attractive partners.

An often-overlooked aspect of complementarity is that there are also degrees of misfit in combinations between real organizations. Thus, the search for complementary capabilities also entails a careful look at the areas in which the relationship actually has some level of misfit. As in the world of acquisitions, an alliance partner that has several positive complementarities also has negative complementarities, or misfits in critical areas. Frequently, there may be complementarity in assets, but accompanied by a lack of fit in terms of organizational processes of communication or decision making. Firms with greater relational capabilities have alliance screening processes that assess both positive and negative complementarities. Partner screening or assessment is one of the important elements of an alliance function. Organizations can vary in the places where the alliance partner is proposed, but the actual function of strategic assessment has been found to improve the chances of alliance success (Dyer, Kale, and Singh, 2001).

Interfirm knowledge-sharing routines have, until recently, not received enough attention in the world of strategic partnering. Yet, there is evidence that in many cases, a very important source of new ideas is the firm's alliance partner. Transfer of these ideas is facilitated by knowledge-sharing routines. We define knowledge-sharing routines as a regular pattern of firm-level interactions that permit the transfer, recombination, or creation of knowledge (Grant, 1996). For effective knowledge transfer, interfirm processes need to be developed and then institutionalized. While many articles on alliances emphasize learning, very few focus on the actual processes through which knowledge may be transferred. There is substantial evidence in vertical alliance relationships that interfirm knowledge-sharing routines are the vehicle for knowledge transfer across firm boundaries (Dyer, 1996).

A firm's ability to absorb knowledge from a partner depends on prior related knowledge or "absorptive capacity" (Cohen and Levinthal, 1990). Cohen and Levinthal define absorptive capacity as the firm's ability to recognize and assimilate

new knowledge, and then apply it to commercial ends. This perspective is developed for the firm as a free-standing entity investing in research and development, which in turn improves its absorptive capacity while generating substantive knowledge associated with the research endeavor.

From a relational perspective, absorptive capacity can be conceptualized as a function of the source as well as the recipient. Accordingly, partner-specific absorptive capacity is an important contributor to knowledge sharing in alliances. Using the logic underlying absorptive capacity in general, partner-specific absorptive capacity will depend on two factors: 1) the extent to which their knowledge bases overlap to lend a basic compatibility, and 2) the extent to which they have developed effective routines of interaction. Partner-specific absorptive capacity is enhanced as individuals on each side of the interface learn more about the nature of critical expertise within the other firm.

Besides the factors that address the generation of mutual benefit, there are contractual, ownership, and monitoring issues related to alliances. *Effective governance* is a fourth element driving relational advantage and rents. Part of the argument is very consistent with traditional transactions cost explanations: governance of the alliance must be done through contracts or ownership structures that effectively protect each side from opportunistic behavior of the other. Thus, formal contracts should effectively protect the interests of each side, and there is a greater likelihood of equity-based relationships when there are high levels of asset specificity on each side. The new element of effective governance is the importance of informal safeguards in protecting the interests of each side against opportunism. Evidence from supplier relationships in asset intensive businesses in Japan has underscored high levels of effectiveness of informal safeguards (trust, reputation) in controlling opportunistic behavior in alliance relationships (Dyer, 1996; Gulati, 1995a). Recent work on alliance management has shown the development of a particular pattern: that contractual hazards facing firms in an alliance relationship are effectively dealt with through informal safeguards rather than formal contractual elements, even though the dominant view earlier emphasized the formal contractual factors driving alliance governance (Williamson, 1991). The work of Zaheer, McEvily, and Perrone (1998) underscores the multilevel nature of trust and the differences in dynamics of the relationship between performance and interpersonal trust versus trust at the corporate level. Effective governance entails the choice of the appropriate mix of formal and informal safeguards to govern the partnering relationship.

The four factors driving relational advantage and rents – interfirm asset specificity, complementary capabilities, interfirm knowledge-sharing routines, and effective governance – add a different, relational, perspective on sources of returns to the resource-based view. From a relational perspective, the firm earns rents from assets it does not control in the legal sense of having majority equity ownership, but to which it has access on a preferred basis. In an interconnected industry (industries do vary in their levels of interconnection between firms), the pursuit of relational rents is a primary motive for building relationships. A question arising from this discussion is: are there some specific factors that distinguish firms that are effective in pursuing relational rents, and if so, what are they? We address this question in the next section.

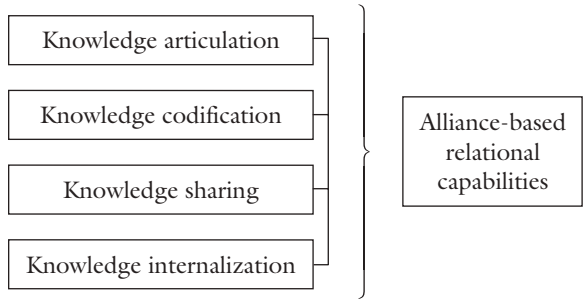

Figure 5.2 Knowledge-management processes that support relational capabilities

Where Do Relational Capabilities Come From?

In recent work there has been significant progress on the origins of organizational capabilities. In the context of relational capabilities, Kale (1999) found that several key elements of knowledge management influenced capabilities and performance. Specifically, relational capability and alliance performance had a positive relationship with the existence of an alliance-management function, that is responsible for developing both the tacit and codified knowledge associated with managing different stages of alliances. In addition, Kale identified four stages of the knowledge-management process in the context of alliances: knowledge articulation, knowledge codification, knowledge sharing, and knowledge internalization. Firms that had well-developed processes (and greater technical fitness) in each of these areas had significantly higher performance than those that did not.

Besides the important role of these knowledge-management processes in the context of alliances, the use of an alliance-management function has a significant positive effect on shareholder response to alliance transactions (Kale, Dyer, and Singh, 2002). Specifically, firms that have a well-developed alliance-management function tend to have greater evolutionary fitness in that they receive significantly higher shareholder responses to their alliance announcements than those that do not have alliance-management functions. The differences are of the order of $50 million in changes in market value, or about a statistically significant 1 percent of the total market value of the firms in the alliance. As an aside, post-alliance performance results also indicate that firms which have an alliance function, and use these processes, tend to have a higher performance than those without an alliance function. Using a larger sample of alliances but less detailed information on the alliance function, Anand and Khanna (2000) found that firm-level factors (imputed by dummy variables in a very large sample investigation) had a significant impact on the stock market reactions to their alliance announcements, clearly indicating that particular characteristics of the firms contributed to their performance in alliances, controlling for particular features of their alliance transaction. The implication is clear: external stakeholders tend to look for a well-developed function driving the alliance-management process, and managers tend to observe higher levels of performance when there is an alliance-management function in place within the firm.

Experience is a precondition for the firm to create value via the alliance function. There is an evolutionary aspect to the development of relational capabilities. Related work by Zollo, Reuer, and Singh (2002) sheds further light on the evolution of alliance management capabilities. The empirical base of this work is a set of alliances in the biotechnology industry and the routines used to manage different elements of the alliance relationship. The theoretical lens used in the study is the evolutionary perspective on the firm, with a focus on the routines used by the firms to manage alliances and their impact on alliance performance. The authors find that particular experience trajectories matter – partner-specific learning matters more than generalized learning. Relational capabilities benefit substantially from interfirm partnering routines and these play a substantial role in explaining alliance outcomes.

The implication is that raw experience alone is a limited way to develop relational capability. Active learning processes using systematic ways of developing people and gaining tacit knowledge, followed by knowledge codification and internalization are important elements in the development of relational capability. These factors lead to the next section on the process of managing knowledge to develop relational capability.

Knowledge-Management Processes

Our foregoing discussion of relational advantage and rents indicates that interfirm knowledge-sharing routines are one source of such advantage. Implicit in our discussion was the point that firms differ in these knowledge-sharing routines. However, an interesting question is: how do firms develop such routines, and are they aware of their origins? Our discussion of the knowledge-management processes underlying relational capability will address new research on how these processes actually develop and are managed in organizations.

Alliance capability has been referenced frequently as a driver of alliance success. Yet, there has been limited work on the actual components of alliance capability. In research based both on fieldwork and on surveys of a large sample of alliances, Dyer, Kale, and Singh (2001) find that firms that had an *alliance function* with very specific activities perform significantly better than those without such functions. The success rates (in terms of achievement of long-term goals) are 63 percent for firms with an alliance function and 49 percent for those without a function. Although this difference may not appear to be large, it should be noted that it is very significant, statistically, and that this finding is obtained after controlling for all assets involved in the alliance. This underscores the importance of skills, processes, and templates, all of which are essentially intangible, in predicting performance. In addition, firms that have an alliance function as a focal point for accumulating knowledge and experience in alliance management create an average of $75 million in shareholder value at the time of announcement of the alliance, versus an average of $20 million for firms without such a function. It should also be noted that the long-term success rate (measured through survey responses by managers) is significantly and positively correlated with archivally obtained abnormal returns at the time of announcement of the alliance (0.33).

There are four processes identified as part of the alliance-management function: 1) improving knowledge management, 2) providing internal coordination, 3) facilitating intervention and accountability, and 4) maintaining external visibility. These processes are interrelated, but different in their foci and locus of activity.

Improving knowledge management is a fundamentally important part of the alliance function. As noted by several scholars working with the knowledge-based perspective of the organization, knowledge tends to be diffused and fragmented within the organization. Alliances tend to occur at a relatively low frequency, and the low comparability of transactions makes the learning process more difficult. The alliance function acts as a storehouse for knowledge on managing various stages of the process: screening, negotiation, initial launch, alliance management, and assessment and evaluation.

Part of the knowledge-management function consists of the development of codified explicit knowledge about managing various stages of evolution of an alliance. Firms have tended to do this by creating both print and online documents detailing steps to be taken in such transactions, and the types of interventions needed to address various difficulties that may emerge as the alliance is run. Other companies create various tools, templates, and processes to manage a particular decision or stage in the alliance's evolution. For instance, in high-technology industries, some companies have created a map of their industry in which they have mapped the domain knowledge of various firms to determine who might be interesting alliance partners.

Providing internal coordination is an important element within an alliance function. There are many examples of failed alliances that had the right vision but were undone by poor coordination between partners. The flow of information within each partner firm may be very different, based on its organizational structure, information systems, degree of centralization, and culture. If the rules of engagement between managers on each side of the interface are not anticipated and developed, it is likely that coordination will be very difficult. The alliance function helps the firm develop a set of processes that can be used for communication both within its own boundaries and across boundaries to the other firm. If both partners have a well-developed alliance function, protocols of communication can be developed to overcome incompatibilities present as a result of differences in organizational structure.

Internal coordination presupposes effective communication, which in turn is influenced by the activities related to the alliance function. Communication here refers to dissemination of information concerning alliance-related initiatives developed on each side, as well as early warning signals of tension or conflict. Kale, Singh, and Perlmutter (2000) found that alliance success (evolutionary fitness) was significantly related to the presence of effective (technically fit) conflict-resolution mechanisms, a critical aspect of the internal coordination function.

Facilitating intervention and accountability is another important part of the alliance function. Only 30 percent of firms that do not have an alliance function have formal metrics for measuring alliance performance, while 70 percent of firms with an alliance function use formal metrics. Both of these percentages are low, because a lack of formal metrics for measuring alliance success would naturally result in a lack of attention to the indicators of performance that are unique to an alliance.

The alternative would be the firm's default performance measures for its ongoing businesses, which would not necessarily provide the right performance information. The managers working in the alliance functions of the more sophisticated firms have developed extensive scorecards, consisting both of qualitative and quantitative measures of performance. Accountability is an important element of relational capability. As firms have developed networks of relationships, ambiguity of authority has substantially increased. As a result, there are significant problems of accountability. Clarifying accountability of key decision-makers for their respective roles in the alliances, once the metrics are in place, is an important part of relational capability.

Maintaining external visibility is the fourth element of the alliance function. For firms involved in multiple strategic relationships, it is very important to have high visibility for its alliance function. The alliance function serves as a highly visible initial point of contact for firms seeking relationships with the organization. Another important part of the function is to maintain visibility with the investment community. In light of the statistically significant and positive impact of alliance announcements in the stock market, it is clear that analysts follow alliances and attempt to assess their income implication. Kale, Dyer, and Singh (2002) find in their fieldwork that firms place a significant value on coordinating their dissemination of information about their alliances with external agents, including the investment community and regulators.

Relational Capabilities and Post-Acquisition Management

As the foregoing analysis indicates, a bundle of processes and associated resources underpins a relational capability. Here we have a clear example of the often-bundled nature of a dynamic (or other) organizational capability discussed in chapter 1. Our analysis of relational capabilities also illustrates the more general point that when the bundle has well-integrated components, better performance in terms of evolutionary fitness frequently results.

Relational capabilities may apply in contexts other than alliances. Post-acquisition management is a domain fraught with complexity because of the multiple factors – strategic, organizational, and financial – that collectively drive the outcomes reflecting the results of the acquisition. Many authors have pointed out the reasons why post-acquisition processes of integration tend to achieve disappointing results: power struggles, unexpected challenges in the integration process, limitations in decision makers' understanding of the key drivers of success in the transaction.

There has been research focusing on the conditions under which post-acquisition management can be effectively managed (e.g., see Capron, Dussuage, and Mitchell (1998) and Zollo and Singh (2004), among others).

While post-acquisition management is a complex domain and a focus of research in its own right, it is possible to argue that an important component of post-acquisition management is the process by which cooperation can be achieved by the two sets of organizations involved. Clearly the intent of the acquisition, the degree of hostility, and the nature of participation anticipated on each side have an impact on the design and extent of post-acquisition coordination. The purpose of this discussion,

however, is to note that for any given level of cooperation in the post-acquisition domain, there is a need for the decision makers in charge of the process to understand how cooperation between the two erstwhile independent organizations will be elicited. Relational skills are an important part of achieving this cooperation.

There is evidence reported by Puranam (2001) on post-acquisition management experience of firms in high-technology industries. Examining a large sample of firms in this industry, Puranam found that prior experience in alliance management was positively related to more effective acquisition integration outcomes. Reuer and Zollo (2005) found a very similar relationship in the context of the retail banking industry. In light of parallel findings in very different industrial contexts, it appears that relational capability may be valuable in contexts beyond alliances as well. The integrative aspects of relational capability may well be transferable to post-acquisition settings. While this has not been directly tested, an acquisition-management function, analogous to the alliance function reported by Kale (1999), should have a positive effect on performance.

Limits to the Relational Perspective

For some scholars, the relational perspective is an extended case of the resource-based view of the firm, extended to alliances. The argument made is that relationship-specific assets and complementary capabilities only extend the definition of resources to include those beyond the ownership boundaries of the firm. There is some merit to this counter argument, in that the logic used in discussing relational rents rests on the premise that idiosyncratic combinations of resources earn such rents.

On the other hand, we argue that the relational perspective of the firm (and the relational organization as the epitome of a successful firm in this view) departs in important respects from the way in which scholars have often applied the resource-based view. In particular, the work on the resource-based view has emphasized proprietary resources, which does not readily accommodate the need for sharing critical resources across organizations. Sharing proprietary resources, under a pure resource-based perspective, would place the firm at significant risk of leakage to the partner. Using a relational perspective, the importance of two critical components – interfirm knowledge-sharing routines and effective governance – comes to the fore in addressing concerns of leakage or misappropriation of proprietary resources. In addition, relational capabilities have an inherently dynamic character, in that firms direct them explicitly toward purposeful change to their resource bases.

