A DYNAMIC THEORY OF THE STRATEGIC FIRM

David Hoopes
California State University, Dominguez Hills

Tammy L. Madsen
Santa Clara University

ABSTRACT

What makes a robust strategic theory of the firm? Rumelt's (1984) "Towards a Strategic Theory of the Firm" explains how variance in performance occurs and endures when decision-makers are boundedly rational and isolating mechanisms slow or prevent equilibration. How and why firms differ is a fundamental issue in strategic management. *Ex ante* uncertainty leads to heterogeneity. Causal ambiguity and other isolating mechanisms allow heterogeneity to endure. A central prescription is that firms often need to react quickly in spite of the uncertainty. Successful first movers can enjoy a durable advantage. This article expands on the contributions of Rumelt's 1984 article. Since strategy is situational, we begin by setting the ideas in context and illustrating how they challenged the received view. Next, we move onto the crux of the matter -- how these ideas created an agenda for strategy scholarship. We then cover work on isolating mechanisms and identify unexplored opportunities.

Forthcoming in ***Strategic Management Review***

INTRODUCTION

> *Strategy: "a firm's competitive position is defined by a bundle of unique resources and relationships and … the task of general management is to adjust and renew these resources and relationships as time, competition, and change erode their value."* (Rumelt,1984: 132)

In the early 1980s, business strategy had emerged as an important field of study. Most work in the past focused on teaching and cases. Research on strategy was new and lacked a theoretical framework. Social science theory of the era assumed environmental determinism (population ecology, perfect competition). This offered little help in understanding how firms compete. And did not appear to reflect the reality of business competition. Entrepreneurial behavior, firm differences in beliefs, performance variance, and the complexity of investment decisions are all left out.

Rumelt (1984) and Lippman and Rumelt (1982) take a big step in providing the foundation the field of strategy needed. Using a partial equilibrium model, they show how *ex ante* and *ex post* uncertainty can lead to persistent within industry heterogeneity. *Ex ante* uncertainty results in differing investment choices. *Ex post*, uncertainty, causal ambiguity and other isolating mechanisms to help firms defend and stabilize their competitive position. This approach leads to a range of results consistent with firm behavior.

Based on this model, Rumelt concludes with a set of implications for a normative theory of the strategic firm and demonstrates the usefulness of the ideas for examining business strategy. The implications characterize strategy as dynamic. A common theme is the influence of uncertainty, shocks, and unexpected events and the opportunities they present to firms. These conditions disrupt the profit trajectory of an industry and change the value of established isolating mechanisms. Failure to recognize isolating mechanism-dynamics may compromise profitability, growth and viability.

Since opportunities arise from the intersection of uncertainty and a firm's idiosyncratic resources, strategic analysis is situational. As a result, business strategy requires ongoing search for how a firm's resources may be redeployed. As situations transform, the task of management is to continue to adjust and renew their resources and relationships to create, capture and sustain value. While there are no rules for riches and situations are rarely perfect, "good strategy" is feasible under uncertainty. Collectively, the implications provide the foundation for a dynamic strategic theory of the firm.

In this article, we begin by reviewing the motivations for Rumelt's foundational work. Situating our discussion in the field's history allows us to clarify the article's influence. In doing so, we showcase the rich normative implications of his 'strategic theory of the firm' and how they fundamentally shaped the field. Rumelt's theory introduced the concept of isolating mechanisms as central to limiting the equilibration of rents among close competitors. We show the impact of his conceptualization by discussing the key findings and implications from the empirical and theoretical work on isolating mechanisms. We conclude with opportunities for future work.

STRATEGIC THEORY OF THE FIRM

After the second world war, the U.S. economy expanded greatly. Many businesses diversified and grew quickly (compared to previous generations). Their size and scope complicated organization, investment, and planning. So, Chandler (1963), Ansoff (1967), Andrews (1971), and others began writing about strategies for businesses. Corporate strategy received a great deal of attention (Buzzell, Rumelt, Gort). In both corporate and single business strategy, topics included strategic planning, diversification, the experience curve, strategy formulation, and environmental analysis. For single business strategy, a challenge was moving beyond cases and case-based prescription.

Business Strategy and Economic Theory

Economics would seem to be the obvious place to find a theoretical foundation for business strategy. Yet, microeconomic theory assumed away the essential components of business strategy. Price theory assumes that entry into profitable industries and imitation of success results in identical firms earning accounting profits. Industrial organization moves away from this by examining how industries differ.

