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# **Modern Resource-Based Theory(ies)**

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## **MODERN RESOURCE-BASED THEORY(IES)**

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## **MODERN RESOURCE-BASED THEORY(IES)**

### **Abstract**

We survey the resource-based view in strategic management, focusing on its roots in economics. We organize our discussion in terms of the Gavetti and Levinthal distinction between a “high church” and a “low church” resource-based view, and argue that these hitherto rather separate streams are increasingly overlapping.

## INTRODUCTION

Almost since its inception, strategic management has been heavily indebted to economics, particularly mainstream economics (Porter, 1981; Rumelt, Schendel & Teece, 1991; Camerer, 1994; Hoskisson, Hitt, Wan & Yiu, 1999; Foss, 2000; Lockett & Thompson, 2001; Gavetti & Levinthal 2004; Agarwal & Hoetker, 2007). This is hardly surprising: Central, arguably *the* central, constructs of strategic management—namely, value creation, value appropriation and sustained competitive advantage—lend themselves directly to an economics interpretation. The notion that all of strategic management ultimately boils down to creating and appropriating more value than the competition (e.g., Peteraf & Barney, 2003) can be usefully addressed in terms of the established economics corpus of applied price theory, industrial organization theory, game theory, and bargaining theory. Not surprisingly, modern strategic management theory is often presented as beginning from some “competitive imperfection” (Knott, 2003): ultimately, *some* deviation from the Walrasian general equilibrium model, or, in some formulations, from the zero transaction cost setting of the Coase theorem (Foss & Foss, 2005), leading to imperfect factor and/or product markets, explain strategy’s central dependent variable, sustained competitive advantage. As Knott (2003: 929) argues, “[t]he field of strategy is concerned with the conditions under which the microeconomic equilibrium of homogenous firms with zero profits can be overcome.”

All modern economics-based approaches have taken this approach, beginning with Michael Porter’s (1980, 1985) work, essentially an application of the industrial organization economics of Bain (1956) and Scherer (1980) (cf. Porter, 1981). Later currents in industrial organization, such as contestable markets theory (Baumol, Panzar & Willig, 1982), game theoretical new industrial organization (Tirole, 1989), and the Chicago-UCLA approach (Demsetz, 1973) have also had enormous influence on strategic management. More specifically, contestable markets theory and new industrial organization have dominated the commitment approach (Ghemawat, 1991), and the

Chicago-UCLA approach to industrial organization as well as ideas from Penrose (1959) and Schumpeter (1911) have motivated the resource-based view (Lippman & Rumelt, 1982; Rumelt, 1984; Barney, 1986, 1991; Peteraf, 1993; Foss, 2000)—the key focus of the present chapter.

From the perspective of economics, the RBV is in many ways a half-way house. On the one hand, it revitalized the concern with firm heterogeneity, innovation, and dynamics associated with such heterodox economists as Thorstein Veblen (Foss, 1998), Joseph Schumpeter (1911), Edith Penrose (1959), and George Richardson (1972) (Jacobsson, 1992). On the other hand, what is perhaps the RBV core model (Demsetz, 1973; Lippman & Rumelt, 1982; Barney, 1986, 1991; Peteraf, 1993; Peteraf & Barney, 2003) is essentially a competitive equilibrium model with (at least one) heterogeneous firms. This tension has been manifest in the RBV from its inception in the beginning of the 1980s, and has led commentators to speak of “Demsetzian” and “Penrosian” (Foss, 2000) or “high-church” and “low-church” versions of the RBV (Gavetti and Levinthal, 2004) (cf. also Matthews, 2006, 2010; ). These distinctions boil down to the same thing: Is use made in the relevant RBV contribution of an equilibrium model with underlying strong assumptions of rationality, or does a process model with underlying behavioural assumptions closer to bounded rationality underpin the contribution? The high church RBV, or the “RBV proper,” is perhaps best associated with the VRIN framework of Barney (1991) (we discuss this later), while the low church RBV may be associated with ideas on core competences (Prahalad & Hamel, 1990), capabilities (Winter, Denrell & Fang, 2003) or dynamic capabilities (Teece, Pisano & Shuen, 1997).

In this chapter we also adopt this distinction and use to organize our presentation and discussion of the RBV. However, as we point out the high and the low churches within the RBV make frequent contact, and, consistent with Gavetti and Levinthal’s overall argument that the strategy field as a whole is manifesting a “movement toward the middle” (2004: 1312) there are signs of an emerging synthesis of the two.