Corporate Examples

Several corporate examples can be advanced to illustrate the creation or use of relational capabilities. A very prominent example is the joint venture, formed in 1996, between Pfizer and Warner Lambert (specifically the Parke Davis division) to market the anti-cholesterol drug, Lipitor. This joint venture was created primarily to use Pfizer's complementary marketing capabilities in conjunction with the

technological capabilities of Warner Lambert in statins to enter the market as the fifth drug to deal with high cholesterol. The drug had demonstrable benefits versus the earlier movers, notably Mevacor, in that the first dosage established for the patient usually was effective (whereas with other drugs, patients needed to have tests conducted, both for efficacy and for side-effects, to adjust and arrive at the final dosage). Yet, it was crucial for the joint marketing capabilities to provide the product with the highest chance of success. Pfizer had marketing incentives based on total revenue from the alliance, while Warner Lambert received licensing fees. Both partners received equal shares of the net profits from the joint venture. Reluctant to relinquish control of the company in case the drug turned out to be a blockbuster, Warner Lambert forced Pfizer to sign a change of control clause in the alliance agreement, such that it was prohibited from making an acquisition bid unless Warner Lambert invited them or some other bidder made a first offer.

As the alliance progressed, it became clear that Pfizer's marketing muscle, with the largest sales force in the world, was an excellent combination with Warner Lambert's product development for Lipitor. Sales ran substantially ahead of projections, exceeding $1 billion in the first year itself. By 1999, the sales of Lipitor had reached about $9 billion. Today, Lipitor accounts for $13 billion in sales worldwide.

While one can make the argument this was merely a case of pooling complementary capabilities, deeper study reveals that both companies, particularly Warner Lambert (perhaps as the partner with more strategic stake in the drug), invested in all the key elements of relational capability. Through the use of extensive training programs of their product development and marketing personnel, Warner Lambert invested in building knowledge-sharing routines that allowed for cooperation despite the incompatible organizational structures (decentralized for Warner Lambert versus centralized for Pfizer). Through the creation of an alliance function, Warner Lambert built training programs that exposed their personnel to the systems and procedures of Pfizer's marketing organization. The function was created with the strong support of the divisional president, ensuring that other functions in the firm would follow the lead of the alliance managers. The contractual provisions of the joint venture, including sales growth-based objectives for both sides, license fees, and investments by Pfizer in the product, were well crafted and created incentives for cooperation. Despite the relatively strong formal governance through the contract, there was a need for trust building to address contingencies not covered in the contract. Both sides, particularly Warner Lambert, invested in developing trust-based relationships between individual managers.

In the light of the above, it is very interesting to note that both partners created relational rents by purposefully investing in each of the components: complementary capabilities, relationship-specific assets, interfirm knowledge-sharing routines, and effective governance. Our field observations of Warner Lambert clearly documented the creation of an alliance function and very distinct codified processes for cooperation across organizational boundaries. It is also interesting to note that merely assembling the assets of each side (complementary capabilities) would not result in the seamless organization needed to achieve the dramatic success of the drug.

As a postscript, in 1999 Warner Lambert was approached by American Home Products with a friendly acquisition bid. The senior management of Warner Lambert was very receptive because it appeared that there was synergy between the firms and

they would have prominent roles in the merged company. This bid triggered the change in control clause and Pfizer jumped into the fray with a very attractive bid, considerably higher than that of American Home Products. Pfizer was able to gain control of Warner Lambert at a total market value of about $100 billion. This was a very high price, but Pfizer's management did not have a choice: it would have been impossible to replace the revenue stream generated by Lipitor. The question of how the eventual price relates to future cash flows from Lipitor remains open.

The main implication from this example is the role of relational capabilities in the success of the joint venture. Detailed field observations found support for each of the elements: complementary capabilities, relationship-specific assets, interfirm knowledge-sharing routines, and effective governance. There was also evidence of the creation of the alliance function with many of the roles that we described earlier in this chapter. The alliance function was clearly responsible for improving knowledge management to create more effective cooperation between the firms. The managers in this function were responsible not only for codifying practices, but also for training employees who would participate in the interface of the alliance. There was responsibility for improving communication both within and across organizations in key issues related to the alliance. In addition, people in this function were responsible for creating appropriate operational measures of alliance effectiveness.

In other cases of alliance capability, there is some variation in both process and outcomes. Hewlett-Packard (HP) is widely seen as a strong alliance organization (detailed descriptions are available in Kale, 1999 and Dyer, Kale, and Singh, 2001). Many of the attributes discussed above in the context of Warner Lambert apply to Hewlett-Packard as well. Hewlett-Packard developed these capabilities over a longer period using multiple non-equity alliances in its enterprise solutions business. In the case of Hewlett-Packard, there is considerable evidence of development of codified knowledge about alliance management (again through an alliance function). In addition, the widespread use of alliance has resulted in its managers developing strong alliance skills. Recently, the acquisition of Compaq by Hewlett-Packard created financial pressure due to the lower margins of the Compaq businesses in contrast (on average) to the higher margins from Hewlett-Packard's imaging and solutions businesses. This event confounds the effect of alliance capability on performance that could have been observed in its absence.

A third case, discussed in more detail in chapter 6 on acquisition-based dynamic capabilities, is that of Cisco Corporation. Cisco is celebrated for its acquisition integration model that has resulted in dramatic growth over 15 years till 2000, and industry-leading growth since then. Until 2000, Cisco's most visible mode of growth was acquisition, and it had routinized its acquisition process to make this effective. However, as the acquisitions grew in size and became more geographically dispersed, the success rates began to drop. For the past three years, Cisco has developed alliance capability systematically, using many of the elements listed earlier.

Conclusions and Implications

As firms compete in an increasingly interconnected world, their capabilities to manage relationships with other organizations have become increasingly important. There

is considerable research evidence that firm-specific capabilities to manage alliances are important in explaining alliance success and increasing the otherwise disappointing performance (e.g., see Anand and Khanna, 2000). These capabilities are distinct and identifiable, and ideally need to be developed in advance of a strategy that features alliances. Many factors that are integral parts of relational capability, such as interfirm knowledge-sharing routines and relationship-specific assets, are evolutionary and require refinement over time. Other factors, such as access to complementary capabilities and effective governance, play their major role at formation. Relational capabilities tend to be more effective in corporations that have an alliance function that can serve as a repository of knowledge, and as a catalyst for the operational parts of the enterprise to effectively partner with external organizations.

Firms with stronger relational capabilities can benefit in three ways. First, in industries that have a high incidence of alliances, the timing of forming relationships is significant. Firms with well-developed alliance capabilities have superior (more technically fit) screening functions and better integration with competitive strategy due to the higher level of discipline present in the alliance function (Kale, Dyer, and Singh, 2002). Second, relational capabilities contribute to higher likelihood of success, a measure of evolutionary fitness. Third, firms with superior relational capabilities are well received in the stock market, with significantly higher announcement effects (another measure of evolutionary fitness) when they announce alliances (Anand and Khanna, 2000). These announcement effects are found to correlate well with post-alliance performance.

A question that naturally arises is, why would all firms not improve their relational capabilities if they are found to have such positive properties? There are a few possible explanations for this. First, there is causal ambiguity in the creation of relational capabilities, as there is in the creation of other capabilities in general. Interfirm knowledge-sharing routines, in particular, are very firm-specific and are likely to have properties of "stickiness" that have been identified in routines in other settings (Szulanski, 1996). Second, the alliance function as an important element of relational capability is subject to change and discontinuity as the firm is reorganized, as is frequently the case today. Third, our arguments about relational capability are predicated upon a degree of continuity and discipline in creation of the underlying elements. The need for continuity is often not met in the context of firms coping with turbulent change.

Relational capabilities and the acquisition-based dynamic capabilities examined in the next chapter have some features in common. Both share common properties in addressing the challenges of working across organizations, dealing with formerly separate organizations with disparate goals, cultures, decision processes, and organizational structure and systems. Relational capabilities encompass important tasks regularly required in both acquisitions and alliances: integration across organizational boundaries to achieve shared goals, and the integration capabilities associated with them. An open question is the extent to which firms can build both acquisition and alliance capabilities to effectively manage both modes of growth.

In industries characterized by high levels of interconnectedness, relational capabilities are playing an important role in corporate strategy. At the same time, in knowledge-based industries in particular, firms have moved to flatter structures

requiring extensive coordination across internal boundaries. With the rise of perspectives of firms as networks across technologies and geographies, the parallels between the challenges of coordination within companies and in their extended networks have become more and more salient. The creation of relational capabilities can thus draw upon the experience of the firm in its internal coordination mechanisms.

In sum, relational capabilities are important for increasing the likelihood of success of the firm as it develops alliances. The relatively low average success rate of alliances suggests that firms tend not to have (or to have low technical fitness of) the capabilities required to be effective in these transactions. Relational capability is the capacity of the firm to purposefully create, modify, or extend the firm's augmented resource base, which includes the resources of partners. This capacity in turn has the potential to create value from the combination of the resources of the parties involved, thus creating value specific to the alliance transaction itself. Effective value creation from alliances requires the firm to develop the ability to coordinate across organizational boundaries, develop assets specific to the linkage, develop and refine knowledge-sharing routines, and use effective governance mechanisms, including contracts and trust-based relationships. Relational capabilities do possess some of the attributes of causal ambiguity and isolating mechanisms that render them sources of competitive advantage (or disadvantage in their absence). As firms rely on external growth mechanisms, alliance and acquisition capabilities together are necessary conditions for long-term success.

Chapter 6

Acquisition-Based Dynamic Capabilities

With Laurence Capron and Jaideep Anand

This chapter explores how firms use business acquisitions to obtain new resources, which we refer to as acquisition-based dynamic capabilities. The argument relates closely to the core themes in this book, including the nature of dynamic capabilities and relational capabilities as boundary-spanning forms of dynamic capabilities. Chapter 1 of this book defines dynamic capabilities as the capacity of an organization to purposefully create, extend, or modify its resource base. Many such capabilities involve activities that work within existing firm boundaries to create new goods and services and change organizational processes, as in chapter 4. In addition to internal development skills, though, firms require dynamic capabilities that allow them to reach across their existing boundaries in search of new resources in order to grow and achieve sustained performance. One can think of these boundary-spanning dynamic capabilities as relational capabilities with which firms access the resources and capabilities of other firms on a preferred basis. Acquisition-based dynamic capabilities are an important form of relational capability, complementing the alliance capability that we discuss in chapter 5, with the potential to help a firm improve its evolutionary fitness.

Firms commonly attempt to use acquisitions to acquire new resources that are distant from their current knowledge base. Internal development commonly facilitates local search (exploitation) because a firm's internal development for new resources is technologically and geographically bounded (Teece, Pisano, and Shuen, 1997; Helfat, 1994; Stuart and Podolny, 1996). External sourcing commonly facilitates more distant search (exploration), because turning to external sources helps overcome the constraints associated with contextually localized internal development (Powell, Koput, and Smith-Doerr, 1996; Nagarajan and Mitchell, 1998; Rosenkopf and Almeida, 2003). External sourcing modes such as acquisitions and alliances provide opportunities for obtaining distant resources and undertaking path-breaking change (Karim and Mitchell, 2000; Vermeulen and Barkema, 2001; Dussauge, Garrette, and Mitchell, 2000).

Acquisition Ability: A Relational Dynamic Capability

Acquisition-based dynamic capabilities include three main elements: acquisition selection, identification, and reconfiguration abilities. This chapter first briefly sketches the main aspects of these three abilities, focusing most attention on acquisition selection ability. (Chapter 5 places more emphasis on identification and reconfiguration abilities, in the complementary setting of alliance dynamic capability.) We then turn to an empirical context that illustrates the value of being able to employ the acquisition selection and identification abilities effectively, by identifying acquisition targets in high-opportunity settings.

Acquisition selection capability is the capacity to recognize when an acquisition would be the appropriate mode for obtaining new resources. Substantial research has demonstrated that acquisitions are difficult and costly, often producing far less value than the acquirer expected. The implication of this research is that acquisitions are most appropriate as a last resort, used only after considering and rejecting simpler modes of change such as internal development, discrete resource exchange, and alliances. Capron and Mitchell (2004) argue that acquisitions dominate the other modes of making substantial changes to a firm's resource base only when three conditions hold: 1) when a firm's existing base of skills has little relevance for the targeted resources, 2) when the targeted resources would face substantial market failures in discrete resource exchange (as we discuss in chapter 2), and 3) when utilizing the new resources involves multiple points of contact with a firm's existing resources.

Lack of relevance arises when a new resource is either technologically distant from a firm's resource base or when a firm's existing resource base is much weaker than the current market frontier on which competitors operate. If a firm possesses relevant resources, then it typically can consider using internal development, rather than seeking outside the firm. If a firm lacks relevant resources, which we will refer to as the need for resource exploration, then it typically needs to search for new resources outside the firm.

Discrete resource exchange is the most focused way of obtaining new external resources. If a targeted resource would face few market failures in arm's-length

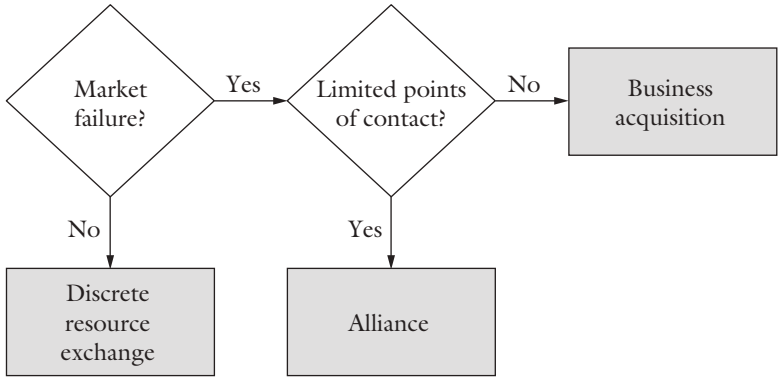

Figure 6.1 Methods of resource acquisition

exchange – where market failures may arise from asymmetric information about the value of a targeted resource or from bilateral lack of information about how a firm will use a targeted resource to create a new set of skills – then a purchase contract, license, or hiring of a new employee typically will provide satisfactory means of obtaining the targeted resource. However, when faced with market failures in resource exploration, a firm often needs to consider modes that involve ongoing interaction with other firms to protect against appropriation and coordinate resource exchange, rather than arm's-length exchange.

Alliances offer the simplest and often least expensive interfirm mode for obtaining new resources that would face market failures in discrete exchange. Alliances help a firm create governance mechanisms that provide safeguards against limited degrees of self-dealing behavior in the face of asymmetric information, while also allowing the partners to coordinate resource exchange and development in the face of bilateral lack of information. However, alliances commonly struggle when they involve too many points of contact between the partners, because it becomes difficult to guard against leakage at too many points and to coordinate a wide-ranging set of activities. In such cases, acquisitions offer a more desirable mode of obtaining new resources, because ownership of the target firm allows both protection and long-term coordination needed for complicated resource exchange and reconfiguration.

Acquisition selection ability, then, includes the ability to assess a firm's existing resource base relative to desired new resources and capabilities; to assess the degree of market failure with respect to resources that are beyond the firm's existing resource relevance; and to assess the number of points of contact that interorganizational creation of new resources would require. Firms that can accurately assess these criteria and select acquisitions as a mode of seeking new resources only when simpler modes would fail can create substantial competitive advantage.

We will briefly sketch the main parameters of the other two elements of acquisition-based dynamic capabilities – identification and reconfiguration capability – which parallel the alliance management capabilities that chapter 5 has developed in detail. Both elements are critically important for acquisition success and have received substantial attention in the acquisitions literature (e.g., Jemison and Sitkin, 1986), whereas the ability to select suitable acquisition contexts has been underemphasized. Moreover, a firm with weak acquisition selection capability will tend to gain little advantage from its acquisitions, no matter how good its identification and reconfiguration capabilities.

Acquisition identification capability is the capacity to detect and negotiate with appropriate targets. This capability requires that a firm be able to carry out effective due diligence of potential targets in order to determine the value of the target to the acquirer, to negotiate appropriate terms with a target's owner, and to be willing to walk away from a target if it lacks needed resources or its owners demand payment that exceeds its value to the acquirer.