The problem was that competitors do differ and stay different. Years of observation led to a broad set of *empirical observations* (Rumelt, 1984). We expect success to result in entry and imitation. But other actions slow and sometimes prevent equilibration (Rumelt, 1984: 132):

> *"Firms: facing similar strategic problems often respond differently,*
> *seek asymmetric competitive positions,*
> *compete with different bundles of resources,*
> *differ because of differing histories or patterns of strategic choice."*

Competition is characterized by entrepreneurial behavior. Firms develop and adjust unique resources and capabilities. Important issues like property rights, transaction costs, bounded rationality, uncertainty, and factory immobility are overlooked by the neoclassical theory of the firm. Yet, all these factors slow industry equilibration. At this time, industrial organization economics considered industry membership as the best predictor of profitability. Intra-industry differences were assumed to be trivial. Rumelt's study underscored the misalignment between strategy (business policy) scholars and most economic theory.

STRATEGIC PROBLEMS, UNCERTAINTY, AND PERFECT MARKETS

"A firm's strategy may be explained in terms of the unexpected events that created (or will create) potential rents together with the isolating mechanisms that (will) act to preserve them. If either element of the explanation is missing, the analysis is inaccurate." Rumelt (1984: 142)

Uncertainty and Ambiguity

Price theory assumes perfect information. This implies knowing the consequences of each choice. Simon (1945: 93) describes three limits to decision makers' understanding. They do not: 1) know all possible choices; 2) understand the consequences of each choice; 3) know which result they will most value. Firms do not select a production function from a well described set with predictable results. To formally model bounded rationality and competition Lippman and Rumelt introduce the concepts, *uncertain imitability* and *causal ambiguity*.

> *"…if the precise reasons for success or failure cannot be determined, even after the event has occurred, there is* ***causal ambiguity****"* Rumelt (1984: 136)
>
> *"…**uncertain imitability** obtains when the creation of new production functions is inherently uncertain and when either causal ambiguity or property rights in unique resources impede imitation and factor mobility."* (Lippman and Rumelt, 1982: 421).

If there are sunk costs in gathering and processing information firms will be limited in their ability to process all available data *ex ante* and *ex post*. Given *ex ante* uncertainty firms' decisions will vary, giving rise to heterogeneity. *Ex post* ambiguity will limit adjustments allowing heterogeneity to persist. Together, uncertainty, ambiguity, and sunk costs can lead to uncertain imitability.

Isolating mechanisms

Industrial organization theory discussed barriers to entry. Factors that gave incumbents an advantage over new entrants. Caves and Porter (1977) extended this idea to mobility barriers. Things that made moving from one strategic group within an industry to another costly and difficult. Rumelt carries this another step. He defines isolating mechanism as, *"phenomena that limit the ex post equilibration of rents among individual firms* (Rumelt, 1984: 141)*."* In Lippman and Rumelt (1982), causal ambiguity is the key isolating mechanism. Rumelt (1984) expands the list of isolating mechanisms and discusses their importance.

Isolating mechanisms are often the result of some change (technology, law, consumer tastes). For a firm to improve its position it needs to recognize the opportunity resulting from such changes. The firm then must respond quickly and successfully. Uncertainty is again a critical characteristic. The subsequent section gives more detail on isolating mechanisms . We then discuss some of the empirical work since then. Finally, we discuss what we know and do not know about isolating mechanisms and identify opportunities for future work.

ISOLATING MECHANISMS

Isolating Mechanisms Beyond Causal Ambiguity

Lippman and Rumelt (1982) use causal ambiguity as the key isolating mechanism in their model. Rumelt (1984) identifies a variety of others (see Table 1). From there he explains the importance of isolating mechanisms as a central idea for strategy. The wide range of possible isolating mechanisms reveals the importance of understanding their value to defending a competitive position. Opportunity for significant advantage can be rare. Recognizing and successfully acting to gain the benefits of an isolating mechanism can give a firm an enduring advantage. As change influences the strength of isolating mechanisms, a fundamental part of strategy is a fundamental part of strategy is decision making in uncertain situations. Rumelt

(1984: 141) states that, "a firm's strategy may be explained in terms of unexpected events that created (or will create) potential rents together with isolating mechanisms that will act to preserve them…. Isolating mechanisms protect idiosyncratic differences in firms' abilities to create and capture value."

As Table 1 shows, Rumelt's original discussion of isolating mechanisms was not limited to firm-specific factors. It also included factors that lie outside of a firm's boundaries such as regulations or regulations limiting entry, switching costs and consumer learning. Isolating mechanisms cluster into three general categories: capability-based, position-based, and exogenous to a firm. Capability-based mechanisms stem from the properties associated with a firm's resources or capabilities whereas position-based mechanisms occur at the intersection of a firm's strategic choices, resource configuration, and the environment in which it is embedded. Exogenous sources of isolating mechanisms are independent of a firm's capabilities or strategic position.