## ORIGINS AND KEY TENETS OF THE “HIGH CHURCH” RESOURCE-BASED VIEW

### Origins

The dominant contemporary approach in strategic management is the RBV, whether in its high or low church versions (Newbert, 2007; Acedo, Barroso, & Galan, 2006; Heimeriks, Felin, Foss & Zollo, 2010). Although part of the marketing effort of the RBV has been to point to its roots in Edith Penrose’s thinking on firm growth (Penrose, 1959; Kor & Mahoney, 2000), the RBV does not get established in the strategy field until the seminal contributions by Lippman and Rumelt (1982), Wernerfelt (1984), Rumelt (1984) and Barney (1986). As already mentioned, resource-based scholars have relied heavily on fundamental insights and theories of various fields and branches in economics, such as the economic theory of the entrepreneur (Barney, 1986; Knight, 1921; Rumelt, 1987); efficient markets theory (Barney, 1986; Fama, 1970); theories of input heterogeneity and its consequences for firm growth (Penrose, 1959; Wernerfelt, 1984); property rights economics (Coase, 1960; Teece, 1986; Kim & Mahoney, 2005; Foss & Foss, 2005); the theory of competitive equilibrium (Debreu, 1959; Lippman & Rumelt, 1982); and, arguably, particularly Chicago-UCLA industrial organization economics (Demsetz, 1973, 1974; Peltzman, 1977; Klein; Crawford & Alchian, 1978). Thus, the base of economics from which the RBV has drawn nourishment is one of applied micro-economics and efficient markets theory.

*Chicago industrial economics as the foundation for the High Church RBV.* Applied micro-economics and efficient markets theory are, of course, equilibrium theories. Not surprisingly, economic equilibrium, particularly in the form of competitive equilibrium, is central in the high church RBV. Indeed, the dominance of the RBV has meant that the key issue of strategic management is routinely defined as the problem of achieving sustained competitive advantage in the sense of earning (efficiency) rents in equilibrium. The intellectual pedigree of this lies in the Chicago approach to industrial organization (Brozen, 1971; Demsetz, 1973, 1982, Peltzman, 1977).

Briefly, a central aim of this approach is to explain long-lived performance differences in terms of efficiency rents existing under competitive conditions rather than in terms of monopolistic abuse of market power. In the Chicago view, entry barriers are informational, concentration is a result of efficiency, and high returns are returns to efficient underlying assets rather than monopoly profits stemming from restriction of supply (e.g., Demsetz 1973, 1982). Such returns may be long-lived because of the complexity of the assets that cause them (Demsetz 1973). Moreover, assets are not necessarily priced according to their value, because of informational asymmetries (idem.). Thus, the Chicago view of is one that stresses efficiency in a world constrained by informational scarcity. The appeal of the Chicago approach is that it promises to reconcile the emphasis on idiosyncratic and firm specific factors that is characteristic of the strategic management field with economic equilibrium theory. As we shall see, many of these key ideas have been taken over lock, stock and barrel by the High Church RBV.<sup>1</sup>

### **Key Tenets**

The RBV is often presented as a “theory of the firm.” Given the now dominant Coasian conception of what such a theory entails (Coase, 1937; Williamson, 1996), it is more correct to say that the RBV is first and foremost a theory of (firm-level) sustained competitive advantage that makes ample use of price theory. Sustained competitive advantage refers to the potential of a firm to create and appropriate more value than the competition (in some formulations, simply more than the marginal firm, e.g., Peteraf & Barney, 2003), that is, the ability to capture a large share of the sum of producers and consumers surpluses than other firms (in the same industry). Thus, sustained competitive advantage is an antecedent to financial performance, not the same thing. In turn, this potential is traced to the resource endowments of firms and the characteristics of these resources. The crowning achievement of the high church RBV—and its main predictive context—has been the

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<sup>1</sup> The Chicago legacy is perhaps most clearly present in an often cited paper by Peteraf (1993), which explicitly casts the RBV in terms of rents in competitive equilibrium, using the basic demand and supply apparatus of economics textbooks to graphically illustrate this.

formulation of criteria that must be jointly met for resources to give rise to sustained competitive advantage (Barney, 1991; Peteraf & Barney, 2003; Peteraf, 1993).

Thus, in Barney's seminal 1991 paper, one of the most cited strategic management texts ever, and among a handful of social science papers with more than 10,000 Google scholar hits, sustained competitive advantage can be enjoyed by firms that control resources that are valuable, rare, and costly to imitate and substitute (i.e., the "VRIN framework"). He (1991: 102) explains that

A firm is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors. A firm is said to have a sustained competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors and when these other firms are unable to duplicate the benefits of this strategy.

Thus, sustained competitive advantage is defined in terms of situations in which all attempts by competitor firms at imitating or substituting a successful firm have ceased, that is, equilibrium obtains.<sup>2</sup>

Barney (1991) is not entirely forthcoming about the precise meaning of these criteria (Foss & Knudsen, 2003), but value may be linked to the existence of a span between the reservation price of the products made possible by the relevant resource and the costs of production of those products; rare should be understood in a simple counting sense (implying that not "too many" other firms can

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<sup>2</sup> In terms of the earlier point about the debt that the RBV owe to the Chicago-UCLA industrial economics tradition, Barney's analysis of the conditions under which such situations obtain is entirely in line with the Chicago school in its emphasis on resources (i.e., input factors) being costly to copy, etc. (compare Brozen, 1971; Demsetz, 1973, 1974, 1982, 1989; Peltzman, 1977). His argument that all performance differences are explainable in terms of differential efficiencies of the resources that underlie the strategies, and that, therefore, superior returns are fully compatible with social welfare, is straight out of the Chicago book (e.g., Demsetz 1974, 1989). Barney's (1986) earlier emphasis on factor market rather than product market imperfections as a condition of competitive advantage is also vintage Chicago (e.g., Demsetz, 1973).

implement the same strategy(ies) as the firm enjoying a sustained competitive advantage), and the two remaining criteria refer to the costliness of imitating or substituting the resource or bundle of resources that give rise to the competitive advantage).