Acquisition reconfiguration capability is the capacity to reshape resources within the target and acquiring firms. This involves the capacity to combine resources from the target and acquirer in order to create new resources, whether at the target or within the acquirer's original business units or in some new organizational unit. This capability also requires the capacity to selectively divest unneeded resources from the

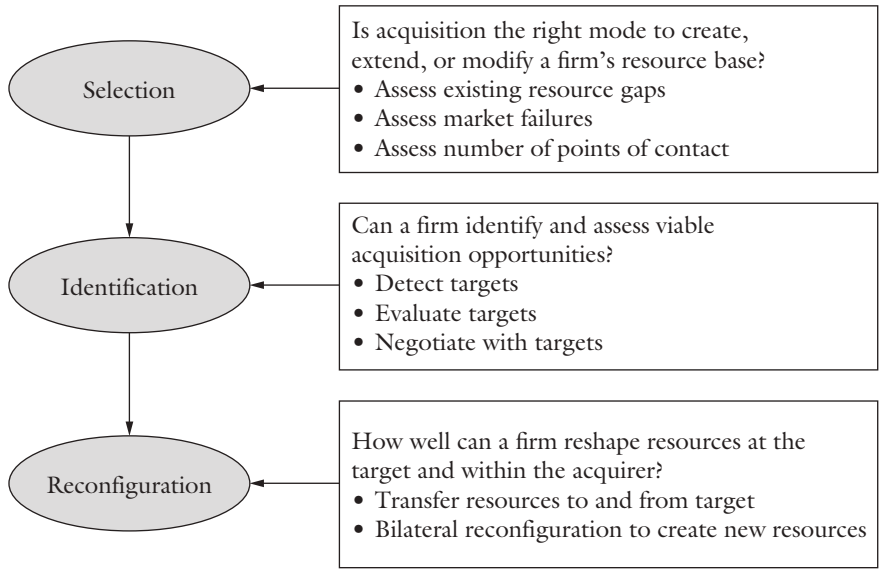

Figure 6.2 Acquisition-based dynamic capabilities (ABDC)

target as well as old resources from the acquirer that have become obsolete as a result of the reconfiguration process.

Thus, acquisition-based dynamic capabilities include a hierarchy of selection, identification, and reconfiguration abilities. These are nontrivial skills, requiring substantial organizational discipline and coordination. As a result, firms that develop effective acquisition-based dynamic capabilities may gain sustainable competitive advantages.

The importance of acquisition selection capability as the initial stage in generating competitive advantage underscores the distinction between technical and evolutionary fitness that we highlight in this book. Firms sometimes can improve the technical fitness of their overall resource bases even if they use acquisitions in the wrong selection context – if, for instance, internal development or licensing or an alliance would have provided adequate access to new resources – because the acquirers may be able to use the targets' resources to improve their own existing resource bases. However, the same firms will tend to lose evolutionary fitness if their competitors utilize a more judicious approach to using acquisitions, because the competitors will gain equal or greater improvements in technical fitness of the overall resource base at lower cost and disruption. Moreover, in this example, the acquisition selection capability itself has low technical fitness, in the sense that the capability does a poor job of performing its intended function.

We next highlight the particular context of using acquisitions to obtain new resources that involve targets based in a country other than the acquirer's home nation and entail international organizational boundaries within the target. Obtaining new resources in such contexts often involves resources that extend a firm's existing resource base, that would face market failures in discrete exchange, and that involve multiple points of contact. Firms that have the capability to effectively select

acquisitions in such contexts and to identify available targets will often gain from their acquisition strategy, relative to firms that use acquisitions in simpler settings.

Using Acquisition-Based Dynamic Capabilities To Create Value At the Country–Firm Multinational Nexus

Firms commonly use acquisitions in many contexts, both within and outside their home countries. Indeed, acquisitions may provide value in many geographic settings, including those that involve purely domestic targets, particularly when the acquisitions involve a combination of resource exploration, market failure, and multiple points of contact. Nonetheless, we will develop and test the argument that acquisitions have the potential to create the greatest value in a context that we refer to as the country–firm multinational nexus, in which all three acquisition-indicating conditions commonly arise. The country–firm multinational nexus is a situation in which a target is based outside an acquirer's home country and operates businesses in multiple countries.

Many firms need to search across national borders to gain access to the new resources that they require in order to compete in their evolving industries. The need for cross-border search arises because technological and market domains of knowledge are heterogeneously distributed across geographic regions as a result of the wide variety in different countries' infrastructures (Nelson, 1993). We refer to heterogeneous resources that reside outside a firm's home market as geographically distant resources.

Gaining access to geographically distant resources may be desirable competitively, but such resources also commonly involve limited and often impaired information flows due to communication barriers, cultural differences, and institutional variation. For instance, Jaffe and Trajtenberg (1999) find that firms are more likely to cite patents whose inventors reside in the same country. In parallel, Keller (2002) finds that countries benefit less from foreign R&D investments the further away from the home country those investments have been made.

These barriers to information flow give rise to a high potential value of cross-border acquisitions for firms that can recognize the opportunity and identify targets. Forming relationships with firms and individuals who could help learn or provide the targeted resources in a distant country is often a highly complex process, entailing market failures that prevent simple resource exchanges across borders. Rather than simply licensing the cross-border use of such resources or hiring a few foreign employees, firms commonly undertake foreign direct investment (FDI) by establishing greenfield subsidiaries, allying with local firms, or acquiring local firms in order to obtain new resources outside their home country (Cantwell, 1989; Kogut and Chang 1991; Almeida, 1996; Anand and Kogut, 1997).

All three forms of foreign direct investment are common, but the investor's lack of relevant internal knowledge often creates a barrier to greenfield investment, while the need for substantial adaptation and reconfiguration of resources frequently deters alliance formation. Hence, several studies have argued that cross-border acquisition offers a desirable way to access extensive sets of resources from distant

markets. The core idea, in terms of the language of acquisition-based dynamic capabilities, is that obtaining large stocks of new resources in the host country that differ substantially from an acquirer's existing resources – where the new resources range from technical skills, to market understanding, to supplier relationships, to government ties – would face substantial market failure that would interfere with arm's-length exchanges and would face too many points of contact for alliances to be viable.

Despite the apparent benefits of cross-border acquisitions, studies that compare empirical outcomes of domestic and cross-border acquisitions offer ambiguous conclusions. In a financial event study, Markides and Ittner (1994) find that cross-border acquirers tend to gain value, counter to the common conclusion in the domestic acquisitions literature that acquiring-firm shareholder value remains unchanged or even falls. Eddy and Seifert (1984), on the other hand, find little difference between the returns of acquirers that purchase foreign firms and those that purchase domestic firms. In studying the acquisition of US firms, Swenson (1993) reports that shareholders of target firms benefit more when a foreign company takes over the firm than when the acquirer is another US firm. Dewenter (1995), though, finds no significant difference in the mean level of acquired-firm shareholder wealth gains in domestic versus foreign acquisitions. Finally, Seth, Song, and Pettit (2000) find that cross-border acquisitions produce gains for acquired and acquiring firms that are similar in value to those in domestic cases.

Recent studies have started to shed light on the apparent ambiguity in such studies of cross-border acquisitions. The core point of the recent work is that traditional studies have considered only the country aspect of multinationality, without considering the organizational portion of the country–firm multinational nexus, typically drawing conclusions by comparing a domestic sample with a foreign sample. Macpherson (2004) notes that this design masks many country-pair effects and acquirer–target country-pair factors.

Anand, Capron, and Mitchell (2005) argue that the traditional dichotomy between domestic versus cross-border acquisitions does not capture the core geographic component of resource search. The usual distinction between cross-border and domestic acquisitions assumes an association between the geographic origin of the target and the geographic diversity of the target's resources. In fact, though, accessing multinational diversity may not necessarily require buying a foreign firm; targets domiciled in the same country as an acquirer (i.e., "domestic targets") sometimes have resources that encompass a diverse geographic setting, while targets domiciled in a different country (i.e., "foreign targets") might have resources that arise from only one local environment. Drawing on a survey of 248 acquisitions, Anand, Capron, and Mitchell find that acquirers are more likely to enhance their resources when they buy a target with a multinational scope. They also find that simply acquiring a foreign target has much less influence on post-acquisition outcomes. Their study altered the emphasis of studies on multinational acquisitions by shifting the focus from foreign market expansion (country-level emphasis) to accessing geographically distributed resources that are embedded in target firms (firm-level emphasis).

The Anand, Capron, and Mitchell study argued that considering an acquired firm's geographic scope as an indicator of geographic diversity is at least as relevant

as taking into account the country origin of the acquired firm. The study argued that a target firm's multinational geographic scope encompasses three key aspects of resource acquisition: ownership, location, and organization. Ownership opportunities stem from the possession of proprietary assets (Caves, 1996). Locational opportunities stem from access to geographically distributed resource networks, including technical and market skills as well as institutional benefits such as supplier networks and government ties (Dunning, 1990). Organizational opportunities stem from the ability to coordinate intracorporate knowledge transfer (Kogut and Zander, 1995; Gupta and Govindarajan, 2000). The multinational target offers the benefit of the resources in its multiple markets, a pooling of those resources within its organizational boundaries, and the availability of multinational organizational skills that can help the acquirer redeploy and integrate the resources (Bartlett and Ghoshal, 1989). The study suggests that purchasing a target with multinational scope helps the acquirer obtain the target's capability to coordinate resources from its diverse operating contexts.

Such results suggest the need to extend analyses that commonly focus on the target's country of origin with a firm-level dimension that captures international diversity and sets of resources that span multiple countries, including the geographic scope of the target's activities. In the terms of this chapter, targets with multinational scope are fruitful sources of resources that differ substantially from an acquirer's existing resources (i.e., require exploratory search because the existing resources lack relevance for the new capabilities that the firm needs to develop), while entailing market failures and multiple points of contact.

Taken to the extreme, a focus on target multinational scope would suggest that a target's headquarters location is irrelevant. Instead, however, we need to return to the discussion of national differences in resources, now focusing on the way that national resources become embedded in firms. This aspect of the discussion highlights the benefit of acquiring locally based firms with cross-border resources.

Since Stinchcombe's (1965) seminal work, the relationship between an organization and the environment under which it was founded has been recognized as imprinting. National context has an important and long-standing imprinting effect on the organization and resources of firms (Dunning, 1990; Porter, 1990; Kogut, 1991), such that initial exposure to country-specific institutions has a remarkably long-lasting effect on the firms of that country (Kriaciunas and Kale, 2005).

Even after founding, ongoing links to geographically specialized factor endowments and markets are vital composites of the spatial interrelationships among a firm's resources. For example, agglomeration effects imply that geographic clustering generates positive externalities and knowledge spillovers (Chung and Alcacer, 2003; Stuart and Sorenson, 2003). Head, Ries, and Swenson (1995) use the term "endowment driven localization" to describe the intangible benefits that accrue to those in a certain community. The literature on national innovation systems has demonstrated that the ability to understand idiosyncratic technical opportunities depends on a deep understanding of public and academic research institutes, on supply and distribution chains, on regulatory agencies, on labor markets, and on other local institutions (Nelson 1993). Interactions with other firms and customers also lead to the development of idiosyncratic downstream resources such as brand names and distribution systems. Firms based in different countries, therefore, reflect

differences in the environments within which they were created and grew. These differences produce heterogeneous sets of geographically distant resources across countries that are embedded within firms operating in those countries.

Moreover, firms that are headquartered in a particular country typically have greater fine-grained understanding of local resources than firms that simply operate subsidiary operations there. Even foreign-based companies that have operated in a host location for many years often struggle to develop deep knowledge of market nuances of that location, partly because they must spread their attention on many countries and, equally importantly, because key actors in the host country, such as regulators and customers/suppliers, often favor host country firms. As a result, purchasing a target that is headquartered in a particular country provides greater direct access to differentiated resources in that country than purchasing a multinational firm that simply operates in the country.

Thus, both target multinational scope and target headquarters location will influence the value of acquisitions in obtaining geographically distant resources. The combination of the country–firm multinational nexus offers a particularly fruitful combination of resource exploration, market failure, and points of contact. The extensive international operations provide a pooling of disparate geographically distant resources within the boundaries of the target firm. The foreign headquarters of the target provides a differentiated view of resources that differs from the perspective that would obtain in a firm with headquarters in the same country as the acquirer. This argument underscores a core theme in chapter 3 in this book, which highlights the role of business processes as an element of a firm's capabilities, in the sense that the location of a target's headquarters and the multinational scope of its own internal boundaries will help define the processes that reflect the firm's knowledge of markets and technology, as well as other commercial resources.

In turn, the abilities to recognize the value of cross-border acquisitions of multinational acquisitions and to identify suitable targets are key aspects of acquisition-based dynamic capabilities. Accordingly, we will test the idea that acquirers gain greater benefit when they acquire foreign targets with multinational geographic scope than when they simply acquire foreign targets or domestic targets with multinational scope. Such acquisitions reflect the combined use of acquisition selection and identification ability. In addition, of course, the firms will need to possess acquisition reconfiguration ability to complete the value-creation process, but we will focus on the first two elements of acquisition-based dynamic capabilities.

Hypothetical Example of Acquisitions In the Country–Firm Multinational Nexus

A hypothetical example may help clarify the value of the country–firm multinational nexus in providing geographically distant resources to acquirers. Consider the global pharmaceutical industry and the company Eli Lilly. As recently as the early 1980s, Lilly was the number two pharmaceutical company in the US, behind only Merck in sales revenue. In 2004, though, Lilly had become a moderate sized player in the industry, at about number ten in terms of sales revenue ($14 billion versus $52

billion for Pfizer, the industry leader). Lilly has long avoided major acquisitions as a means of expansion, preferring to undertake internal development and alliances to develop and market new drugs. In doing so, Lilly has achieved moderate growth and substantial profitability. At the same time, however, Lilly has fallen behind several other firms in the industry that have used major acquisitions to expand rapidly, such as Pfizer in the US and the UK–US combination of GlaxoSmithKline ($39 billion), as well as Novartis ($28 billion), AstraZeneca ($21 billion), and Sanofi-Aventis ($20 billion) in Europe.

At the same time as Lilly's major competitors have expanded through acquisition, the global scope of the pharmaceutical industry has expanded and differentiated. Firms now need access to varied technical developments in the US, several European countries, Japan, and, increasingly, in India and Israel. Similarly, firms need to sell their products in multiple markets in order to obtain expected rates of return on their R&D and regulatory investments, with opportunities in the traditional markets of North America, Europe, and Japan being complemented by growth in emerging markets such as China, India, Brazil, and elsewhere. Moreover, markets around the world are increasingly demanding complex mixes of branded and generic drugs, which require more complicated marketing strategies to address.

Pharmaceutical firms such as Lilly can meet some of these global demands and opportunities through alliances and contractual relationships, but many of the global activities are sufficiently complex and encompassing that interfirm relationships struggle to work effectively. As a result, business acquisitions become increasingly desirable as a means of expansion.

Even when Lilly was one of the leading pharmaceutical firms in the US, it was only a moderate player outside the country. Despite substantial efforts and investments, the company has never been able to achieve a leading presence in Japan or Europe. In the past, such secondary presence outside the company's home market was viable. With increasing globalization of technology and sales, however, a home-country focus is increasingly untenable. Lilly increasingly faces a "buy or be bought" situation.

Now suppose that Lilly decided to forgo its "no acquisitions" strategy and undertake a substantial acquisition to gain access to geographically distant resources. (This example is entirely hypothetical; we neither expect nor recommend the examples that we describe in this section.) In the language of this chapter, this would mean that Lilly develops a stronger acquisition selection capability.

Imagine that the company has several options. First, Lilly might pursue an acquisition of a major US firm with extensive multinational operations. Merck, for instance, might be available as a takeover target because of recent problems in its product portfolio. Merck has a strong presence in the US, a wholly owned subsidiary in Japan, a subsidiary in China, and several operations in Europe. Second, Lilly might attempt an acquisition of a major foreign firm with extensive multinational operations. London-based AstraZeneca, for instance, might be available because of a product pipeline that some analysts view as weak. AstraZeneca has operations throughout Europe and the US, and a moderate presence in China and several other Asian countries. Third, Lilly might attempt an acquisition of one or more foreign firms that primarily have activities only in their home countries. Sankyo, in Japan, might

be available, for instance, as several of its competitors are consolidating in attempts to gain greater scale. Sankyo has recently agreed to purchase one of its Japanese competitors, Daiichi, which will provide greater scale but will leave it as primarily a Japanese-focused firm even after the combination.