[Insert Table 1 about here]

Table 1. Isolating Mechanisms: Rumelt's 1984 List

Isolating Mechanisms	Sources	
	Firm-specific	External to a Firm
Causal Ambiguity	●	
Specialized Assets	●	
Switching and Search Costs		●
Producer Learning	●	
Consumer Learning		●
Team-embodied Skills	●	
Unique Resources	●	
Special Information	●	
Patents and Trademarks	●	
Reputation and image	●	
Legal Restrictions on Entry		●

Early Work Influenced by Rumelt and Lippman (1982) and Rumelt (1984) (and Wernerfelt)

Consistent with the emerging work on the resource-based view, Barney (1986) argued that strategic factor markets are imperfect when the future value of resources differ.[1] In response, Dierickx and Cool (1989) theorized that strategic assets are immobile due to firm-specific properties that accumulate over time and thus, the assets cannot be traded in strategic factor markets.[2] In their view, the inimitability of these assets stems from characteristics of a firm's asset accumulation process, including time compression diseconomies, asset-mass efficiencies, asset interconnectedness or interdependencies, and causal ambiguity.

Similarly, work in evolutionary economics theorized that skills embodied in routines were more resistant to imitation (Nelson and Winter, 1974, 1982). The general view is that value created by firm-specific resources or capabilities is bound to the firm. The opportunity cost associated with employing firm-specific resources is "significantly less than their value to the present employer" (Peteraf, 1993: 184). Barney (1991) synthesized the various ideas as part of the resource-based view's conceptual development and specified the conditions under which firms may obtain an advantage under equilibrium.

Rumelt (1984) and Lippman and Rumelt (1982) influenced the foundations of the resource-based view (RBV) of the firm. Yet, some issues raised by Rumelt are often overlooked:

> 1. *RBV under-emphasizes uncertainty:* In terms of Lippman and Rumelt, and Rumelt, the future value of some resources, or perhaps more accurately, the future value of an investment in resources and capabilities, is uncertain. Most firms will make investments where the value is predictable, such as new equipment for a factory. Based on experience, the firm can predict what the investment will produce and what value it will generate. Other investments such as in R&D, new technology, or a new type of capability, are less certain. Firms' responses to uncertainty will vary and in turn, contribute to competitive heterogeneity.

[1] As background, Richard Rumelt and Jay Barney were in the same department at UCLA in the early 1980s.
[2] See Barney's response in the same issue, pages 1511 – 1513.

2. *Complementary Resources and Interfirm Heterogeneity:* The future value of an investment in a resource or capability can vary across firms given the importance of firm specific complementarities. The extent to which complementary skills or resources contribute to heterogeneity is likely to increase with the novelty of the focal resource or capability.

3. *Pre-existing Complementary Resources and History:* Over time, firms use of an asset can/will vary with some firms making better use of it than others. This might stem from pre-existing complementarity or better learning.

4. *Not simply resources but how they are used:* It's important not to get stuck on the idea of an asset or resource as a thing. It is more accurate to say that an investment in a technology is an investment in some asset but also *in the use of that asset*. Rumelt observes, "resources and relationships" and not simply resources as a static, disconnected entity.

5. *Factor markets refer to accurate pricing.* That doesn't mean value will be homogenous. Factor markets can impede resource flows and thus, contribute to heterogeneity.

Since heterogeneity arises not only from investments in resources but in their use, work on how managers learn, coordinate, connect and redeploy resources was prominent in the origins of the isolating mechanism concept and in subsequent analysis.

ISOLATING MECHANISMS: SUBSEQUENT WORK

As mentioned above, isolating mechanisms include three general categories: capability-based, position-based, and exogenous to a firm. We highlight some of the classic findings from work on these three categories (a comprehensive review is not intended). Next, as a step in identifying future directions and unanswered questions, we discuss studies that challenge the assumptions and boundary conditions of the isolating mechanism concept.

Capability-based Isolating Mechanisms

Most empirical and theoretical work on isolating mechanisms has focused on the capability category. In this stream, some scholars use indirect effects to understand the potency of isolating mechanisms whereas others employ more explicit measures. Other studies focus on the origins or foundations of particular capability-based isolating mechanisms.

A variety of empirical and formal theory studies examine isolating mechanisms indirectly or as unobserved sources of enduring firm heterogeneity (or as a mediator between sources of advantage and the duration of an advantage). In this work, a positive association between intangible factors and persistent firm heterogeneity is assumed to signal the presence of an isolating mechanism. Much of this work capitalizes on the notion that capabilities, due to their origins and/or development over time, are firm-specific and in turn, inimitable. Similarly, firms may hold resources that are unique or specialized. In their classic study of uncertain imitability, Lippman and Rumelt (1982) use a formal model to show that uncertainty in the value of a capability or resource stems from ambiguity about the factors (and their interactions) that contribute to a superior position. Building on these insights, scholars argue that causal ambiguity arises from or mediates distinct characteristics of a firm's capabilities and resources – tacitness, complexity and specificity and is a key contributor to performance differentials (Reed and DiFillippi, 1990; Simonin, 1999).