Earlier work by Barney (1986) established the necessary condition for sustained competitive advantage that the relevant underlying resources or the services thereof are acquired or rented at a price that is lower than their net present value. Otherwise, any competitive advantages will be offset by supply prices on “strategic factor markets.” This is explicitly included in Peteraf’s (1993) closely related contribution, which also introduces a condition of relative immobility of resources: essential but highly mobile resources can appropriate most or all of the value they contribute to the firm.

### **Empirical Work**

Despite its broad theoretical appeal and strong influence on managerial education and practice, the empirical track record of the key tenets of the RBV has so far been rather modest (Priem & Butler 2001). Hoopes and Madsen (2008) argue that the RBV lacks a cumulative body of work showing how firms differ in their resource bases. In survey articles on the empirical support for the RBV, Armstrong and Shimizu (2007) and Newbert (2007) find only modest support for the key tenets of the RBV that connect resource characteristics to sustained profitability (cf. Crook et al. 2008 for a meta study that finds more robust support). Arend (2006: pp) even argue that

... there are no satisfactory empirical tests of the RBV. No paper or collection of related papers measures the benefits specified by RBV theory; adjusts for the costs of the resources; provides evidence that resources meet the RBV criteria; and controls for the influence of higher-level resources. Moreover, the adequacy of testing has not improved over the last 10 years. If empirical testing does not alter its approach, the RBV will be in increasing jeopardy.

More broadly, Arend also argues that resources that meet the VRIO criteria are usually identified only *ex post*, making the explanation circular (empirical tests handle this problem, however); (2) the RBV is mainly used as a convenient framing device and specific implications of the view are seldom tested; (3) the link between resources and performance is not carefully examined, for example, in terms of organizational variables that mediate this link; (4) key resources are hard to measure, particularly those “socially complex” and “tacit” resources that the view often focuses on (e.g., Dierickx & Cool, 1989; Barney, 1991); and (5) the gains from superior resources may not be captured at the firm level—but rather be captured by individual resources (Coff, 1997, 1999; Lippman & Rumelt, 2003a)—in which case firm performance cannot be the dependent variable.

### **Later Work**

Much subsequent research has consisted in elaborating, refining, extending and testing the core ideas of the RBV as well as refining the more specific criteria for sustained competitive advantage. We here briefly survey this work.

***Resource accumulation.*** A central question in the RBV is what factors make resources hard to imitate. The seminal contribution here is the resource accumulation model advanced by Dierickx and Cool (1989) that was highly influential for subsequent work. Dierickx and Cool (1989) argue that competitive advantages stem from firm-specific resource stocks that need to be accumulated internally. Strategists are mainly concerned with the building of valuable stocks of resources (like brand reputation, manufacturing capabilities, technological expertise) by making appropriate choices about strategic investments flows. The imitability and sustainability of competitive positions result from the characteristics of the mapping of investment flows onto resource stocks. Dierickx and Cool argue that time compression diseconomies explain early-mover advantages, since higher investment outlays over a shorter period of time by a follower are required to catch up with an early-mover. Asset mass efficiencies confer an advantage to a firm that has already

accumulated a critical mass of a resource (cf. Cohen & Levinthal 1990). However, in the presence of asset erosion, Knott et al. (2000) argue and show empirically that time compression diseconomies and asset mass efficiencies are not sufficient to gain sustainable competitive advantages.

Rather, the interconnectedness of asset stocks and causal ambiguity appear to be necessary to explain long-term differences in resource stocks (Lippman & Rumelt 1982; Barney 1991). The interconnectedness of asset stocks relate to complementarities among two or more resources (Stieglitz & Heine 2007). The value of an asset stock depends on the presence of complementary resources, sharply increasing the investment costs for an imitator (Ghemawat 1991). Causal ambiguity obfuscates the link between resources and firm performance. It points to the tacitness, complexity, and specificity of the resource base (Reed & DeFillippi 1990). Recent work has particularly highlighted the complexity of a firm's resource base as an effective barrier to imitation (Winter 2000; Rivkin 2000; Rivkin 2001). However, causal ambiguity of its resources may also restrict the strategic options of a firm, since it may find it impossible to transfer or to replicate the competitive advantage in a different context (Szulanski & Winter 2001; King & Zeithamel 2001). These characteristics also impact the tradability of resources. Thus, while generic resource may be acquired in factor markets, the firm-specific and idiosyncratic resources underpinning competitive advantages result from internal accumulation processes. Lippman and Rumelt (2003: 1082) succinctly summarize RBV's insistence on the primacy of internal resource accumulation: "The resource-based view predicts that firms will focus their energies on the development of complex 'home-grown' resources, taking time and care to develop knowledge, know-how, social capital, and other socially complex, difficult-to-transfer resources." However, Makadok (2001) argues that resource development may not constitute the only causal mechanism to explain competitive advantages. Firms may also be better than others at picking undervalued resources in the market for

resources. Resource-picking points to the role of strategic factor markets in explaining firm behavior and competitive advantage.