Clearly, many factors would condition the decision about which acquisition opportunity to pursue, including the strength of targets' product development pipelines, their regulatory relationships, their marketing skills, their organizational cultures, and the level of competitive bidding for a target. But let us focus on the question of geographically distant resources. In particular, which option would provide the greatest likelihood of increasing Lilly's access to geographically distant resources?

Option 3 (Sankyo) provides only limited access to geographically distant resources. To have the major effect that the pharmaceutical industry increasingly requires, such an acquisition would need to be part of a portfolio of regional acquisitions. Lilly would need to target other firms in countries such as China and several European countries, at least (for instance, NovoNordisk in Denmark and/or Merck KGAA in Germany). Such a "multiforeign" strategy is possible, but would require extensive coordination and a substantial degree of competitive success in identifying and winning the bids for targets in multiple countries.

On first consideration, options 1 (Merck) and 2 (AstraZeneca) seem similar in terms of geographically distant resources. The companies had similar sales levels in 2004: $23 billion for Merck; $21 billion for AstraZeneca. Both involve companies with extensive operations outside the United States, in Europe, Asia, Latin America, and elsewhere. Hence, the two firms would appear to be equivalent in terms of their contributions to Lilly's resources.

However, the fact that Merck and AstraZeneca have headquarters and related operations in different countries creates a substantive difference. Much of each company's understanding of international activities is conditioned by the systems and processes of its headquarters.

Merck headquarters personnel, central research staff, and the business processes that they support, have a deep understanding of the US market, regulators, and technology, but a less extensive understanding of markets outside the US. As a result, Lilly would be gaining only part of the advantage of Merck's global scope and, instead, in many ways would be replicating its existing global resources. The greater depth of global resources might well be useful, but would provide only limited exploration opportunity.

AstraZeneca, by contrast, has a deep understanding of the British market and, because of the Swedish heritage of Astra, Scandinavia. In addition, the partial integration of the UK within the broader regulatory and market framework of the European Union means that AstraZeneca headquarters staff has extensive market and regulatory integration across Europe. These linkages provide advantages in facilitating product development and introduction activities in Europe, creating parallel trade strategies to deal with multiple pricing levels in different European markets, managing patent protection activities in Europe, and other key commercial activities. As a result, acquiring AstraZeneca would provide Lilly with a more differentiated set of geographically distant resources than an acquisition of Merck. If

obtaining access to geographically distant resources were a primary driver for an acquisition, this difference might be enough to tip the balance in favor of an AstraZeneca purchase.

Study Context

In 1994, we conducted a top-management survey of acquirers involved in horizontal acquisitions in Europe and North America between 1988 and 1992. We received 101 responses from public firms that we could use for this study, including 81 cross-border acquisitions and 20 domestic acquisitions. The median lag between acquisition and survey was about four years, which was sufficiently recent for respondents to recall the conditions of the acquisitions. Anand, Capron, and Mitchell (2005) describe the sample in more detail.

Event study

We carried out an event study of how the geographic scope of the acquisitions influenced the cumulative average abnormal return (CAAR) of the acquirers. The event study examines how financial markets assessed the potential of the acquisitions to generate value. We focused on whether the multinational scope and foreign headquarters of the target firm influenced stock market perceptions of acquirer performance.

We used the following procedure for the event study (see Capron and Pistre, 2002). The procedure defines the "normal" return as that which one would expect if an acquisition event did not take place; the return obtained with the market model provides a measure of the normal return.

The daily excess return of a firm i for day t (AR_{it}) is estimated as:

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt}, \tag{6.1}$$

where R_{it} is the observed individual firm i's return for day t and R_{mt} is the return on a market index for the same period.

In the above equation, α_i and β_i are ordinary least square values from the estimation period, which precedes the event window. We obtained the daily returns of all the firms in the sample for a period ranging from 180 days prior to the acquisition announcement in the *Wall Street Journal*, to 180 days after the acquisition announcement. The estimation period includes day –180 through –50, and day +50 through +180. To remove any bias due to changes in a firm's characteristics around the acquisition announcement, we apply the procedure outlined by Ruback (1982). The parameters before the announcement date are estimated on data from the pre-event estimation period; those on or after the event are estimated from the post-event estimation period. We use market-model parameters from the pre-event estimation period to calculate abnormal returns for days –20 to –1. Similarly, we use parameters from the post-event estimation period to calculate abnormal returns for days 0 to +1.

Average excess returns for each relative day are calculated by:

$$AR_t = (1/N)\sum_{i=1}^{N} AR_{it}, \tag{6.2}$$

where N is the number of securities with excess returns during day t.

The cumulative abnormal return (CAR) for each security i, CAR_i, is formed by summing individual excess returns over time as follows:

$$CAR_{i,k,l} = \sum_{t=k}^{l} AR_{it}, \tag{6.3}$$

where $CAR_{i,k,l}$ is for the period from $t = k$ days until $t = l$ days.

The cumulative average abnormal return ($CAAR$) over the event time from k days until l days is calculated by:

$$CAAR_{k,l} = (1/N)\sum_{i=1}^{N} CAR_{i,k,l}. \tag{6.4}$$

While scholars have criticized event studies on several grounds – studying only short-term performance, requiring strong assumptions about unanticipated events, focusing on public firms, and missing the impact of acquisitions that are part of a broader corporate strategy (Lubatkin and Shrieves, 1986; McWilliams and Siegel, 1997) – the CAAR approach provides useful analysis because it provides an "outside the firm" assessment of the value of an action and encompasses the opinions of people who have a financial stake in the outcome of firm strategy.

Variables

Table 6.1 reports correlations and descriptive statistics for the variables. We used two sets of variables to define the geographic scope of the target. First, a "cross-border" dummy variable denoted whether a company was buying a firm based in its home market or in a different country. Second, we measured the multinational scope of the acquired firm with a "multinational operations" dummy variable that distinguished targets that operated only in a single country from those that operated within multiple countries. We then interacted the cross-border variable with the multinational operations variable to create four geographic scope variables for the targets: 1) home country targets that operated in only a single country (10 percent of the cases); 2) home country targets that operated in multiple countries (10 percent); 3) foreign targets that operated in only a single country (35 percent); 4) and foreign targets that operated in multiple countries (45 percent). The target scope variables offer simple direct measures of resource diversity. A more complex analysis might identify specific countries and industrial environments in which targets operate, but geographic scope variables provide meaningful indicators of the potential for changes that stem from the diversity of a target's resource base.

Several control variables addressed other influences on acquisition performance.

Table 6.1 Correlations and descriptive statistics

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Home-country target with multinational scope	1													
2. Foreign target with domestic scope	–0.29	1												
3. Foreign target with multinational scope	–0.37	–0.54	1											
4. Acquirer geographic scope	0.01	–0.03	0.23	1										
5. Pre-acquisition target innovation strength compared with rivals	0.07	–0.03	0.02	–0.02	1									
6. Pre-acquisition target cost efficiency compared with rivals	0.05	–0.01	–0.01	0.02	0.09	1								
7. Similarity of technology	–0.02	0.07	–0.01	–0.01	–0.03	0.08	1							
8. Similarity of geographical markets	0.21	–0.19	–0.13	0.03	–0.05	–0.06	0.18	1						
9. Direct competitors	0.03	–0.20	0.07	0.04	–0.11	–0.11	0.18	0.39	1					
10. Relative size of target to acquirer	0.13	–0.18	0.04	–0.15	0.07	0.02	0.03	0.15	0.22	1				
11. Pre-acquisition target profitability compared with industry	–0.04	–0.12	0.08	–0.04	–0.26	–0.17	–0.06	0.16	0.17	–0.05	1			
12. Pre-acquisition acquirer profitability compared with industry	0.07	0.01	–0.02	–0.04	0.02	0.12	0.03	–0.01	–0.04	0.10	0.01	1		
13. Forecasted demand	0.04	0.07	–0.19	–0.18	–0.07	0.02	–0.07	0.06	0.14	0.15	0.06	0.16	1	
14. US–UK targets vs others	0.22	–0.23	0.02	0.21	–0.05	0.09	–0.03	0.18	0.18	0.15	0.08	0.03	–0.03	1
Range	0–1	0–1	0–1	1–3	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	0–1
Mean	0.10	0.35	0.45	2.62	3.13	2.79	3.52	2.54	2.44	1.86	2.78	2.34	2.20	0.38
Standard deviation	0.30	0.48	0.50	0.65	1.16	0.96	1.18	1.39	1.52	1.27	1.16	0.89	0.73	0.48

Acquirer geographic scope The theory of the multinational enterprise suggests that multinational acquirers are more likely than domestic acquirers to redeploy resources to targets and to benefit from acquisitions. We measured acquirer geographic scope with a three-value scale, with domestic scope set equal to 1, international scope within one region equal to 2, and global scope equal to 3. The regions were North America, the European Union, and Asia-Pacific. (Unfortunately, there were too few cases to distinguish between regional and global scope in the target variable once we interacted geographic scope with the cross-border acquisition dummy variable.)

Pre-acquisition profitability of targets and acquirers We control for the target and acquirer firms' pre-acquisition profitability, measuring pre-acquisition profitability relative to the industry average. The variable uses a five-point scale that ranged from "much more profitable" to "much less profitable."

Pre-acquisition resource asymmetry We expect acquirers to draw knowledge from acquired firms on dimensions where the latter have relative strength. We measured the pre-acquisition resource profile by evaluating the relative strength of the target to the acquirer in innovativeness and cost efficiency, based on ascending five-point scales.

Similarity We assessed the similarity of the target and acquirer in terms of technology, similarity of geographic markets, and direct competition to control for economies of scale and opportunities for reducing overlapping functions and overcapacity. We used measures based on five-point scales.

Relative size of target to acquirer We measured the relative sales of acquired firm to acquirer on a five-point scale, with 1 indicating acquired firm sales less than 10 percent of acquirer sales and 5 indicating acquired firm sales of more than 100 percent.

Market growth forecast We measured expected industry sales growth on a five-point scale, ranging from "rapidly growing" to "rapidly declining."

Country A dummy variable differentiated targets based in the US or UK (38 percent of the sample) from others, to help identify country-specific effects.

Results

Table 6.2 reports descriptive results for the study. The core conclusion from the table is that acquisitions of home-country targets that operated within a single country produced the weakest stock market reaction, while acquisitions of foreign-based targets that operated in multiple countries produced the strongest reaction. The pattern held for both timing windows. The descriptive statistics provide a clear demonstration of the basic performance outcomes, although they neither control for alternative explanations nor test for statistical significance.

Figure 6.3 depicts the major results in table 6.2. The figure contrasts the results of the traditional distinction between domestic and cross-border acquisitions (first row) and those we obtain by considering both target country origin and target geographic scope (second row). We highlight two implications of the patterns in the figure.

Table 6.2 Descriptive results: acquirer CAAR

[–5 days;+5 days]	*Nationality of target (crossing a border)*		
	Home-country target	**Foreign target**	
Scope of target's operations **Domestic scope**	**–2.68**	0.04	–0.51
Multinational scope	1.06	**1.65**	1.54
	–0.71	0.95	0.63

[–20 days;+ 5 days]	*Nationality of target (crossing a border)*		
	Home-country target	**Foreign target**	
Scope of target's operations **Domestic scope**	**–3.21**	–0.67	–1.18
Multinational scope	1.08	**1.16**	1.14
	–0.94	0.36	0.11

The values in the cells are sample mean CAAR values for different classes of acquisitions; a larger value indicates a more positive stock market reaction within a class of acquisitions, while a negative value indicates a negative market reaction

The first set of implications is straightforward: firms obtain greatest benefit when they have the ability to simultaneously cross a border and gain access to the target's multinational diversity. There is a stark contrast between the 2.68 loss versus the 1.65 gain (–5;+5 day window, in the lower left of figure 6.3) and the 3.21 loss versus the 1.16 gain (–20;+5 day window, in the lower right of the figure). This pattern is consistent with our earlier hypothetical example in the pharmaceutical industry.

The second set of implications is more subtle and revisits previous studies on domestic versus cross-border acquisitions. The pattern suggests that acquirers tend to be better off when buying a home-country target whose scope of operations is international than buying a foreign target with operations that are mainly domestic. There is a striking contrast between the gain of 1.06 versus the gain of 0.04 (–5;+5 day window, the two middle bars in the lower left of figure 6.3) and the gain of 1.08 versus the loss of 0.67 (–20;+5 day window, the two middle bars in the lower right of the figure). Those results suggest that if analyses do not control for international diversity at the firm-level, then they may produce a highly misleading interpretation of return differences between cross-border and domestic acquisitions. The results also suggest that average returns across those two groups are sensitive to the proportion of targets with domestic scope versus targets with international scope. For instance, if the group of domestic acquisitions includes many targets with international scope and the group of cross-border acquisitions includes many targets of national scope, it is likely that the acquirer returns from the domestic acquisitions group will perform as well as, or even better than, acquirer returns from cross-border acquisitions, and vice versa.

Table 6.3 reports multivariate statistical analysis. The analysis is consistent with the core proposition that the ability to acquire foreign targets with multinational

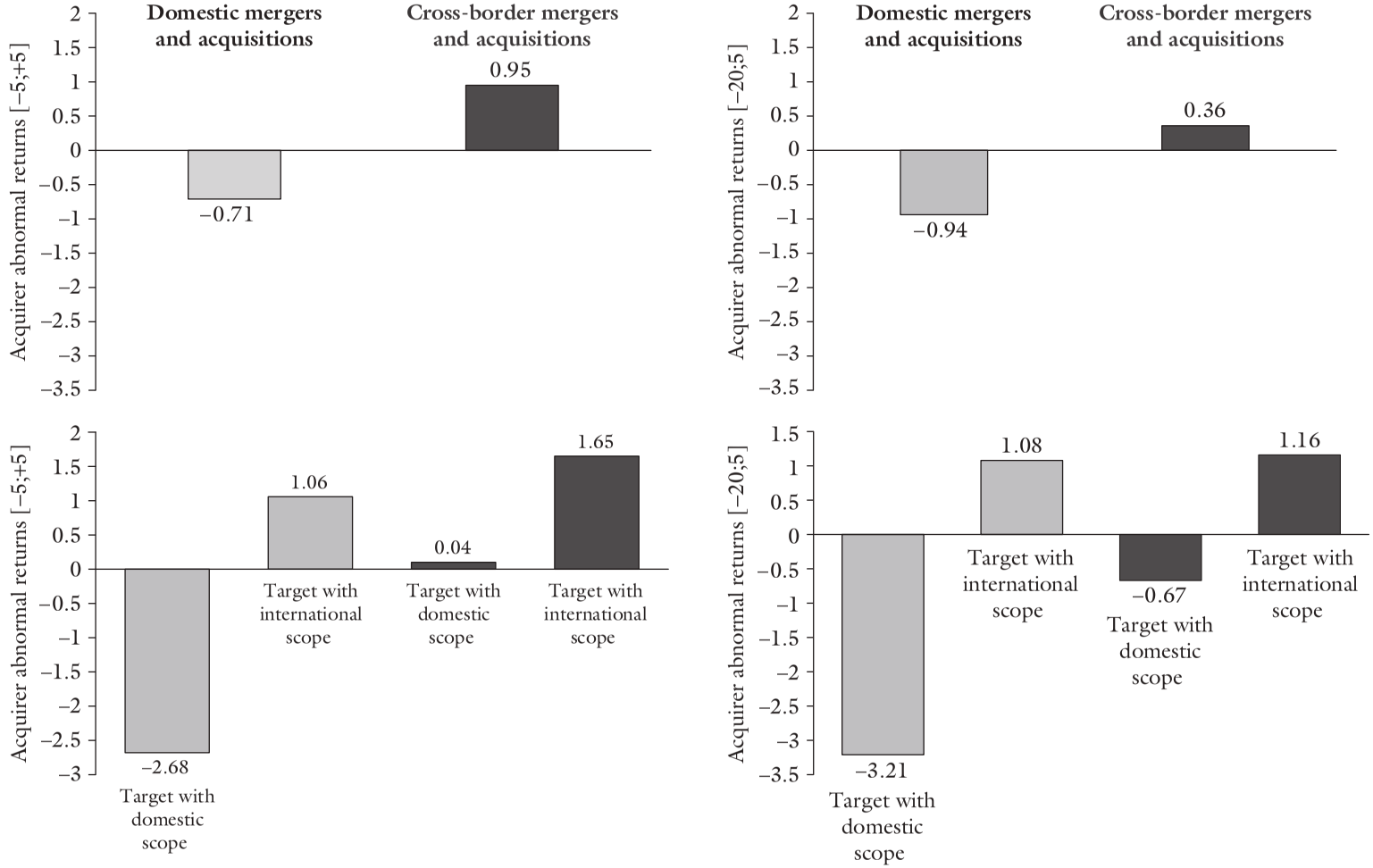

Figure 6.3 Relationship of acquirer abnormal returns to target country origin and target geographic scope