Elaborating on these foundations, empirical work has examined the conditions under which various sources of capability-based isolating mechanisms promote competitive heterogeneity. Villalonga (2004) finds that intangible resources contribute to persistent differences in performance among firms and suggests that properties associated with intangible resources isolate a firm's strategic position from that of its rivals. Examining differences in research productivity, Henderson and Cockburn (1994) demonstrate that distinct types of competences, component and architectural, contribute to enduring interfirm heterogeneity. Using a simulation, Rivkin (2000) shows that the complexity of a firm's strategy combined with asymmetric information helps to protect the focal firm from imitation.

Consistent with the notion that a firm's history of success is associated with the cumulation of unique capabilities, Madsen and Lieblein (2015) show that the isolating mechanisms associated with a firm's cumulated experience yield a more enduring innovation advantage as compared to those associated with the experience held by the firm's partners. Additionally, isolating mechanisms associated with the experience held by a firm's partners yield a more enduring advantage than isolating mechanisms associated with a firm's patent stock.

Studies with more explicit measures of capability-based isolating mechanisms or applying formal theory to analyze isolating mechanisms generate mixed conclusions. For example, King and Zeithaml (2001) find a positive association between causally ambiguous properties of capabilities and superior firm performance. Alternatively, Ryall's (2009) formal theory shows that causal ambiguity, a barrier to learning-by-observing, supports a capability-based advantage but its existence is not sufficient to guarantee the protection of superior profits over time.[3] Knott, Bryce and Posen (2003) find that the asset accumulation process does not deter imitation. In contrast, Madsen and Leiblein's (2015) findings reported above reinforce the value of a firm's capability accumulation process as an isolating mechanism. Similarly, Knott (2003) demonstrates that firms generating innovations on a repeated basis build a propensity for innovation and in turn, sustain superior profits relative to rivals.

In combination, the findings suggest that more work is needed to clarify the conditions under which asset and capability accumulation will deter imitation. For instance, is the strength of the isolating mechanism a function of the type of asset or capability accumulated?

[3] Rivals' beliefs may lead to optimism and in turn, entry. This set of firms may commit to sustained experimentation to catch up to, and erode, the focal firm's capability-based advantage.

Shifting to historical conditions, empirical work shows that time compression diseconomies are not potent enough to prevent followers from catching up in the pharmaceutical sector (Knott, Bryce and Posen, 2003). These findings are consistent with Pacheco de Almeida and Zemsky's (2007) formal model of resource development by rivals which concludes that time compression diseconomies are not sufficient to sustain superior profits. Further, Hawk and Pacheco de Almeida's (2018) analysis of the oil and gas context provides evidence of time compression economies rather than diseconomies. The findings question the validity of considering time compression as a source of protection from rivals. Other scholars theorize that isolating mechanisms have a dark side and over time, can make resources and the economic rents they generate less durable (Breton-Miller and Miller, 2015).

Knowledge and learning play a crucial role in the microfoundations of capability-based isolating mechanisms. For one, since causal ambiguity is a knowledge-based barrier to imitation, it also can pose a barrier to different types of learning. In the context of time compression diseconomies, microfoundations include different learning rates and levels of analysis (such as the individual level) (Srikanth, Anand and Stan, 2021) as well as variation in the focus of learning (rate of execution vs. rate of capability development). For example, studies distinguish between a firm's ability to execute projects at a faster rate than rivals and a firm's ability to improve its capabilities (see Hawk, Pacheco de Almeida, and Yeung, 2013). Related work theorizes that a firm's design choices associated with how knowledge is "manifested" in routines, blueprints, prototypes or products is a source of isolating mechanisms and enables firms to shape appropriability regimes (Sharapov and MacAulay, 2022: 139). Using a computation model, Davis and Aggarwal (2020) find that knowledge mobilization, or how knowledge is aggregated to generate firm outcomes, offers temporary protection from imitation conditioned on the characteristics of a firm's opportunity space. When an opportunity space is highly complex, a firm's recombination capabilities provide for a more enduring advantage.

Position-based Isolating Mechanisms

What evidence exists regarding the influence of isolating mechanisms that are related to a firm's strategic position or that lie at the intersection of firm choices and its environment? Switching cost theory argues that a firm can maintain an advantage by making it expensive for buyers to switch to a rival's offering. Underlying mechanisms involve the costs for a buyer to search, learn or transition to an alternative supplier's offering. As buyers learn-by-using, they may build capabilities specific to their supplier and, as a result, become reluctant to switch suppliers. Li et al, (2006) argue that this "buyer switching inertia" isolates an incumbent supplier from a challenger. Other work demonstrates that switching costs help first movers maintain an advantage, albeit temporary (Gomez and Maicas, 2011). Additional studies reveal a positive association between switching costs and profitability (i.e., Brush, Dangol and O'Brien, 2012) but do not address whether switching costs contribute to persistent differences in profitability among rivals.