*Strategic factor markets.* Barney (1986) characterized markets for resources as strategic factor markets. Apart from luck, firms may only acquire resources below their net present value by forming heterogeneous expectations about resource value. Otherwise, prospective buyers bid up the price to the resource's net present value and the seller appropriates the value from the resource (e.g., Capron & Shen, 2007). Much subsequent research on strategic factor markets has focused on the origins of differential expectations about resources. Chi (1994), Makadok (2001) and Makadok and Barney (2001) analyze differences in the information acquisition strategies of firms, while Denrell, Fang and Winter (2003) point to entrepreneurial serendipity to explain the acquisition of undervalued resources. A second line of inquiry has focused on co-specialization among heterogeneous resources (Teece 1986; Lippman & Rumelt 2003; Adegbesan 2009). Even with perfect information, heterogeneous firms may place differential values on a complementary resource in a strategic factor market. With resource heterogeneity among buyers, gains from resource trade are not dissipated in a competitive bidding process and at least some of the resource value is appropriated by the buyer.

One of the traditional differentiating characteristics of the RBV is its focus on factor markets—to the exclusion of a concern with product markets. RBV scholars sometimes explain this as a simple intellectual division of labor, the positioning approach handling product imperfections (e.g., Porter, 1980), the RBV handling factor market imperfections (e.g., Barney, 1991). Accordingly, product markets are often treated as perfectly competitive in the RBV (e.g., Lippman & Rumelt, 1982; Peteraf, 1993). However, it seems fundamentally odd for reasons of basic symmetry to invoke highly imperfect factor markets and perfect products at the same time, particularly given that one firm's product market is another firm's factor market (Foss & Hallberg,

2010). Priem and Butler (2001) argued that there are demand-side aspects of value creation that the RBV abstracts from. Thus, for any transaction, created value is the difference between the reservation price and the underlying costs of production. To the extent that the RBV essentially abstracts from the demand side by only focusing on competitive product markets, it also neglects an important part of value creation, as well as those resources (e.g., advertising capabilities) that are valuable because they can influence demand-side value creation.

Moreover, if product market conditions (i.e., what game forms characterize interaction in product markets) significantly influence factor market behaviors, it would seem odd to separate factor and product markets. In fact, recent work shows that there are close connections between product market and factor market behaviors (Asmussen, 2010; Makadok, 2010), which suggests that focusing on only upstream or downstream markets may lead analysis astray.

Work on strategic factor markets point to the more general problem of bargaining and rent-sharing among resource owners (Peteraf 1993) (although small numbers bargaining on strategic factor markets still have to be modeled in the literature). Bargaining among resource owners has attracted a great deal of attention in recent contributions to the RBV.

***Bargaining.*** Coff (1997, 1999) argues that rent-sharing and value appropriation among resource owners (e.g. employees, shareholders, suppliers) fundamentally depends on the bargaining power of each resource owner. Following in the tradition of Peteraf (1993), he shows how various instantiations of constrained resource mobility systematically influence the bargaining position of resource owners (cf. Jacobides, Knudsen & Augier 2006). Lippman and Rumelt (2003a) and Adgbesan (2009), drawing on cooperative game theory, analyze how co-specialization among resources systematically change the outside options for resource owners and thereby determines their relative bargaining positions. Ryall and MacDonald (2004) add to this emerging stream of literature by establishing the necessary conditions for value appropriation. They highlight the

importance of competition for a scarce resource among different resource coalitions for value appropriation. Blyler and Coff (2003) add a social dimension to the bargaining problem by stressing the role of social capital for attaining and leveraging bargaining power. However, recent research has also begun to point to the dynamic properties of bargaining power. That is, expectations about value appropriation drive investments into resources (Stieglitz & Heine 2007) as well as the entrepreneurial search for new resource combinations (Lippman & Rumelt 2003, Stieglitz & Foss 2009). Explicit bargaining costs have yet to be considered within the RBV, however. Such costs is a part of the broader category of transaction costs.

***Transaction Costs and property rights.*** Some proponents of the RBV have tried to separate it from the more mainstream economics of the firm (e.g., Conner, 1991; Conner & Prahalad, 1996), and have argued that the RBV has the potential to develop into a distinct theory of the firm. It has become increasingly clear, however, that not only are the RBV and mainstream economics insights in transaction costs and property and how these shape economic organization highly complementary, there is also a very significant overlap (Foss, 1996; Silverman, 1999; Nickerson & Zenger, 2004; Argyres & Zenger, 2010). More generally, it is arguable that the RBV relies on competitive imperfections that are essentially in the nature of transaction costs or at least information costs, notably costs of imitation (Mahoney, 2001; Foss, 2003).