Table 6.3 OLS estimates of the effect of target multinational scope on acquirer CAAR

	1. Acquirer CAAR [–5 days;+5 days]	*2. Acquirer CAAR* [–20 days;+5 days]
Multinational diversity of acquired business[a]		
1. Home-country target with multinational scope (0–1)	0.27**	0.22*
2. Foreign target with domestic scope (0–1)	0.45**	0.32*
3. Foreign target with multinational scope (0–1)	0.65***	0.60***
4. Acquirer geographic scope	0.09	0.18*
5. Pre-acquisition target innovation strength compared with rivals	–0.07	–0.11
6. Pre-acquisition target cost efficiency compared with rivals	–0.19	–0.11
7. Similarity of technology	0.09	0.14
8. Similarity of geographical markets	0.06	0.11
9. Direct competitors	0.03	–0.07
10. Relative size of target to acquirer	0.03	–0.02
11. Pre-acquisition target profitability compared with industry	0.36***	0.33***
12. Pre-acquisition acquirer profitability compared with industry	0.08	–0.05
13. Forecasted demand	0.08	0.16
14. US–UK targets vs others	0.07	0.01
R-Square	0.27	0.25

Positive coefficient = positive market reaction to acquisition; 101 cases

[a] The baseline variable is "a home-country target with a domestic scope of its operations"

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$ (one-tailed tests)

scope produces the greatest stock market benefits, reinforcing the descriptive patterns in table 6.2 and figure 6.3. Among the control variables, only target pre-acquisition profitability had a substantial impact on stock market reactions, although acquirer geographic scope had a moderate effect in the larger time window (model 2).

In sensitivity analyses, we investigated whether the year in which an acquisition took place affected performance, on the premise that greater time might lead to more extensive activity that, in turn, might negate any influence of target geographic scope. We found only weak impact of timing, with no material changes in the global scope influence.

Discussion

The analysis reveals that the country–firm multinational nexus of the target firm contributes to acquisition performance, as measured by abnormal stock market returns

for the acquirer. These results can be interpreted in the broader context of using acquisitions as a form of dynamic capability. Target firms with activities that span different countries provide internationally diverse contexts in which acquirers can obtain and exploit resources and skills that complement their knowledge bases and existing markets. In turn, the new resources help the acquirer make major changes in its resources stock, with the potential to contribute to growth and profitability. Firms that understand the potential to use acquisitions in this context where resource exploration, market failure, and multiple points of contact will be common, and then to identify available targets, will often benefit. Moreover, firms with highly effective dynamic capabilities for using acquisitions will gain increased evolutionary fitness relative to firms that use acquisitions successfully in more constrained settings and so gain more limited advances in the technical fitness of their resource bases relative to their stronger competitors.

By highlighting acquisition-based dynamic capabilities, we complement previous research on reverse internalization in FDI, while revealing a more nuanced picture of resource procurement through domestic and cross-border acquisitions. While most previous research has focused on access to technological and marketing resources, our research captures the internalization of organizational capital.

An implication of these results is that the acquirer can successfully appropriate returns from the acquisition and thereby gain competitive advantage. In an efficient market for corporate control, this is possible only if the acquirer has synergies with the target firm, where the synergies might be technical or market interactions or, more interestingly in the context of this book, superior dynamic capabilities for selecting situations that suit acquisitions and for identifying targets. Without such product-based or capability-based advantages, the competition for the target will reduce acquirer returns to insignificance.

Thus, gains from target multinationality are not available to all firms; instead, they can only be appropriated by firms that have a mix of resources and capabilities needed to exploit acquired assets. For example, interestingly, the effect of acquirer geographical scope is positive, even though small, which suggests that the positive effect of target multinationality holds even if the acquirer is already a multinational. The slight positive effect can be interpreted as the positive effect of experience in intrafirm knowledge transfer. The acquirer-specific nature of these gains can explain both the appropriation by the target as well as the fact that all acquirers do not necessarily seek multinational targets all the time.

It is useful to consider examples in which multinational acquisitions have created substantial value. The pharmaceutical industry, in which we set the hypothetical example of Eli Lilly's strategic choices, is a useful setting for considering actual cases. The current world leader in the industry, Pfizer (based in the US), has substantially increased its product portfolio, technical skills, and marketing coverage through acquisitions of firms such as Pharmacia, which was based in Sweden and possessed extensive international operations through its internal expansion and from its own prior acquisition of Upjohn. The current number two firm, GlaxoSmithKline, has reached that position through an extensive set of acquisitions with multinational scope, including SmithKlineBeecham and Wellcome. The number three and four firms, AstraZeneca and Sanofi-Aventis, similarly have achieved both growth and

profitability through a series of multinational acquisitions. By contrast, attempts to grow by purchasing primarily domestic targets, such as Merrell Dow's acquisition of Marion Laboratories in the early 1980s, have often been less successful.

Nonetheless, we should be clear that many multinational acquisitions fail. Again, in the pharmaceutical industry, cases such as the Japanese firm Fujisawa's acquisition of Lyphomed in the US during the 1980s and the German firm Hoescht's acquisition of Marion Merrell Dow (MMD) have produced little value. Some problems stem from poor identification of targets, such as Fujisawa's lack of recognition of underlying problems in Lyphomed's clinical testing procedures. Others stem from post-acquisition integration difficulties, such as in the Hoescht–MMD case.

The fact that both types of difficulties – pre-acquisition and post-acquisition – are common in practice highlights the complex and difficult nature of acquisition-based dynamic capabilities. In turn, the presence of the difficulties reinforces our point that firms with effective capabilities often gain competitive advantages, because many firms simply are not able to develop a strong set of acquisition-based dynamic capabilities.

It is important to recognize that acquisition-based dynamic capabilities also create value from domestic acquisitions for many firms. Bank One is one such example. The company expanded successfully for many years through a series of domestic acquisitions in the US. In the Bank One case, the value of the domestic acquisitions arose because the scope of the banking market and its underlying technology was largely country-specific, so that there was relatively little potential value to be gained through multinational acquisitions. In turn, Bank One's high level of acquisition-based dynamic capabilities created substantial value through its domestic acquisitions.

Another example with frequent use of domestic acquisitions, though, involves an industry with extensive international markets and technological range. The example is Cisco, in the telecommunications industry. Between 1993 and 2004, Cisco consummated 136 acquisitions to help expand its network router lines and related businesses. Many of the targets were based in the US and had relatively little international operations although a few, such as Pirelli's optical systems business, did offer both foreign headquarters and substantial multinational scope. Cisco created substantial value through its acquisitions, as complements to its equally active alliance strategy (208 new alliances from 1988 to 2004) and internal development activities (with R&D expense averaging 15 percent of sales annually). Cisco has very strong acquisition-based dynamic capabilities, with extensive skills for selecting among internal development, alliances, and acquisitions, plus identifying and negotiating terms with targets, and integrating acquired businesses. These capabilities have contributed to the firm's superior profitability in a difficult industry (producing a mean annual return on sales of 17 percent from 1993 to 2004). Even in this example, though, it is more the portfolio of acquisitions rather than any one domestic acquisition that has created the value for Cisco. That is, simply relying on a few domestic acquisitions would not have produced the results that we observe at the company. Instead, the results arise because the company has used its acquisition-based dynamic capabilities so actively in the domestic acquisitions market. Moreover, acquisitions with multinational scope, such as the Pirelli optics example we note above, have often had a larger impact than any one domestic acquisition for Cisco.

Cisco also provides a strong comparison to another high-profile firm, Hewlett-Packard (HP). From the 1970s through the mid-1990s, HP developed very strong alliance-based and internally based dynamic capabilities, and benefited as a result, but did not invest deeply in creating acquisition-based dynamic capabilities. As a result, HP struggled badly when it purchased Compaq in response to a competitive situation that would have benefited from a major and rapid change in its existing resource base – which limited the ability for using internal development to respond and would have incurred very high market failures had it attempted to use alliances to develop the new resources required. In this case, HP had sufficient acquisition-based dynamic capability to select acquisition as a mode of change and to identify a target (as well as sufficient financial resources to make one big bet), but did not have sufficient reconfiguration capability to integrate the target successfully. Indeed, there was widespread conflict within the firm both about the use of acquisition and the particular target, reflecting lack of confidence in the company's acquisition selection and identification capabilities.

Finally, it is important to recognize that firms would need to undertake domestic acquisitions even if multinational acquisitions, on average, produced greater value. First, many of the resources that a firm requires for expansion exist within its home market, where domestic targets provide a means of obtaining the resources. Second, desirable multinational targets often are not available. As a result, firms may need to seek domestic targets as substitutes if they wish to expand and grow. In either case, the firm needs to develop a deep set of acquisition-based dynamic capabilities if it wishes to change successfully.

Chapter 7

Firm Growth and Dynamic Capabilities

Dynamic capabilities often provide organizations with the potential for growth. Organizations may seek growth in the direction of more of the same, expanding in their current businesses, or they may seek growth in the direction of something different, including new markets and businesses. Modes of growth include mergers and acquisitions, joint ventures and strategic alliances, and internal growth such as via new product development. As the three previous chapters have shown, organizations will meet with greater evolutionary fitness if they develop effective dynamic capabilities associated with each mode of growth.

In the dynamic capabilities framework, firm trajectories or "paths" of change depend on the current resources and capabilities of each firm ("positions"), from which change proceeds (Teece, Pisano, and Shuen, 1997). Thus, as in evolutionary economics, which underpins much of the logic of dynamic capabilities, firm evolution and change is nonrandom and depends on prior history. In common parlance, both the initial resource bases and viable paths for the future are history (or path) dependent. Change therefore is constrained by past actions and by the organization's resource base. This general logic suggests that firm performance, including with regard to growth, should be expected to persist over time.

Some empirical studies related to dynamic capabilities have documented persistent differences between firms within an industry in terms of the type and amount of organizational capabilities they possess, such as those connected with innovation (Helfat, 1994). Documenting the history dependence of these capabilities, however, does not subject the theory regarding dynamic capabilities (and organizational capabilities and routines more generally) to a test of whether these capabilities have any meaningful effect on firm performance for more than a short period of time. In fact, skeptics have claimed that the empirical evidence shows that firm performance over time, measured as growth in firm size, is a random walk. If true, this conclusion would imply that, to the extent that dynamic capabilities affect the growth trajectories of firms, they do so in a manner indistinguishable from a series of random shocks.

Such a claim seems to pose a serious challenge to any theory featuring persistent heterogeneity in firm traits – as is the case both with the dynamic capabilities approach and evolutionary economic theory more generally. We therefore ask whether

the evidence in fact shows that growth is random or whether other patterns consistent with dynamic capability theory and evolutionary economics explain the data.

In what follows, we begin with a general discussion of the measurement of firm performance and its persistence. Then we examine growth persistence as a measure of firm performance and evolutionary fitness. This leads into a discussion of what evolutionary economic theory, as well as empirical regularities from the study of industry evolution and experience curves, would lead us to expect in terms of growth persistence. We then discuss the empirical evidence on growth persistence and explain what the findings do and do not tell us with regard to the evolutionary fitness of dynamic capabilities.

Measurement of Firm Performance

Scholars and practitioners of strategic management care not only how well firms perform at any given point in time, but also how well they perform over time. After all, the holy grail of strategy is *sustained* competitive advantage. One prominent approach to assessing performance is accounting profitability. A substantial empirical literature has assessed the persistence of various accounting measures over time, as one indicator of sustained relative competitive advantage or disadvantage.

Several of the studies of persistence in accounting profitability use the following empirical approach. Following Mueller (1986), accounting profitability is modeled empirically as having a permanent and a transitory component. The transitory component is further modeled as a first-order autoregressive process, such that the transitory component of profitability is a function of the transitory component in the prior period. In a regression of current transitory profitability on past transitory profitability, the estimated coefficient on past transitory profitability provides a measure of how fast a firm's profitability returns to its normal (permanent) level. A coefficient between zero and one implies that a positive shock to prior period profitability has a positive but diminishing impact on profitability in current and future periods. Most studies of profit persistence have found exactly this type of persistence not only at the firm level (Mueller, 1986; Cubbin and Geroski, 1987; Waring, 1996) but also at the industry (Waring, 1996; McGahan and Porter, 1999) and business levels of analysis (McGahan and Porter, 1999).

A largely separate set of empirical studies has decomposed the variance of business-level accounting profitability into factors associated with industry, firm, business, and year. These studies have found that cross-sectional variation between businesses within firms accounts for a large portion of the variance of business-level profitability (for a review, see Bowman and Helfat, 2000). This is consistent with the findings of earlier studies with respect to the permanent component of firm profitability, which indicated firms do not converge to a common profitability level over time (Mueller, 1977). Putting the results of the profit persistence and variance decomposition studies together suggests that profitability varies across firms and the businesses in which they operate, and these differences tend to persist over time.

Like all empirical measures of performance, measures of accounting profitability have disadvantages. Academic studies have utilized a variety of profit performance measures, including return on assets, return on sales, and return on equity. Among

these measures, some version of return on assets is the closest counterpart, conceptually speaking, to the "rate of return on capital" that tends to be equated across different employments of financial capital – according to a classical proposition in the economic theory of a competitive economy. (Other conceptual and operational advantages are claimed, however, for the other measures.) Not only have researchers employed different accounting measures, but they also have employed different methods of calculating each measure. The variety of calculation methods leads to different answers for what is ostensibly the same number. As an example, consider the most frequently used measure, return on assets. Accounting statements of earnings offer several choices for the numerator, depending on how the researcher treats items such as depreciation, interest payments, taxes, and extraordinary income. For the denominator, balance sheet values of assets generally reflect current values of monetary assets plus historical values of depreciated physical assets and perhaps the value of accounting "goodwill."[1] Researchers may or may not adjust physical asset values for inflation. Depending on which of the various approaches different researchers use to calculate both the numerator and the denominator, we may observe a wide range of calculated values for the same measure. This in turn makes it more difficult to compare the results of different studies on firm profitability.

Even if researchers were to use comparable measures of profitability across studies, accounting data pose some additional problems when used to assess patterns of firm performance over time. For example, the use of historical asset values in accounting data produces greater persistence in measured return on assets over time than would hold for the true replacement cost values of firm assets. This occurs because the balance sheet value of physical assets each year equals the historical cost of the assets minus depreciation (itself a function of historical cost), which in turn causes the denominator to be positively correlated from year to year. In addition, balance sheet measures of assets generally do not include intangible assets; the costs of creating such assets are typically treated as current expense. Among the types of assets treated in this way are, indeed, capabilities, dynamic capabilities, and reputations – strategically critical resources. Needless to say, the market value of assets may fluctuate from year to year. By omitting fluctuations in the value of assets, both intangible and tangible, analysis of accounting return on assets may overstate the persistence of profitability. This in turn makes it difficult to draw strong conclusions regarding the persistence of firm performance over time.