Other attributes associated with a firm's strategic position also may contribute to isolating mechanisms. Kim (2013, 2016) shows that a firm's geographic scope of knowledge acquisition, the degree to which it sources knowledge from multiple different countries, may deter imitation due to two attributes of international markets, a high degree of market frictions and a high degree of heterogeneity. By impeding knowledge flows, these two attributes limit the extent to which rivals can access the knowledge necessary for the successful imitation of the focal firm (Kim, 2013, 2016). Shifting attention to interactions between firms and other actors in their environments, Dyer and Singh (1998: 660) theorize that the durability of relational rents among two or more firms stems from the co-evolution of their capabilities, the degree of asset interconnectedness among the firms, and social complexity. The latter serve to isolate the advantages, or relational rents, participating firms generate from a collaborative arrangement.

Intellectual property rights also can serve to protect rents from co-specialized assets and isolate a firm from imitation (Rumelt, 1984; Teece, 1986). Since such rights are granted by a legal party external to a firm, we include them in the category of position-based isolating mechanisms. Patents are commonly viewed as a legal safeguard however, their strength as isolating mechanisms varies by sector (see Cohen 2010; Cohen et al, 2000; Somaya, 2003). The degree of enforcement of these mechanisms also varies by situation (firm, industry, IP regime). For example, the extent to which firms litigate is a function of an asset's value. Litigation itself can discourage rivals from capitalizing on knowledge spillovers (Agarwal, Ganco & Ziedonis, 2009). A reputation for rigorous patent enforcement also can deter rivals from utilizing knowledge spillovers, such as those stemming from inventor mobility (Agarwal, Ganco and Ziedonis, 2009; see also Ganco, Ziedonis and Agarwal, 2014). In addition to serving as an isolating mechanism, Hsu and Ziedonis (2013) show that the value signaled by a firm's patents enhances the firm's access to and trade in strategic factor markets.

Empirical work on patents and property rights as isolating mechanisms offers somewhat mixed results. Some work provides evidence of patents as isolating mechanisms (Somaya, 2003) others results suggest the benefits are temporary at best (Madsen and Leiblein,). Survey findings suggest that that firms often view capability-based isolating mechanisms as more important than formal rights in deterring imitation (Hall, 1992; Cohen, et al, 2000). Consistent with these observations, work shows that firm-specific knowledge and cumulative experience provide a more enduring advantage as compared to a firm's patent stocks (Madsen and Leiblein,). Other studies demonstrate that firms with a repeatable ability to innovate may generate innovations more frequently and sustain an advantage relative to rivals (Geroski et al, 1993; Knott, 2003; Roberts, 1991, 2001). These findings are consistent with evidence that persistent profit advantages primarily arise from firm-specific effects rather than industry effects (Cubbin and Geroski, 1987; Jacobsen, 1988).

Exogenous Sources of Isolating Mechanisms

Another set of studies identifies exogenous sources of isolating mechanisms. Oliver (1997) introduces the concept of institutional isolating mechanisms to explain how the institutional context in which a firm embedded affects sustained firm heterogeneity. A firm's institutional context includes influences external to a firm such as the state, society or other actors as well as a firm's internal organizational characteristics such as a its legacy, culture and organizational politics (we discuss the internal factors in a subsequent section). External influences include formal rule systems established by regulatory bodies or the state that pose barriers to entry operate to preserve imperfect factor and product market conditions, isolating incumbent firms from potential rivals (for instance, see Maijoor and Van Witteloostuijn, 1996). However, when regulations limit competition, they also reduce incentives for firms to develop new or novel practices (Winston, 1998) and thus, dampen heterogeneity among firms (Henry et al, 1978; Wiggins, 1981). In contrast, deregulation often advances interfirm heterogeneity in performance (Walker et al, 2002) and contributes to heterogeneity in the duration of firms' profit advantages (Madsen and Walker, 2017).

BOUNDARY CONDITIONS & UNEXPLORED THEMES

Do Competitors Always Imitate?

What are the boundary conditions associated with isolating mechanisms? A general assumption underlying work on isolating mechanisms is that firms will seek to imitate superior performers. However, studies suggest that firms often create or employ self-imposed barriers to imitation. Such self-imposed barriers may arise from organizational inertia, dispositions, perceptions, organizing practices, strategic logics, and/or institutionalized norms. For one, when rivals are inert, their strategic response will be slow or non-existent (See Helfat's review of Rumelt's work on inertia and strategic transformation in this volume). Regardless of whether inertia is strong or weak, firms also may be less open to learning or acquirinq the knowledge or resources necessary for imitation (Knott, 2003; Oliver, 1997; Szulanski, 1996). In addition to cognitive sunk costs and a reliance on tradition, an unwillingness to imitate also might arise from a firm's institutionalized norms or logics. For instance, a firm may resist acquiring resources that do not align with its cultural or political norms or that lack social approval or legitimacy (Oliver, 1997). Rumelt (1995) labeled these effects "dulled motivations" (see Helfat, 2022). Under these conditions, tacit knowledge might not be a necessary condition for isolating a firm from its rivals. Additionally, an imitator's distorted perception of their knowledge and capabilities, of their environment, or both may result in a failure to adopt explicit knowledge (Knott, 2003; Rumelt, 1995).