Foss and Foss (2005) argue that transaction costs are present right at the heart of the RBV. Thus, the basic unit of analysis in the RBV is the discrete resource. The notion of resource has a direct intuitive appeal because it can be so associated with real entities, like machines, buildings, experts, and so on. However, what firms ultimately demand are the *services* that resources yield (Penrose, 1959). In fact, resources are really collections of “attributes,” that is, services, functionalities, etc. In a world without transaction costs, all these attributes could be identified and traded, and there would be no reason to trade discrete resources. To the extent that such resources

are actually traded, it is because it pays in terms of transaction costs to bundle attributes in resources. The other side of the coin is that resources are really endogenous results of economizing with transaction costs. Relatedly, resource value is intimately related to transaction costs. Thus, the lower the costs of defining and enforcing property and ownership rights to resources, the higher the value of the relevant resource (all else equal) (Kim & Mahoney, 2002; Foss & Foss, 2005). Finally, some resources are valuable because they are capable of reducing transaction costs. Contracts, credit rating systems, organizational structures and so on may be analyzed in this light.

*Path-dependent theoretical development.* As the above brief review of RBV work within the last 15 years indicates, the high church RBV has been a progressive research program in a number of ways: the understanding of the workings of strategic factors have been much improved; a better understanding of bargaining and value appropriation has been reached; adding transaction costs to the basic model has yielded an increased understanding of value creation and impediments to such value creation, and a deeper understanding of the value of resources has been developed by incorporating demand side factors and transaction costs into the analysis.

Still, the core model has changed rather little as a result of this work, which has tended to refine and elaborate already existing insights rather than yielding fundamentally novel insights. And core RBV theorizing continues to be wedded to a model that originated in mainstream economics in the context of industrial economics. In this sense, a strong intellectual path-dependence has obtained in the history of the RBV.

Although borrowing from the Chicago approach in some ways furthered strategic management, the set of phenomena relevant to strategic management that can be framed by relying on this approach is rather limited. This follows from the basic Chicago research methodology, which casts virtually any social phenomenon in terms of competitive equilibrium—what Chicago School insider Melvin Reder (1982) characterized as the “tight prior equilibrium” assumption. The

core of this approach is that “in the absence of sufficient evidence to the contrary, one may treat observed prices and quantities as good approximations to their long-run competitive equilibrium values” (Reder, 1982: 12). The resulting notion of competitive equilibrium may not entirely be of the perfect competition (Walrasian) textbook variety, but it is very close. The famous Lippman and Rumelt (1982) paper starts from the standard assumptions of independent profit maximizing decision-makers and competitive markets with free entry. New industry entrants’ production processes are assumed to be subject to an *ex ante* uncertainty (causal ambiguity) in the specific sense that entrants’ post-entry cost function is randomly drawn from a known probability distribution after paying a fixed non-retrievable entry investment cost. This produces an equilibrium in which rents persist. Key to generating the desired results is the isolation of new firm production processes—which are assumed to subject *ex ante* uncertainty—from an otherwise frictionless (competitive) economic environment. Though not cast in formal terms, later key contributions to the RBV adopt essentially this model as the founding model.<sup>3</sup> The low-church RBV very clearly differs with respect to intellectual pedigree, and its emergence can to a certain be understood in the context of the constraining nature of the equilibrium-based High Church RBV (Foss, 2000; Mathews, 2010).

## **THE LOW CHURCH RESOURCE-BASED VIEW**

### **Origins**

Encompassing the “knowledge-based view of the firm” (Kogut & Zander, 1992;...), the “evolutionary theory of the firm” (Nelson & Winter, 1982), the “capabilities view of the firm” (...),

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<sup>3</sup> As Foss and Hallberg (2010) argue the Lippman and Rumelt model and its later verbal RBV counterparts are instances of a specific economic modeling methodology in which imperfections are introduced in a piecemeal manner into a world that is otherwise perfect in order to generate a specific result. As an example, the foundational RBV high church models take factor markets to be imperfects, while product markets are assumed to be perfect (i.e., competitive).

and the “dynamic capabilities view” (Teece, Pisano, and Shuen, 1997), the origins of the low church RBV are more diverse than is the case of the high church RBV, some of its pedigrees lie outside of economics, and many lie within heterodox economics. Thus, the low church RBV draws on the product development and knowledge management literatures in management, evolutionary economics, Schumpeterian thought, the organizational learning literature, work on leadership and alliances, business history, as well as the Penrose’s thought. Thus, the low church RBV is the contemporary heir to the Penrose who stressed that “One of the primary assumptions of the theory of the growth of firms is that ‘history matters’; growth is essentially an evolutionary process and based on the cumulative growth of collective knowledge, in the context of a purposive firm” (1959[1995]: xiii). What is more, in light of only modest empirical support for the RBV, Newbert (2007) argues that a firm’s organizing context and its dynamic capabilities rather than its static resources are essential for understanding competitive positions and superior profitability. Hence, the low church approach to the RBV might not only offer a different theoretical perspective, but may also help to address certain empirical shortcomings of the RBV.