Growth as a Measure of Firm Performance

Firm performance has many definitions, both conceptual and empirical (see Winter, 1995).[2] Empirical research in strategic management has tended to ignore an obvious alternative to accounting profits as a measure of firm performance over time: growth

[1] "Goodwill" is the name for the value that appears on the balance sheet when a firm makes an acquisition and brings the assets of the acquired entity onto its own books at the values shown on that entity's books, but actually pays more than book value for them.

[2] Studies also have used stock market measures of firm performance. We focus on accounting measures of profitability here, because most measures of firm growth use accounting data.

in firm size. Most firms seek profitable growth. In the absence of growth, firms can improve their performance only by reducing costs or raising prices. Market forces and technological constraints often limit how much firms can do either in a sustained manner for more than a few years. Instead, firms often seek growth from increased sales of products and services, for existing products, improved products, and new products, in existing or new markets. Moreover, to understand competition in a market economy, analysis of growth is as important as analysis of profits. A market economy in which firms that receive abnormally high returns simply receive them passively (or in which returns move randomly) differs vastly from an economy in which such firms grow and put sustained pressure on others. Hence, growth persistence is a critical attribute of competition.

Empirical research on growth persistence comes from the economics literature. The studies generally use one of three measures of firm size: sales revenues, number of employees, and accounting value of assets. The most frequently used measure is sales revenues, which has the advantage that it is comparable across firms selling similar products. The measure also is straightforward to compute. Moreover, with regard to the dynamic capabilities and their impact on firm performance over time, sales revenue as a performance measure has some advantages relative to accounting rates of return. For example, because sales revenues reflect current rather than historical dollar values, they are not subject to an inherent bias of the sort that leads to a built-in positive correlation of accounting returns for individual firms over time. Although nominal sales revenues incorporate the impact of price inflation (or deflation), we can adjust for the effect of inflation to a reasonable extent using price deflators. Furthermore, an analysis of persistence in growth can reveal the extent to which firms can sustain their evolutionary fitness. Firms generally find unprofitable growth difficult to sustain over time.[3] Therefore, a measure of persistence of growth in firm size provides an alternative basis for assessing patterns of firm performance and evolutionary fitness over time.

Growth Persistence

What exactly can analysis of growth tell us about firm performance in general and dynamic capabilities in particular? To add precision to the discussion, we first explain how prior empirical research has modeled firm growth and what growth persistence means in that context. Then we consider the question of what general sorts of factors might lead to persistence in firm performance.

As a starting point, define the rate of firm growth in period t, G_t, as follows:[4]

$$G_t = (S_t - S_{t-1})/S_{t-1} \tag{7.1}$$

[3] Probably the most widely noted exception to this claim is that a wave of dubiously profitable growth via mergers and acquisitions often accompanies a booming stock market. However, this sort of distortion is not that hard to sort out in empirical work, and, in any case, bull markets don't last forever.

[4] This formulation follows Sutton (1997). In empirical work, the time period referred to is almost always a year.

where S_t is the size in period t and S_{t-1} is the size in period $t - 1$.

Equivalently, equation (7.1) can be stated as:

$$S_t = (1 + G_t)S_{t-1} \tag{7.2}$$

As a practical matter, G_t could be close to zero. For example, once a market reaches maturity, firms may no longer grow in a sustained manner and any changes up or down in firm size may amount to noise. Observed values of G each year would be random: the size of any one firm this year would be a multiple of last year's size with a small random component, and growth in the following year might move in an opposite (or in the same) direction. Current firm size is dependent on firm size in the prior year, but only because the random annual growth is typically small relative to the prevailing level.

The foregoing example suggests that empirical analysis of G_t must take into account whether or not conditions that might cause firm size to change are in equilibrium. Under conditions of equilibrium, analyzing whether G_t has any sustained direction over time doesn't tell us much about firm performance or about persistence in any of the underlying factors that led to that performance. The question of whether G_t has a sustained direction over time or whether G_t instead is random becomes relevant only under conditions of change. These conditions of change can involve factors external to the firm, such as changes in competition or demand or technology, as well as factors internal to the firm, such as new product or process development.

Using equation (7.2), we can more precisely formulate the question of whether G_t is random or not. If S_0 is the first period of the firm's existence (or of empirical observation), then equation (7.2) implies that:

$$S_t = (1 + G_t)S_{t-1} = S_0(1 + G_1)(1 + G_2) \ldots (1 + G_t) \tag{7.3}$$

If we take a logarithmic transformation of equation (7.3) and approximate $\log (1 + G_t)$ as G_t, we obtain:

$$\log S_t = \log S_0 + G_1 + G_2 + G_3 + \ldots + G_t \tag{7.4}$$

The log of firm size in the current period therefore is a function of a constant term ($\log S_0$) and of the sum of prior growth rates.

What is known as Gibrat's Law (following Gibrat, 1931) places the following restrictions on equation (7.4): the growth rates in each period are independent of one another and are random variables, each with mean m and variance σ^2. As the number of time periods becomes large, $\log S_t$ has an approximately normal distribution with a variance that increases linearly in t. This formulation implies that firm growth in each period is random and independent of current firm size.

Gibrat's Law, if strictly interpreted, implies that no firm or industry attributes have any systematic influence on firm growth. Even if firms have long-lived and heterogeneous resource bases, they do not affect growth, which is entirely random. More specifically, Gibrat's Law therefore implies that dynamic capabilities have no systematic effect on evolutionary fitness in terms of growth persistence. Even if we

take a less strict view – acknowledging that what passes for "randomness" in the real world is typically an aggregation of small systematic effects – any empirical evidence favoring Gibrat's Law stands as a warning that it may be hard to produce a countervailing statistical demonstration supporting a role for dynamic capabilities or other systematic causes.

Possible Explanations of Growth Persistence

On its face, Gibrat's Law seems to pose a stark challenge to any sort of resource or capabilities explanation of firm performance. At a minimum, it is entirely at odds with the simplest theoretical models of evolutionary competition and growth. In those models, firms differ permanently in attributes that can be fully summarized by a single number, such as productivity or the unit cost of production. Firms replicate those attributes perfectly as they grow, and manage to retain their attributes under pressures inducing decline. Profitable firms grow and unprofitable ones shrink. One simple way to summarize the implications of this constellation of assumptions is in terms of the rank correlation of firms' growth rates at two different points of time: the correlation is predicted to be perfect. Absolute growth rates may rise or fall in the course of the evolutionary struggle, and absolute growth differentials across firms may widen or narrow, but the rank ordering is always the same. This stands in the sharpest possible contrast to the Gibrat's Law claim, which says that the rank correlation is zero.

Of course, no one ever proposed that the stark predictions of simple theoretical models should be expected to describe data well. The primary purpose of such models is to explicate causal mechanisms, and to provide an accessible launching platform for more sophisticated modeling efforts. Many of the mechanisms reflected in the more sophisticated models do suggest qualifications of the simple persistence story. More importantly, however, it is realistic to expect to see a lot of apparent randomness in the data, even in deviations from a sophisticated theoretical model that does admit a variety of time-varying mechanisms. Nevertheless, it is one thing to encounter the need to qualify the simple models and another thing to encounter an emphatic and unqualified rejection. While there are many reasons to expect rank correlations to be well below one, it remains hard to see how it could happen that a world in which an important role is played by the persistent, performance-relevant traits of business firms is also a world in which no trace of such effects can be found in growth data. Thus, it is quite important to ask whether we have been looking for the traces in all the right places, and whether it is really true that they cannot be found.

In addition to theoretical reasons to expect persistence rather than randomness in firm growth, there are at least two well-documented empirical regularities that imply that firm growth rates are likely to persist over time. The first regularity is the industry lifecycle. The second regularity is the experience curve. We next discuss each of these regularities.

A great deal of evidence has shown that the evolution of many (but not all) industries tends to follow a recognizable pattern of industry emergence, growth,

maturity, and decline (for a review, see Klepper, 1997). In the emergence and growth stages, many firms enter the industry; successful firms grow and unsuccessful firms exit. By the time the industry enters maturity, it often has experienced a shakeout – a relatively abrupt decline in the number of participating firms. A few large firms often come to dominate the industry.

What lies behind this common pattern of industry growth? Technological innovations often provide the seed for new industries. As the new technology evolves, costs decline, quality improves, demand increases, and the industry grows as new firms enter and expand. Evolutionary economics leads us to expect that over time in a competitive setting, firms that have lower costs and higher quality (as the emerging market understands it) will put pressure on less successful firms: the more successful firms will tend to grow and less successful firms will find it more difficult to compete.

This pattern of differential firm growth during the growth phase of the industry lifecycle implies that we should expect G_t to be nonrandom. Successful firms continue to grow over time and less successful firms will either "run in place" or decline over time; the least successful firms will exit the industry. What happens as the industry nears maturity? The losers have departed, and their decline can no longer open additional space for the winners. The winners confront only each other and the limits of the finite niche they collectively occupy; their growth is therefore checked. Once the industry settles into maturity, we should expect relatively little in the way of systematic patterns in G_t, since the industry is essentially in equilibrium. As compared with the growth phase of the industry, growth rates should be smaller in absolute terms, less persistent, and closer to random. Over the lifecycle of an industry, if new entrants start out small (as is typical), we would observe higher rates of growth for these smaller firms during the emergence and growth phase of the industry. During the maturity phase of the industry, we might expect to see less or even no persistence in growth for the larger firms that come to dominate the industry. Thus, the underlying stages of the industry or firm lifecycle may partly determine any observed empirical relationship between firm size and growth.

The industry lifecycle describes growth within industries over time. As noted above, many factors interact to produce these patterns of growth. One important factor is the decline in costs as technology improves, particularly during the growth phase of the industry lifecycle. Although empirical studies of the experience curve generally have not linked specific portions of the experience curve for an industry to specific phases of the lifecycle for that industry, cost reductions along the experience curve may help to explain observed patterns of industry growth.

Empirical analyses of experience curves have documented sustained cumulative improvements in costs over time (sometimes approximated by price declines in empirical research) for a variety of different manufacturing settings (e.g., see Ghemawat, 1985; Lieberman, 1989). Experience economies are generally found to fit an exponential curve, whereby the log of unit cost declines at a constant rate with respect to the log of cumulative volume. The relationship between quantity and unit costs is typically modeled as:

$$C_n = (C_1)(Q_n^{-b}) \tag{7.5}$$

where C_n is the cost per unit for the nth unit of production; C_1 is the cost per unit production initially; Q_n is the cumulative quantity produced; and b is the elasticity of unit cost with respect to quantity produced.

The cost declines associated with increased cumulative production are thought to result from several sources, including learning-by-doing within the firm (see Argote, 1999), advances from the firm's R&D or other efforts "without doing," spillovers from the learning of other firms, and exogenous technological progress. Process innovation from all of these sources appears to be one important contributor to experience-based cost reductions. Thus, empirical evidence shows that experience economies are greatest in complex manufacturing industries (Ghemawat, 1985).

In industries where experience economies are significant, the pattern of experience-based cost reductions over time has implications for G_t over the course of the industry lifecycle. In the growth phase of industry evolution, firms gain experience with a technology and demand grows as the product improves. As production increases to meet demand, costs decline due to experience economies. Competition then leads firms to lower their prices. If demand elasticity exceeds 1, as is often the case, sales revenues increase as well. As firms continue to increase production to meet demand, costs and prices decrease even more, providing the basis for future growth. This pattern is likely to repeat itself until the industry reaches maturity and demand becomes saturated – or a range of low elasticity is encountered, making sales revenues decline even as physical output continues to rise.[5]

During the growth phase of the lifecycle for manufacturing industries, in particular, empirical evidence from the experience curve studies suggests that we would expect to observe persistence in G_t. That is, growth leads to more growth, at least for firms that survive long enough to benefit from experience. As the maturity phase of the industry lifecycle is approached, experience continues to cumulate but it takes longer and longer to achieve significant experience economies – both because growth has slowed and because a given absolute growth in cumulative volume confers diminishing proportional growth. Experience curve economies would no longer have a strong effect on observed values of G_t.

Empirical evidence with respect to both the industry lifecycle and the experience curve documents patterns of firm growth and cost decline rather than their underlying causes. For example, we are still learning exactly what organizational factors lead to experience-based cost advantages (e.g., see Argote and Darr, 2000). In addition, most of the statistical evidence reflects average trends within industries rather than the lifecycles and experience curves of individual firms.

There are many underlying reasons why we might expect that industries, and the firms that inhabit them, are likely to persist in their growth patterns over time. Dynamic capabilities provide one possible explanation for observed patterns of firm growth and experience-based cost declines over time. For example, some dynamic

[5] Winter (1984) proposes that an initial range of high demand elasticity can be accounted for by the fact that the new industry is often competing successfully with an existing functional substitute – airline passenger travel displacing railroad passenger service, TV displacing movies, mini-mill steel displacing the products of integrated firms, etc. Once able to offer a price that is below the unit costs of the existing substitute, the new industry obtains room to grow.

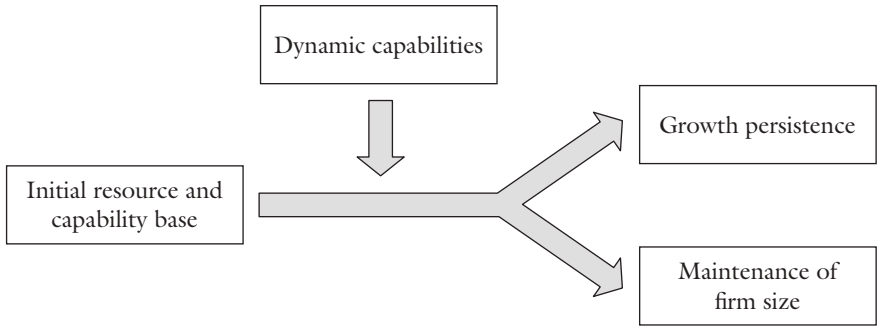

Figure 7.1 Dynamic capabilities, firm size, and growth

capabilities facilitate learning-by-doing, which in turn may lead to the cost reductions recorded in the experience curve. These experience-related cost reductions may also derive from dynamic capabilities that support incremental process innovation (Sinclair, Klepper, and Cohen, 2000).

Thus far, we have discussed strong theoretical reasons as well as robust empirical evidence indicating that firm growth is likely to persist over time, especially in the growth phase of the industry lifecycle. Arguably, dynamic capabilities contribute to this growth. It is important to note, however, that dynamic capabilities have implications for firm growth beyond the industry lifecycle and the experience curve. For example, some dynamic capabilities, rather than promoting firm growth, may enable firms to ward off decline instead. Consider situations where firms face changing market and technological conditions. Under these conditions, dynamic capabilities may enable some firms to survive and maintain their scale and scope in the face of change, but without necessarily growing. This perspective is fully consistent with the original emphasis of Teece, Pisano, and Shuen, who characterized dynamic capability as the ability to "match the requirements of a changing environment" (Teece, Pisano, and Shuen, 1997: 515).

The foregoing observation leads to a key point regarding the empirical analysis of growth persistence: the context that we examine must allow for the possibility of sustained firm growth. If we are analyzing an industry environment where the primary function of dynamic capabilities is to permit established firms to maintain their revenue base in the face of change, but not necessarily to grow, then analyzing growth persistence will tell us little about dynamic capabilities. With this in mind, we next turn to the empirical evidence on growth persistence.

The Empirical Challenge: Gibrat's Law

As noted earlier, Gibrat's Law implies that (log) firm growth each period is random and independent of firm size. Empirical tests of Gibrat's Law typically estimate a model wherein firm growth, measured as a one-period change in the logarithm of firm size, is a function of the logarithm of firm size in the prior period, plus a constant and an error term. If Gibrat's Law holds, the estimated coefficient on prior

period size should be zero and the error term should be normally (independently, identically) distributed (iid) with mean zero. This implies that firm growth (the change in firm size) depends on a constant term plus a random (error) term. In other words, firm growth is a random walk.