Even when a firm has the capacity to imitate rivals, economic incentives associated with the firm's strategic choices may dampen its willingness to pursue imitation. Madhok, Li and Priem (2010: 92) refer to this unexamined source of competitive heterogeneity as comparative firm advantage and argue that it can yield sustained advantage when either "1) the rivals continue to have more profitable opportunities elsewhere; or 2) when delay by rivals pursuing other opportunities allows the focal competitor time to convert ‘second class’, imitable resources into ‘first class’ inimitable resources.”

Recent work explores the conditions under which imperfectly mobile resources, such as the knowledge and skills embedded in employees, preserve a firm’s strategic position. For one, Hatch and Dyer (2004:) demonstrate that firms with superior skills in “acquiring, developing and deploying human capital” benefit from an enduring advantage in learning and cost. The authors suggest that human capital may be a source of sustained advantage when employees are continuously building firm-specific knowledge that is difficult to imitate and advances the learning performance of the firm. These findings conflict with some of the asset and capability accumulation evidence cited above. Other scholars propose three conditions under which firm-specific human capital will isolate a firm from its rivals: 1) the “exchange value of workers’ general human capital is no greater than the use value of workers’ full portfolio of human capital in the focal firm; 2) the exchange value of worker skills and the firm specificity of those skills must be tightly coupled; and 3) supply-side mobility constraints are not so low that workers are willing to incur substantial financial costs to move” (Campbell, Coff, and Kryscynski, 2012:). Building on this work, Kryscynski, Coff and Campbell (2021) offer a theoretical framework where human capital based advantages arise from interfirm heterogeneity in incentives offered to employees.

Work on interfirm interactions suggests that isolating mechanisms that protect shared resources differ from those that protect non-shared resources. In this context, firm-specific, partner-specific and relation-specific factors influence sustained value creation and value capture (Lavie, 2006). Complementarities among two or more firms in an exchange contribute to the value of each firms’ resources. Partners also may proactively learn and internalize the capabilities or resources held by their counterparts. Since firms in an exchange benefit from resources or capabilities that they do not own, causal ambiguity and social complexity become less relevant in deterring imitation by an exchange partner. Thus, in interfirm collaborations, inimitability may be less about the properties of resources or capabilities held by a firm and more about the “nature of relationships” among interconnected firms (Lavie, 2006: 249). Under these conditions, a firm’s repeated ability to develop and maintain value producing alliances or partnerships may protect its relational rents over time. The theory suggests that isolating mechanisms for first order and second order capabilities differ.

Unexplored Themes

The cumulative work on isolating mechanisms has advanced our understanding of the conditions under which isolating mechanisms protect an advantage, and also, points to several themes that merit additional inquiry: 1) dynamics of isolating mechanisms and imitation; 2) duration of protection provided by isolating mechanism type; 3) comparative analysis: what types of isolating mechanisms matter more, capability-based, position-based, or exogenously based; and 4) origins and additional sources of isolating mechanisms.

A rich opportunity exists for exploring the dynamics of isolating mechanisms and the duration of an advantage afforded by different mechanisms. How does the potency of an isolating mechanism change over time and what are the implications for the duration of an advantage? Instances of sustained superior performance tend to be rare rather than the norm (McGahan and Porter, 1999; Madsen and Walker, 2017; Wiggins and Ruefli, 2002). As a result, firms engage in managing cycles of temporary advantage. In each cycle, the sources of advantage may change and so too may the isolating mechanisms that provide for a temporary advantage. For instance, considering exogenous sources, regulation may allow for stable rent preservation among established firms but once removed (deregulation), firms must rely on other mechanisms to limit the equilibration of rents. Shifting to capability-based mechanisms, Knudsen, Levinthal and Winter (2014) argue that a firm's success in scaling its operations or its rate of expansion serves as a dynamic isolating mechanism, protecting the advantages held by established firms over time. How do we reconcile these effects with the findings on capability or asset accumulation? How long will a capability accumulation process protect a firm from imitation? How can firms design capability development and renewal in a way that invokes ongoing protection from imitation?