### **Key Tenets**

Whereas the high church version of the RBV is founded on economic equilibrium and maximizing behaviour, and generates its predictions in the time-honoured manner of selectively introducing imperfections in an otherwise perfect world, the low church RBV is a much more amorphous collection of insights that in some dimensions overlap with the high church RBV. Thus, overall there is the same emphasis on firms as collections of heterogeneous resources.

However, the high church RBV focus on given resources that, moreover, tend to be seen as efficiently organized within a firm. In contrast, the low church RBV focuses on building, accumulating, transforming, managing, learning about, combining and recombining, etc. resources, and, in particular, the services that can be derived from such resources. Dynamics and learning are

key in the low church RBV. Moreover, whereas the high church RBV is hesitant to privilege any specific resource category, the low church RBV unambiguously concentrates on resources or assets that are knowledge-based, social in the sense that they are somehow linked to a collectivity of interacting agents (Felin & Foss, 2005), and tend to put much emphasis on the tacit nature of the knowledge that is alleged to reside in such interaction. Notions of “capabilities,” “dynamic capabilities,” “routines” and the like capture these characteristics.

Though clearly anticipated in Nelson and Winter’s (1982) notion of “dynamic routines” and in the innovation literature (e.g., notions of “dynamic efficiency”, Klein, 1977), research on (dynamic) capabilities was rejuvenated by Teece et al. (1997) who argued that superior performance comes from a firm’s capacity to change its resource base in the face of Schumpeterian competition and environmental change. Dynamic capabilities are defined as the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments (Teece, Pisano & Shuen 1997: 516). Importantly, dynamic capabilities reflect past learning processes, as they are a learned pattern of collective activity through which the organization systematically generates and modifies its operational routines in pursuit of improved performance. This basic definition has been subsequently refined and extended (e.g. Winter, 2000, Eisenhardt & Martin, 2000; Zollo & Winter, 2002; Teece, 2007; Di Stefano et al., 2010). What unites different approaches and definitions is the insistence on an organizational ability to alter its resource base. Thus, Helfat et al. (2007: 4) synthesize prior conceptual work by defining a dynamic capability as “the capacity of an organization to purposefully create, extend, and modify its resource base”. Accordingly, dynamic capabilities may perform different tasks that alter the resource base, such as new product development, alliance formation, or post-acquisition integration (Eisenhardt & Martin, 2000). According to the dynamic capability (DC) approach, a firm’s capacity to alter its resource base indirectly influences economic profitability (Helfat and Peteraf, 2009). Superior dynamic

capabilities allow firms enable firms to adapt more quickly and effectively to a changing business environment, creating a stream of temporary competitive advantages over time (Teece et al., 1997; Zott, 2003; Helfat et al., 2007).

Recent work on dynamic capabilities has increasingly stressed the role of organizational processes for understanding how firms alter its resource base. Teece (2007) opens up the black box of dynamic capabilities by relating the concept to organizational processes of sensing and seizing business opportunities and the constant (re)alignment of resources (cf. Helfat and Peteraf, 2009). A firm's sensing ability critically depends on the organizational systems and individual capacities to learn and to identify, filter, evaluate, and shape opportunities. Once a business opportunity is identified, the organizational structure, procedures, and incentives influence whether and how a firm seize the opportunity and creates a new strategic path. What is more, governance and organizational structures shape how firms align their specific resources over time. These "microfoundations" of dynamic capabilities (Teece 2007) link the DC approach to extant research on organizational design and adaptation and on transaction costs and governance structures.

However, despite the popularity of the low-church approach to the RBV in general and dynamic capabilities in particular, many open questions and unresolved issues remain. Williamson (1999) argues that the definition of dynamic capabilities remains overly inclusive and elastic, while Zahra et al. (2006) point to important contradictions in key tenets of the DC approach. For example, while most of the DC literature seems to imply that dynamic capabilities are a fundamental precondition for resource alterations, Helfat and Peteraf (2003) argue that dynamic capabilities are not required for capability building and strategic change. Furthermore, Salvato (2003) and Felin and Foss (2005) point to the lack of proper microfoundations, since extant research fails to demonstrate how individual behaviour (i.e. individual skills) aggregates into collective outcomes (i.e. organizational capability). In a recent critique, Arend and Bromiley (2009) argue that the current

DC approach offers unclear additional insights relative to existing concepts in the management literature, lacks a coherent theoretical foundation, receives only weak empirical support, and offers diffuse practical implications. Helfat and Peteraf (2009) respond to these criticisms by pointing to the complexity of the research questions which is matched by the complexity of the theoretical underpinnings. What is more, they also claim that the DC approach is still in a state of flux and in its formative stage. According to Helfat and Peteraf (2009: 99), “dynamic capabilities are not yet a theory”.