Based on a survey of several empirical analyses of the foregoing type, Geroski (2000) argued that the available evidence does not enable us to reject the hypothesis that firm growth is a random walk.[6] He noted that many studies fail to reject the hypothesis that the coefficient on last period's size is zero, and also that the error terms appear to be normally distributed and random. He concluded that the available empirical evidence is at odds with any theory that emphasizes the persistent features of firms. That is a broad range of theories, but certainly includes the capabilities/dynamic capabilities view and evolutionary formulations featuring the "quasi-genetic traits" of firms.

How robust is this assessment? The answer to this question depends on several factors. First, we examine whether the general nature of these tests can provide robust enough results to support the claim that growth is indeed a random walk. A second issue concerns the empirical context for the analyses. A third concern has to do with the econometric specification of the tests. Finally, it is important to ask whether Geroski was correct in his characterization of the empirical evidence, and whether more recent studies point in that same direction. We next consider each of these issues.

The first concern regarding the nature of the tests has to do with the framing of the hypothesis and its implication for how the tests are conducted. There are two pieces of evidence involved here. The first has to do with the estimated coefficient on prior period firm size. Geroski interpreted the evidence as consistent with a general finding that the coefficient is near zero. The second piece of evidence consists of observing that the error terms appear to be randomly distributed.

It is not really persuasive that the *apparent* randomness of the error terms is itself strong evidence in favor of Gibrat's Law. Nonrandom behavior of the error term can take many different forms, few of which have been explicitly investigated for in the residuals from these regressions. In contrast, statistical tests for randomness in a series of data, including even basic nonparametric methods such as runs tests, depend on the particular form of nonrandomness being tested (Gibbons, 1971).

More generally, in testing Gibrat's Law, we need to utilize an empirical specification that includes the theoretically predicted outcome of growth persistence as a possibility, rather than utilize a specification that presumes that growth persistence is zero. Many of the studies in fact investigate a specific alternative to randomness, namely, that firm size regresses to the mean (e.g., Hart and Oulton, 1996; 2001). Regression to the mean, if it exists, implies that small firms grow faster than large ones, a pattern that evolutionary economics would predict in data sets that include firms from multiple industries of varying degrees of maturity.

[6] We note with regret Paul Geroski's untimely passing in the summer of 2005. The stimulus provided by his 2000 paper has been a valuable one, and we suspect that it will prove to be even more so as these important issues receive further study in the future.

Even allowing for the alternative of regression to the mean, however, does not necessarily provide a well-designed test for capturing growth persistence if it exists. For example, suppose we consider a specification such that firms have sporadic arrivals of growth (say every few years) that are correlated with current capabilities. Dynamic capabilities take time to produce results and increments or changes to capabilities and growth don't necessarily occur on a regular basis that coincides with the periodicity of the data. This is particularly true for R&D capabilities. A test of the hypothesis that residuals are iid won't necessarily pick up this form of path dependence and growth persistence, as Geroski himself has noted (Geroski, Lazarova, Urga, and Walters, 2003). This plausible yet simple example underscores the importance of first specifying potential (non-Gibrat) stochastic processes based on theories of the underlying firm and industry dynamics, and then testing for the occurrence of these stochastic processes in the data.

A second concern regarding Geroski's interpretation of the evidence has to do with the empirical context reflected in the data used in the tests. Consider for example the UK data used by Geroski, Machin, and Walters (1997). The data have several features that may make them poorly suited for a test of growth persistence: they consist of time series of just eight years of annual data, they cover a time period (1976–82) of widely fluctuating world oil prices that rose precipitously and then crashed, they cover a wide variety of industries, and they consist mainly of large manufacturing firms.[7] Large manufacturing firms, however, are much less likely than small firms to be in a growth phase of the firm or industry lifecycle. The short time series of data also makes it difficult to distinguish out-of-equilibrium from equilibrium conditions. The oil price fluctuations would make it more difficult to discern any systematic patterns of growth persistence. And the range of industries further complicates the analysis. A subsequent analysis by Geroski et al. (2003), which also fails to reject randomness of firm growth, has the advantage that it uses a much longer 25-year time sample. This newer study, however, still suffers from the disadvantage that it includes only a relatively small number (147) of large surviving firms spread over many industries.

As we noted earlier, it is important to test for growth persistence under out-of-equilibrium conditions of the type that could reasonably be expected – at least from an evolutionary perspective – to generate growth persistence. As a general principle, testing for growth persistence in a broad spectrum of firms, where many of them are likely to be operating under close-to-equilibrium conditions, makes it difficult to adequately test for growth persistence. For example, data on US manufacturing firms suggests that the 1980s and 1990s were a time period of maturity and decline in many industries, in contrast to earlier periods of growth in the 1950s and 1960s

[7] These data also consist of a balanced sample, which raises yet another sample selection issue that could potentially bias a test of Gibrat's Law (see Harris and Trainor, 2005). A balanced sample includes only certain types of firms, namely, those that survived for the entire period of study. These firms may have characteristics that are correlated with apparent randomness of growth, including a greater likelihood that surviving firms are more likely to be in an equilibrium state than firms that entered or exited during the time period of study. This would introduce sample selection bias of the sort that would make it more difficult to reject Gibrat's Law.

(Thomas and D'Aveni, 2004). It should also be noted that in a sample of firms from many different industries, a portion of the growth performance will be attributable to differing time- and industry-specific shocks to supply and demand. Unless the statistical specification allows for this specific failure of statistical independence, the determinative role of within-industry competitive strength will tend to be obscured by the cross-industry noise level.

Moreover, simply examining firms under conditions of change is not enough. As noted previously, some dynamic capabilities and firm routines enable established firms to adapt to changing circumstances and maintain their size rather than grow. Therefore, we need to think carefully about what sorts of conditions might be likely to lead to systematic changes in firm growth, and for what sorts of firms with what sorts of capabilities, before jumping headlong into empirical testing.

The third general concern about the econometric specification of a standard test of Gibrat's Law is tied to the first two concerns. In particular, the specification of the model used in these tests exacerbates some of the concerns just discussed. These tests often commit to a specification (e.g., Gibrat's Law) that directly conflicts with the possibility of persistent differences among firms, and then find the model "hard to reject." For example, the empirical specification often constrains the coefficient on lagged firm size to be the same for all firms. But any number of factors should cause this coefficient to differ between firms, including, prominently, differing strengths in dynamic capabilities. Among the other factors are those that affect: 1) whether or not the industry is in equilibrium, including the stage of the industry lifecycle or the extent of technological change; 2) whether or not the firm is in equilibrium, including the extent of firm innovation activity; and 3) whether the firm is a single- or multiple-product enterprise, since competitive strength and growth persistence may vary between different products and industries in which a firm participates.

These latter issues relate to a broader concern about the specification of the residual as normally distributed when testing for randomness. Positive feedbacks within firms (and industries and markets), such that the probability of growth depends on past growth, will produce a Laplace (symmetric exponential) distribution rather than a normal distribution of growth rates (Stanley et al., 1996; Bottazzi and Secchi, 2003a). Opportunities for growth, and strategic opportunities more generally, may depend on a firm's dynamic (and other) capabilities (Denrell, Fang, and Winter, 2003). If firms have dynamic capabilities directed toward growth, then past growth resulting from these capabilities augments the firm's resource base, and provides the basis for additional growth. Under such conditions of positive feedback effects, standard statistical tests for a Gibrat Law type of randomness that assume normality of the residuals are misspecified (Bottazzi and Secchi, 2003b).

In light of the foregoing concerns, it makes sense to ask whether the empirical evidence still supports a conclusion of randomness in growth persistence if researchers: 1) investigate whether a Laplace distribution characterizes the residuals and firm growth more generally; 2) allow the coefficient estimates on lagged firm size to vary across firms and time periods; 3) specify a particular alternative to randomness in their statistical tests of growth persistence; and 4) test for growth persistence in empirical contexts where it is likely to apply, namely, in out-of-equilibrium settings. We next examine empirical evidence along these lines.

Empirical Evidence of Growth Persistence

Suppose we test for growth persistence under conditions where we might reasonably expect to observe it, rather than in settings where it is less likely to hold. In these settings, some of the extant evidence in fact supports growth persistence. For example, Geroski, Machin, and Walters (1997) note that the evidence from the UK seems to reject Gibrat's Law in the 1950s. During this period after World War II, the UK experienced rapid growth.

Another circumstance where we might reasonably expect to observe growth persistence if it exists is in industries that rely on innovation. Bottazzi et al. (2001) analyze the growth of 150 firms in the pharmaceutical industry with ten years of data per firm, and find that the arrival of major drug innovations creates new market segments, which in turn spurs growth in these market segments. Firm growth further appears to be characterized by autocorrelation, at both the firm level and within firms at the segment level, consistent with growth persistence. Similarly, Cefis, Ciccarelli, and Orsenigo (2004) note the limitations of standard approaches to testing Gibrat's Law, and pursue a Bayesian alternative that addresses in particular the possibility that the heterogeneity of firms is reflected in the heterogeneity of growth parameters. Testing on 12 years of data for about 200 international pharmaceutical firms, they find, in particular, persistent interfirm differences in growth rates.

The Bottazzi et al. (2001) study of pharmaceutical firms also addresses the more general statistical question regarding the distribution of the residual. The authors document that in the pharmaceutical industry, the residuals in a regression of current (log) firm growth on prior (log) firm growth are consistent with a Laplace rather than a Gaussian (normal) distribution. In simple terms, the distribution is tent-shaped and the tails are much fatter than in a Gaussian distribution. This finding in itself suggests that Gibrat's Law does not hold, per the discussion above.

Empirical evidence that supports a Laplace distribution of firm growth extends beyond the pharmaceutical industry. Stanley et al. (1996) first documented the Laplace tent-shaped distribution of growth rates (defined as the log of current period sales minus the log of prior period sales) in a broad sample of COMPUSTAT data on US firms. They demonstrated that a Laplace distribution fit the data well and that a normal distribution did not. Bottazzi and Secchi (2003c) then performed a similar analysis to Stanley et al. (1996) using 20 years of COMPUSTAT data for 15 different sectors. They found that the Laplace distribution held at the sector level as well. Bottazzi and Secchi (2003b) also documented that a Laplace distribution fit growth rates in three different sectors in the Italian manufacturing industry.

With the foregoing considerations in mind, we turn to the evidence from large sample empirical tests for regression to the mean as an alternative to Gibrat's Law. The results from empirical models that restrict the coefficient on lagged firm size to be the same for a wide sample of (generally manufacturing) firms and all years in the sample yield similar results: Gibrat's Law is rejected for the very smallest firms in the sample but not for other size firms (see e.g., Hall, 1987; Evans, 1987; Hart and Oulton, 1996). Disaggregating the estimates by time period separately, however, shows that the results of the earlier studies do not necessarily hold: there is strong

evidence against Gibrat's Law in some time periods in favor of regression to the mean, and less strong (but still significant) evidence in other time periods, even for the mean or median company in the sample (Hart and Oulton, 2001).

Conclusion

Taken as a whole, the available evidence casts strong doubt on the proposition that Gibrat's Law accurately describes the growth of firms. Instead, we find substantial evidence of growth persistence, especially when the data are disaggregated to allow for variation between firms and time periods. We also find strong support for growth persistence from an industry where it seems clear that dynamic capabilities are crucial – the pharmaceutical industry. This is not necessarily the easiest arena to find results contrary to Gibrat, in view of the long gestation periods and skewed outcome distributions of pharmaceutical R&D projects. Additional evidence shows that the logarithm of firm growth does not match the normal distribution predicted by Gibrat's Law, but instead has a Laplace (symmetric exponential) distribution, which is consistent with growth persistence.

These patterns of growth persistence tell us that firm growth is nonrandom and consistent with dynamic capabilities and associated evolutionary economic theory. The available evidence does not, however, prove a direct link between dynamic (and other) capabilities and evolutionary fitness in terms of growth. It also does not tell us which dynamic capabilities, if any, contribute to growth persistence and in which firm and industry settings. In addition, research has not tested whether differences in mean reversion across time periods is systematically linked to differences in underlying characteristics of the time periods or industries or firms in question, such as the stage of the industry or firm lifecycle or macroeconomic changes in technology or demand. What we know about dynamic (and other) capabilities also suggests that mean reversion might differ within industries for reasons in addition to those associated with differences in firm size.

Since economists rather than scholars in strategic management have conducted this research, it is not surprising that the studies have yet to link growth persistence to organizational capabilities. As observed in chapter 2, mainstream economic theory has thus far failed to incorporate the role of dynamic managerial and other capabilities. Herein lies a large opportunity for empirical research in strategic management to investigate the link between dynamic capabilities and firm performance in terms of growth.

From the perspective of someone interested in understanding firm strategy and why firms meet with success or failure, the tests used in prior research take place from a perspective similar to that of an airline pilot – we can only make out the bare outlines of what might be happening on the ground. These studies have created a substantial body of empirical evidence, however, and recent advances in econometric techniques have improved the accuracy of the estimates. Rather than completely abandon these techniques, there may be much to gain from tailoring them to gain a better understanding of the relationship between dynamic (and other) capabilities and growth. One important consideration is to insure that empirical tests differentiate

between contexts in which growth persistence is or is not a relevant possibility. For example, subsamples of the data could be constructed based on factors such as stage of the industry lifecycle and other factors associated with industry growth potential (e.g., industries experiencing cost-reducing or demand-increasing innovations). Statistical analyses could then compare growth persistence in the different subsamples.

Another obvious approach is to examine underlying reasons why growth persistence might differ between firms beyond simply differences in firm size. Thus, analyses could incorporate empirical proxies for dynamic (and other) capabilities as explanatory variables for growth persistence. In this manner, we may better understand what factors lead to differential evolutionary fitness of firms in terms of growth.

Chapter 8

Dynamic Capabilities: Future Paths and Possibilities

Whether directed toward growth or simply toward change without growth, dynamic capabilities rely on managerial and organizational processes. From the outset of this stream of research, processes have held an important position as one of the "3 P's" in the positions–processes–paths approach to dynamic capabilities and strategic change. In this framing, an organization's resource base provides its starting point or initial *position*. *Paths* are the strategic alternatives available to the firm. And "the essence of a firm's . . . dynamic capabilities is . . . resident in the firm's organizational *processes*" (Teece, Pisano, and Shuen, 1997: 524).

In a dynamic environment, an organization can use its dynamic capabilities, and the associated managerial and organizational processes, to alter its initial position and proceed along a strategic path. Viable alternatives for the future path of an organization, however, are "often rather narrow. What the firm can do and where it can go are . . . constrained by its positions and [prior] paths" (Teece, Pisano, and Shuen, 1997: 524), a proposition that derives directly from evolutionary economics (Nelson and Winter, 1982). As we explained in chapter 3, prior literature on dynamic capabilities has placed less emphasis on the underlying processes that an organization requires in order to move from its starting position to a new or adjusted path. In this book, we have begun to rectify this gap. We also have begun to more precisely examine the nature of the paths that dynamic capabilities can make possible. In this concluding chapter, we focus on these two key issues – the processes that underpin dynamic capabilities and the constraints that firms face in taking strategic paths.