All else being equal, do some mechanisms contribute to more enduring protection than others? Empirical work on the persistence of advantage reveals that firm-specific factors vary in how much they contribute to an advantage and to the duration of that advantage (Madsen and Leiblein, 2015; Madsen and Walker, 2017). Yet, studies on isolating mechanisms typically do not estimate how long a mechanism will enable superior rent generation; in contrast, the duration of an advantage is estimated in studies of the persistence of superior profits. Integrating work using observable measures of isolating mechanisms and work on the persistence of superior profits (where mechanisms are often unobservable) provides a rich opportunity for future analysis.

Additionally, comparative analysis of the strength of different isolating mechanisms would advance understanding while also providing more prescriptive implications for organizations. Under what conditions will capability-based isolating mechanisms matter more than position-based isolating mechanisms? For example, when would causal ambiguity matter more than switching costs? All else being equal, a firm's strategic investment choices may differ when capability-based isolating mechanisms are weaker in potency and duration as compared to position-based isolating mechanisms or exogenous sources of isolating mechanisms. Moreover, how does the strength of isolating mechanisms vary within category – for instance, do all capability-based isolating mechanisms yield the same degree of protection? Under what conditions will some of these factors matter more than others? Lastly, which categories of isolating mechanisms tend to erode faster than others? How might the distinct categories operate together to deter imitation?

As discussed in the preceding section, scholars have expanded the scope of isolating mechanisms. First, some studies focus on uncovering the micro-sources of isolating mechanisms such as design choices that influenced knowledge mobilization whereas others attend to the macroenvironment, considering interfirm and institutional sources. Regardless of the level of analysis, opportunities exist for expanding our understanding of the origins of isolating mechanisms, beyond knowledge and learning. Second, much of the focus to date occurs in traditional contexts such as a firm positioned in an industry or market. We know less about how the concept operates in the context of platform-based ecosystems and innovation ecosystems. Since ecosystems are not equivalent to networks or alliance portfolios, what types of isolating mechanisms matter? When the focus is on enabling ecosystem generativity by facilitating and enabling joint value creation, where do isolating mechanisms come into play?

CONCLUSION

Rumelt (1984: 132) introduced a novel, non-traditional approach to business strategy based on structured thinking consistent with a set of empirical observations that merit repeating:

1. *"The general managers of firms make choices, some of these choices are considerably more important (having more impact on performance) than others.*

2. *Strategic choices are not necessarily explicit but may be characterized by infrequency, uncertainty, the irreversibility of commitments, and the multifunctional scope, and they are usually nonrecurring.*
3. *The most critical strategic choices exhibited by a firm are those concerned with the selection of the product-market areas or segments in which the firm will compete and the basic approach to those businesses.*
4. *Similar firms facing similar strategic problems may respond differently.*
5. *Firms in the same industry compete with substantially different bundles of resources using disparate approaches. These firms differ because of differing histories of strategic choice and performance and because managements appear to seek asymmetric competitive positions."*

At the time, these observations conflicted with several dominant lines of thinking – all of which overlooked or assumed away the constructs of corporate entrepreneurship and resource heterogeneity in explaining differences in the outcomes of firm behavior. The neoclassical view held that a firm's choice set was limited to price or output levels and resource heterogeneity was exogenous rather than endogenous to the firm. But a theory of the pricing system is not a theory of the firm as it ignores a wide range of phenomenon that contribute to competitive heterogeneity such as managerial behaviors, bounded rationality, bargaining power, factor immobility, transaction costs, information asymmetry, producer learning, technological uncertainty and so on. The industrial organization (IO) literature viewed firms as homogeneous (other than scale) and ignored evidence of intra-industry differences. The notion of firm heterogeneity as central to strategy also conflicted with early work on population ecology that tipped toward environmental determinism. By making the core strategy constructs invisible, the assumptions and theoretical focus of these alternative views assumed away the role of strategic management!

Rumelt's observations aligned more with work on evolutionary economics. Building on Schumpeter's conceptualization of competition as a process of creative destruction, Nelson and Winter (1974, 1982) showed that firms function in dynamic environments which evolve through the innovative capacity of entrepreneurs and the properties of a dynamic selection environment.

Uncertain environments provide opportunities. Yet, when environments are uncertain, entrepreneurial choices will differ contributing to variation in resource bundles, interconnections among resources, and resource conversion activities. It is these sources of heterogeneity that define the "strategic firm" Rumelt (1984: 135).

With this foundation, Lippman and Rumelt (1982) and Rumelt (1984) developed a theoretical model of rivalry under causal ambiguity where entrepreneurship produced resource heterogeneity. In contrast to a neoclassical approach where imitation yields convergence in efficiencies among firms, Rumelt (1984) and Lippman and Rumelt (1982) show that when irreducible uncertainty exists in the development of a new production function, *ex ante* bounded rationality contributes to differences among firms. This initial heterogeneity stems from ambiguity regarding resource investments to serve the uncertain context. In a complementary fashion, when development involves a nonrecoverable investment, rational actors will hesitate to imitate superior performing rivals. Under these conditions, the *ex post* bounded rationality of rivals helps to isolate the focal firm from imitation and contributes to ongoing heterogeneity.