### **MOVEMENT TOWARDS THE MIDDLE?**

Changes within the high church as well as the low church RBV have brought them closer to each other. Thus, the low church RBV has become increasingly formal, and although it does not have a core model in the sense that the high church does, it may be reaching for one. Thus, Gavetti and Levinthal (2004: 1310) explicitly argue that the “... framework of evolutionary economics (Nelson and Winter 1982, 2002) rests on a conceptual apparatus that is quite consistent with the nature of this movement. More specifically, we view it as an emerging archetype, a paradigm, which has the potential to unify this growing middle ground and provide the coherence that is key to the cumulative development of any field of intellectual inquiry.”

In its turn, the high church RBV may have reached the point where further reliance on patched-up competitive equilibrium models does not longer yield progress. In fact, recent advances within this branch of the RBV make use of the language of game theory (Lippman & Rumelt, 2003; MacDonald & Ryall, 2004; Adegbesan, 2009) that has supplanted the reliance on competitive equilibrium in economics as the main vehicle of analytical development.<sup>4</sup> In fact, it is arguable that many RBV contributions have already been pushing the envelope quite significantly. Thus, as Gavetti and Levinthal (2004: 1311) points out, it is arguable that the seminal Dierickx and Cool

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<sup>4</sup> Although game theoretical work on the RBV tends to be cast in a cooperative mold, rather than the non-cooperative approach that dominates economics.

(1989) paper can be read as a low church contribution: “Within their perspective, actions were not necessarily rational and there was not a presumption of equilibrium ... Although not explicitly linked to the Carnegie School tradition of characterizing organizations as engaged in problemistic search, Dierickx and Cool drew a picture of a firm’s capability development that was certainly compatible with such a viewpoint.”

Indeed, the question of how new resources and capabilities are developed is arguably becoming a common theme in both approaches to the RBV. Recent theorizing has stressed that competitive advantage usually does not stem from access to a single, unique resource. Rather, what underpins competitive advantage are complex combinations of co-specialized resources (Peteraf 1993; Levinthal 1997; Knott et al. 2000; Rivkin 2000; Winter 2000; Lippman & Rumelt 2003; Denrell, Fang & Winter 2003). The fundamental questions then becomes how firms search for new, valuable resource combinations. The line of inquiry connects RBV thinking to the substantial literature on organizational search and learning. An important theme there is that the search for new resource combinations is not a purely random process, even though luck and serendipity play an essential role in explaining heterogeneous firm performance (Lippman & Rumelt 1982; Rumelt 1984; Denrell, Fang & Winter 2003; Denrell 2004). The effectiveness of organizational search is influenced by internal factors such as a firm’s internal structure (Siggelkow & Levinthal 2003; Rivkin & Siggelkow 2005; Knudsen & Levinthal 2007) and external linkages (Rosenkopf & Nerkar 2001; Holmquist 2004). What is more, goal-setting and performance feedback shape an organization’s breadth of search. As many empirical studies have shown, negative performance feedback stimulates explorative search for new resource combinations (Greve 2003 for an overview).

Recent theoretical and empirical research on organizational search similarly suggests that agents use specialized mental models to navigate the vast space of possible resource combinations

(cf. Nickerson & Zenger, 2004; Gavetti, 2005; Gavetti & Rivkin, 2007). In a simulation model, Gavetti and Levinthal (2000) show how the effectiveness of organizational search may be substantially enhanced by cognitive representations of the resource space. A cognitive representation is a simplified picture of the resource space. A well-informed cognitive representation provides guidance in opportunity discovery and allows firms to identify attractive regions in a problem space. Because the cognitive representation is just a coarse-grained depiction of the resource space, an entrepreneur engages in local adaptation to refine the initial business idea. After the discovery of a potentially value-creating resource combination, firms proceed to its refinement and modification (Siggelkow & Levinthal, 2003; Stieglitz & Heine 2007; Stieglitz & Foss, 2009). Hence, what the cognitive representation fundamentally represents is the entrepreneurial expectation and speculation about more attractive regions in the resource space, what Foss, Foss and Klein (2007) call “judgment.”

The key question then is where cognitive representations come from. For technological innovations, an obvious source for a cognitive representation is basic science (Fleming & Sorensen, 2004). Basic science offers an understanding of causal laws and how certain resources combine and interact in principle. Scientific understanding leads entrepreneurs more directly to useful resource combinations, eliminates fruitless paths of research, and motivates them to press on even in the face of negative feedback (Fleming & Sorensen, 2004: 911-912). Likewise, a cognitive representation of the resource space may also be informed by analogies (Gavetti, Levinthal & Rivkin, 2005; Gavetti & Rivkin, 2007; Gavetti & Warglien, 2007). Analogies allow human agents to take insights developed in one context and apply it to a new setting. More generally, an important source of competitive advantage is the heterogeneity of expectations and cognitive representations held by human agents in an economy.