Managerial and Organizational Processes

In the strategic management literature, discussion of processes within organizations often relates to "implementation" of strategy or deployment of resources and capabilities, including through organizational routines or sets of actions. This orientation tends to emphasize the "doing" rather than the "deciding" aspect of processes. But

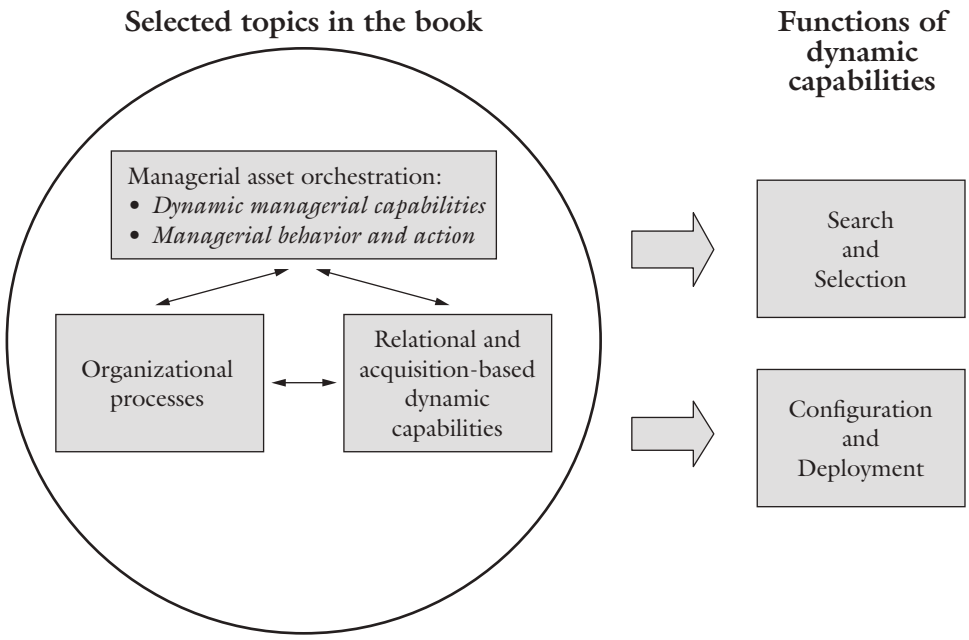

Figure 8.1 Dynamic capabilities: search, selection, and deployment

as several of the chapters in this book demonstrate, processes for making decisions prior to taking action matter at least as much as deployment. Decisions regarding search and selection of resources comprise part of the managerial asset orchestration function introduced in chapter 2 and examined in more detail in chapter 4. Search and selection also comprise key features of the sorts of organizational processes discussed in chapter 3 and examined in more detail in chapters 5 and 6 with regard to relational and acquisition-based dynamic capabilities. Search and selection further condition, and must take account of, deployment – the means by which bundles of often co-specialized assets are configured and coordinated, by managers as well as by teams and organizational units more generally.

We have used the term "asset orchestration" to include the search, selection, and configuration/coordination functions that managers perform. Identification of opportunities and threats comprises an important aspect of the search for new strategic opportunities, for which managers bear a critical responsibility (Helfat and Eisenhardt, 2004). But not all managers perform this aspect of dynamic capability equally well. Adner and Helfat (2003), for example, showed that although managers in the US petroleum industry faced the same industry environment, they made different strategic decisions that, when implemented, were associated with differential firm financial performance. The Rubbermaid case analyzed in chapter 4 provides a clear example of poor managerial opportunity recognition capabilities. Although company executives observed the changes taking place in their external environment, they did not or would not recognize that these changes could affect their company directly. They therefore failed to respond.

Selection of new resources also comprises an important dynamic managerial capability. Here again, some managers and firms have greater fitness of their capabilities than others. When Quaker Oats decided to extend its resource base into a new market segment by acquiring Snapple, as described in chapter 4, company executives stumbled by inappropriately selecting some of Quaker's marketing and distribution capabilities for use at Snapple. We also, however, can find many examples of highly fit managerial search and selection capabilities. Consider, for example, the patching capabilities of top executives of companies such as Dell and Johnson & Johnson, who successfully moved organizations and their resource bases into and out of different businesses (Brown and Eisenhardt, 1998; Karim and Mitchell, 2004). Rosenbloom's (2000) analysis of NCR's metamorphosis from a mechanical to an electronic cash register company also illustrates the critical role of the company's new chief executive and top management team in selecting (as well as reconfiguring) an appropriate new resource base and strategic path for the company – and without whom the company arguably might have ceased to exist.

Underlying these managerial search and selection functions are key elements of dynamic managerial capabilities: managerial human capital, managerial cognition, and managerial social capital (Adner and Helfat, 2003). The Quaker example highlighted the importance of managerial human capital in the form of managerial knowledge of distribution and marketing, which in this example turned out not to apply to the new setting. The social relationships and social capital within the group of top executives at Quaker reinforced their search and selection decisions with regard to Snapple. Managerial cognition and decision-making heuristics also matter, as in the Rubbermaid example where the executives simply did not "see" the relevance of changes in the external environment. Hence, dynamic managerial capabilities, and the associated managerial human capital, cognition, and social capital, can have low rather than high evolutionary fitness if employed in inappropriate contexts.

More generally, many sorts of resource allocation decisions involve search and selection dynamic capabilities, not only of managers but also of organizational teams. For example, opportunity recognition plays an important role in the acquisition-based organizational capabilities analyzed in chapter 6. This analysis identified two important aspects of opportunity recognition with regard to acquisitions: 1) selection of when to use acquisitions rather than an alternate mode of creating, extending, or modifying the resource base of an organization, and 2) identification of targets for acquisition. The analysis in chapter 5 of relational capabilities in alliances further examined organizational processes for search and selection involving the creation of relationship-specific assets and identification of complementary alliance partners and capabilities.

In addition to search and selection, organizational resource reconfiguration and coordination processes underpin dynamic capabilities. These sorts of organizational processes include the interfirm knowledge-sharing routines needed for relational capabilities used in alliances (Singh and Mitchell, 2005). Additionally, as explained in chapter 2, governance of resources affects resource coordination. Here again, organizational processes can play an important role, as in the governance processes discussed in chapter 5 regarding relational capabilities for alliances. Notably, the processes that underpin the sorts of dynamic relational capabilities in alliances that

have higher levels of fitness consist of patterned behaviors by dedicated teams in the organization, accompanied by codified knowledge where possible.

Managerial capabilities affect resource reconfiguration as well. As an example, consider the strategic decisions by managers in US petroleum companies mentioned earlier. These decisions involved major cost cutting, layoffs, and restructurings. The managers of these companies may have made different decisions not only because their dynamic managerial capabilities differed, but also because they had different resource bases to work with, consistent with the positions–processes–paths framework (Adner and Helfat, 2003). Hence, we might expect to see an interaction between the asset orchestration capabilities of managers and the resource bases that managers seek to reconfigure.

The decisions to shrink part of the corporate resource bases in the oil industry have another important implication. Not all dynamic capabilities (managerial or otherwise) involve growth. Decisions to "deselect" resources matter as much as decisions to select resources, as chapters 4 and 6 have made clear with regard to both managerial and acquisition-based dynamic capabilities. Capron, Swaminathan, and Mitchell (2001) also find that firms need to divest excess and obsolete resources to gain the greatest benefit from acquisitions. More generally, as emphasized in chapter 7, firms often require dynamic capabilities simply as a defensive measure, in order to shift gears so as to maintain their strategic positions and forestall decline.

Paths

The chapters in this book contain several examples of possible paths that firms can take through the application of dynamic capabilities and associated managerial and organizational processes. For example, alliances can provide opportunities to learn from partners as a route to new business opportunities (Dussauge, Garrette, and Mitchell, 2000). Firms also can use formal joint ventures with partners to enter new businesses directly (Singh and Mitchell, 1992). But having effective capabilities and processes for identifying alliance partners and for configuring the alliance itself does not suffice to produce high evolutionary fitness. Firms also need a resource base that affords opportunities upon which an alliance can build. Learning from partners has little use if a firm has no resources from which it can create value from such learning. For example, we would find it surprising if a company like Dell undertook an alliance with a cement company, because Dell's resource base is unlikely to benefit by obtaining specialized knowledge of, or preferred access to, cement resources.

More generally, the existing resource base of the organization constrains its opportunities. Consider another example in this book, namely, acquisition-based capabilities. As explained in chapter 6, firms that undertake acquisitions may have the most to gain from cross-border acquisitions that enable the firm to extend its existing resource base. Without a resource base worth extending, cross-border acquisitions and the dynamic capabilities to undertake such acquisitions have little value.

Dynamic capabilities do not imply unlimited capacity for change. With all the current enthusiasm for reinventing the corporation, in all its various scholarly and practitioner forms, we must not lose sight of the fact that organizations have far

from unlimited opportunity or flexibility. Instead, we must deal with the reality of constrained change.

In the context of dynamic capabilities, constraints on change may take several forms. One such constraint involves managers themselves. Managers undeniably lack perfect foresight. Their decision-making heuristics and cognitive biases may lead them to make mistakes. We need go no further than the Rubbermaid and Quaker Oats examples in chapter 4 for evidence. But the broader resource bases of the organizations themselves contain constraints (Helfat, 2003). For example, the particular form of Quaker's marketing and distribution operational capabilities limited the contexts in which these capabilities would apply well – contexts that did not include Snapple. The nature of the dynamic capabilities of a firm also constrains change. Without effective relational capabilities with which to undertake alliances or acquisitions, for example, firms would do well to use those modes sparingly, at least until they develop the requisite capabilities.

Constrained change does not mean lack of opportunity or capacity for change, however (Helfat, 2003). Consider the successful entry of Corning Inc. into fiber optics for telecommunications (Cattani, 2006). Corning had an initial resource base that included many types of glass technologies and a strong commitment to, and dynamic capability for, research and development. As Corning's research on fiber optics proceeded, a few telecommunications companies began to express interest in the technology. Managers at Corning recognized the potential opportunity for a fiber optics business and began to allocate more resources to this area, indicative of search and selection dynamic managerial capabilities. As the fiber optics and other high-technology glass businesses developed over time, the company shifted much of its business out of traditional glassware products. Corning literally reinvented itself through a combination of internal and external search and reconfiguration of resources. But the opportunity for and reality of Corning's overhaul grew out of its original resource base.

Future Directions

We began this book by proposing conceptual yardsticks for evaluating the contribution of dynamic capabilities to organizational performance. If we return to these yardsticks, we can see even more clearly how constraints on change affect performance in terms of technical and evolutionary fitness. The first chapter explained that technical fitness of dynamic (and other) capabilities does not necessarily imply evolutionary fitness, particularly when the environment changes. Chapters 4 and 6 provided further illustrations of this fact with regard to managerial and acquisition-based dynamic capabilities.

Firms will need to alter their resource bases at some point during their lifetimes. If firms entirely forsake their current resources and capabilities, however, they may encounter very high costs of obtaining new resources and capabilities that have greater evolutionary fitness. Due to the difficulty of trading capabilities in the market, capabilities tend to have high sunk costs. Rather than bear these sunk costs, firms may do better if they seek to improve the evolutionary fitness of their existing

capabilities. This approach narrows the future paths open to an organization, but may have a much larger payoff in the end.

Our use of these fitness concepts suggests that work on dynamic capabilities contains links to the recent literature on "fit" of activities within organizations (see e.g., Siggelkow, 2001) and of the organization with its external environment, including N,K simulations (e.g., Rivkin, 2000; Gavetti and Levinthal, 2000; Lenox, Rockart, and Lewin, 2006) and fractal geometry models (Winter, Cattani, and Dorsch, 2006). Research on fit tends to focus on conditions of change, with concomitant opportunities to explore issues of dynamic capabilities. For example, as discussed in chapter 3, research by Peteraf and Reed (2005) on changing fit in the US airline industry provides statistical evidence of effective dynamic managerial capabilities.

This book indicates several other areas where the study of dynamic capabilities provides a new context for research, including work on managers (chapters 2 and 4), alliances (chapter 5), acquisitions (chapters 4 and 6), innovation (chapter 4), knowledge management (chapter 5), organizational learning (chapters 5 and 6), diversification, market entry, and scope of the firm (chapter 4), growth (chapter 7), divestitures and market exit (chapter 6), organizational processes (chapter 3), and cognition and social capital (this chapter). These topics provide but a starting point for future research.

Because dynamic capabilities concern strategic change, virtually any research topic that involves strategic change has links to dynamic capabilities, and vice versa. Research on industry evolution provides one such example. Industry evolution reflects the evolution of firms, each of which may have dynamic capabilities that in turn affect both firm and industry evolution. Research on entrepreneurship, particularly within corporations, provides another such example, since entrepreneurial activity by definition is directed toward change. Moreover, since dynamic capabilities concern a particular type of change, namely that which takes place through altering the resource base of an organization, work on dynamic capabilities ties directly to the entire body of literature on the resource-based view and the closely associated knowledge-based view of the firm. Helfat and Peteraf (2003) have termed this broader perspective the "dynamic resource-based view."

The clear links between dynamic capabilities and other areas of research provide many opportunities for additional conceptual and empirical research. On the conceptual dimension, we put forward the concepts of technical and evolutionary fitness as a first step toward unpacking the determinants of performance of dynamic capabilities. Additional elaboration and explanation of these concepts, as well as empirical work to link dynamic capabilities with their performance outcomes, provides fodder for new research. As part of this endeavor, we have the opportunity to investigate the ways in which processes that underpin dynamic capabilities affect performance outcomes, as discussed in chapter 3. We also can employ underutilized measures of performance – such as growth – in statistical analyses in order to better understand how dynamic capabilities contribute to the evolutionary fitness of organizations within evolving environments and as shapers of those same environments. In short, we have a plethora of opportunities for exploration of dynamic capabilities – more than enough to exploit in the coming years.

Glossary of Terms

Acquisition-based dynamic capability is a form of *relational capability* that refers to the capacity to use business acquisitions to obtain new resources and capabilities. Acquisition-based dynamic capability consists of *acquisition identification capability*, *acquisition reconfiguration capability*, and *acquisition selection capability*.

Acquisition identification capability is the *capacity* to detect and negotiate with appropriate target firms.

Acquisition reconfiguration capability is the *capacity* to reshape resources within target and acquiring firms.

Acquisition selection capability is the *capacity* to recognize when an acquisition is the appropriate mode for obtaining new resources and capabilities.

Asset orchestration refers to managerial search, selection, and configuration/coordination of resources and capabilities.

Capability can be operational or dynamic, and refers to the *capacity* to perform a particular task, function, or activity.

Capacity refers to the ability to perform a task, function, or activity in at least a minimally acceptable manner.

Competitive advantage holds when a *resource* or *capability* (or set of resources and capabilities) creates relatively more *value* than do comparable resources and capabilities of competing organizations.

Dynamic capability is the *capacity* of an organization to purposefully create, extend, or modify its *resource base*, and consists of patterned and somewhat practiced activity.

Dynamic managerial capability refers to the *capacity* of managers to create, extend or modify the *resource base* of an organization.

Evolutionary fitness refers to how well a *dynamic capability* enables an organization to make a living by creating, extending, or modifying its *resource base*. Influences on evolutionary fitness include *technical fitness*, competition, and market demand.

Growth persistence holds when the amount of organizational growth (change in size) in one period is positively correlated with the amount of organizational growth in the prior period(s).

Operational capability is any type of *capability* that an organization uses in an effort to earn a living in the present.

Relational advantage is a *competitive advantage* that derives from access to, or acquisition of, the resources and capabilities of other organizations.

Relational capability is a type of *dynamic capability* that refers to the *capacity* of the firm to purposefully create, modify or extend the firm's *resource base*, augmented to include the resources of partners.

Relationship-specific assets are assets of a partner that are customized to the relationship with another partner.

Resource in the broadest sense is anything upon which an organization can draw in an effort to accomplish its aims. In a narrower sense, a resource is a tangible, intangible, or human asset upon which an organization can draw.

Resource base of an organization includes tangible, intangible, and human assets (or resources), as well as capabilities that the organization owns, controls, or has access to on a preferential basis.

Sustainable advantage from resources and capabilities is a *competitive advantage* that persists in the face of competitive efforts to duplicate the *value* created by a *resource* or *capability* (or a set of resources and capabilities).

Technical fitness denotes how effectively a *capability* performs its intended function (its quality) when normalized (divided by) by its cost.

Value equals willingness-to-pay minus opportunity cost.

List of Company Examples

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