Such a reading is developed by Foss and Foss (2008) who, drawing on the resource-based view, argue that firm-level entrepreneurial opportunities emerge along paths shaped by the firm's experience. However, they also argue out that property rights and transaction cost considerations are important to understanding the discovery and exploitation of opportunities. Two mechanisms link transaction costs and opportunity discovery. First, transaction costs determine how well defined and enforced property rights to resource attributes are; in turn, this influences the value that entrepreneurial resource owners expect to appropriate, and therefore their incentives to engage in opportunity discovery. This is the "appropriability mechanism." Second, entrepreneurial experience influences opportunity discovery (e.g., Shane, 2000). However, experience (also) emerges from resource learning, that is, entrepreneurs' learning about the attributes of resources (Mahoney, 1995). Such learning entails transaction costs, for example, the costs of measuring the productivity potential of employees. The transaction costs that entrepreneurs face influence their resource learning, introduce path dependence in such learning, and therefore influence which opportunities will be discovered (the "resource learning mechanism"). In other words, the mental models firms ('managers) adopted from their learning experience of available opportunities are influenced transaction costs and property rights. Although embedded in the resource-based view and property rights economics, the approach of Foss and Foss is thus akin to recent attempts to include learning mechanisms in transaction cost economics (Mayer & Argyres, 2004; Argyres & Mayer, 2007).

## **CONCLUSIONS**

As we have argued the various contributions that make up modern resource-based theory draw from a large and heterogenous set of influences. To be sure, many of the key ideas can be found in the work of the matriarch of the resource-based view, Edith Penrose (1959), but not all of them, and in certain ways her work contains insights that are still to be addressed in modern theory. Thus, the key idea of heterogeneity as key to understanding phenomena of strategic interest is, of course, in

Penrose's work. However, Penrose stressed the role of heterogeneous services rather than of resources *per se*, and the role of the administrative framework of the firm as well as management in shaping the kind of services that the resources under the control of the firm can yield. In fact, a key concern in her book is management's actions with respect to resources, that is, processes of acquiring, bundling, leveraging, etc. resources (cf. Kraaijenbrink et al., 2010). This is not a concern in modern theory to the same extent. As Barney and Arikan (2001: 174) admit, the (high-church) RBV has "a very simple view about how resources are connected to the strategies that a firm pursues." Relatedly, Crook et al. (2008) argued that contingencies related to managerial choice should be a major research area within the RBV. More generally, Felin and Foss (2005) argued that action and interaction in general should be more prominently featured in the RBV in order to understand the emergence, maintenance, change, etc. of firm-level capabilities. A potentially fruitful avenue of research that fulfills some of these more "individual-centric" concerns is represented by a string of recent contributions that link the RBV to research on entrepreneurship (Zahra & Dess 2001; Alvarez & Barney, 2005).

In certain key ways, these ideas also hark back to the other important ancestor of the RBV, Harold Demsetz. Demsetz (1973: 3) attributes superior performance to the "combination of great uncertainty plus luck or atypical insight by the management of a firm." What is more, if information acquisition is costly, managers and their ability to sense and seize business opportunities and effectively recombine resources, becomes more specialized over time (Alchian & Demsetz 1972; Demsetz, 1988). This line of thinking places more emphasis on decision-making and the individual ability to search and evaluate resource combinations. A number of contributions highlight individual cognition in structuring the search for new resource combinations (e.g. Amit & Schoemaker, 1993; Foss, 1993; Gavetti & Levinthal, 2000, Gavetti, Levinthal & Rivkin, 2005; Knudsen & Levinthal, 2007), but these ideas do not seem to be well integrated into the core of the

RBV. In addition, the decision-making process about resource allocation and capability development is structured by the organization design (Adner & Levinthal, 2004; Gavetti, 2005; Foss, Foss & Klein, 2007; Christensen & Knudsen, 2010). Lastly, the incentive system of a firm influences where and how a firm searches for new resource combinations (Manso, 2008). In a nutshell, it appears that the RBV stands to gain from a more careful consideration of individual and organizational factors that influence how a firm searches and evaluates resource combinations and allocates resources. In terms of drawing on neighboring fields, the operational implications seem to be that the RBV may stand to gain from linking up more explicitly with research on strategic human resource management and top management teams.

Finally, another area for further research is the development of (formal) models that would facilitate the cumulative buildup of theoretical knowledge and careful development of empirical hypotheses. While the RBV has a long tradition of formal models (e.g. Lippman & Rumelt, 1982; Makadok, 2001; Lippman & Rumelt, 2003; Denrell, 2004; MacDonald & Ryall, 2004), these contributions appear to represent a fringe rather than a widely accepted theoretical core of RBV thinking. For example, it is unclear how a standard model in the RBV looks like that connects differential resource advantage to product market competition (e.g., Klepper & Simmons 2000), although this issue is beginning to be explored (Asmussen, 2010; Makadok, 2010). Does the NK model—widely applied to problems of organizational search and adaptation—represent an adequate model platform to study how firms engage in resource learning, recombine resources, and protect them from competition? To what extent can RBV theory draw on formal theories of the firm that link resource investments to the bargaining positions of resource owners and other factors (Gibbons, 2005)? It is noteworthy that formal arguments have been brought to bear on issues both within the high- and the low church RBV. Perhaps the movement towards the middle that we have diagnosed

will be prompted by formal developments, and the long-standing schism within the RBV will finally be overcome.

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