The introduction of the isolating mechanism construct fundamentally changed the way scholars and managers thought about strategy and the factors explaining enduring advantage. The logic revealed that a combination of unobserved and observed factors contribute to sustained superior performance. In so doing, it underscored the notion that strategy is about non-priced alternatives and paved the way for new streams of research.

Surprisingly, many of the rich insights from work on isolating mechanisms are not fully absorbed by scholars or managers. Instead, scholars, as well as many strategic management textbooks, tend to identify 'barriers to imitation' as the primary sources protecting a firm's advantage and often ignore position-based isolating mechanisms (other than switching costs) and external sources of isolating mechanisms. This approach also overlooks the mixed evidence for mechanisms such as time compression diseconomies or asset accumulation. As a result, opportunities exist to take stock of what we know and what we do not know about isolating mechanisms and in turn, refine and advance the field's understanding of the factors enabling temporary and sustained advantage. As noted above, while many empirical studies have advanced our understanding of the conditions under which isolating mechanisms contribute to competitive heterogeneity, many questions remain under explored.

It would be inappropriate to stop here. The interaction of isolating mechanisms and uncertainty yields several implications for normative theory :

- Substantially improving a strategic position stems from *the recognition of a change in some underlying factor.*
- A central task in strategy is to discover how a firm's *unique resources can be redeployed in changing circumstances.*
- Isolating mechanisms are dynamic. Shocks or unexpected events *alter the nature of isolating mechanisms at work.*
- With powerful isolating mechanisms*, firms that make early commitments to what turns out to be defensible positions can be stunningly successful.*
- Despite uncertainty, *waiting (for more information) may result in entering too late. Someone else benefits from the isolating mechanism.*
  Rumelt (1984: 142)

While our attention predominately focused on uncertain imitability and isolating mechanisms, the normative implications provide a fuller view of Rumelt's foresight. Table 2 highlights research streams and scholarly work related to or spawned from the implications and Figure 1 provides a graphic illustration of work connected to Rumelt (1984).

In conclusion, Rumelt's ideas challenged the received view. His 1984 paper identified dramatically different explanations for enduring success and yielded a set of normative implications that framed a very sticky agenda for the strategy field. Not surprisingly, the implications remain foundational to the study of strategy and continue to inspire work today.

[Insert Table 2 and Figure 1 about here]

REFERENCES

Agarwal, R. and Helfat, C.E., 2009. Strategic renewal of organizations. *Organization science*, *20*: 281-293.

Ahuja, G. and Katila, R., 2004. Where do resources come from? The role of idiosyncratic situations. *Strategic management journal*, *25*: 887-907.

Alvarez, S.A. and Barney, J.B., 2007. Discovery and creation: Alternative theories of entrepreneurial action. *Strategic entrepreneurship journal*, *1*(1-2), pp.11-26.

Andrews, Kenneth Richmond, 1971, The concept of corporate strategy, Richard D. Irwin, Homewood.

Argyres N, Mahoney JT, Nickerson J. Strategic responses to shocks: Comparative adjustment costs, transaction costs, and opportunity costs. *Strategic Management Journal.* 2019 Mar;40(3):357-76.

Barney, J.B., 1989. Asset stocks and sustained competitive advantage: A comment. *Management science*, *35*: 1511-1513.

Barney, J., 1991. Firm resources and sustained competitive advantage. *Journal of management*, *17*: 99-120.

Bowman, E.H. and Hurry, D., 1993. Strategy through the option lens: An integrated view of resource investments and the incremental-choice process. *Academy of management review*, *18*: 760-782.

Brush, Thomas H., and Philip Bromiley. “What Does a Small Corporate Effect Mean? A Variance Components Simulation of Corporate and Business Effects.” *Strategic Management Journal* 18.10 (1997): 825–835.

Campbell BA, Coff R, Kryscynski D. Rethinking sustained competitive advantage from human capital. *Academy of Management Review*. 2012 Jul;37(3):376-95.

Caves, R.E. and Porter, M.E., 1977. From entry barriers to mobility barriers: Conjectural decisions and contrived deterrence to new competition. *The quarterly journal of economics*, pp.241-261.

Conner, K.R. and Prahalad, C.K., 1996. A resource-based theory of the firm: Knowledge versus opportunism. *Organization science*, *7*(5), pp.477-501.

Davis, J.P. and Aggarwal, V.A., 2020. Knowledge mobilization in the face of imitation: Microfoundations of knowledge aggregation and firm-level innovation. *Strategic Management Journal*, 41: 1983-2014.

Dierickx, I. and Cool, K., 1989. Asset stock accumulation and the sustainability of competitive advantage: Reply. *Management Science*, *35*(12), pp.1514-1514.

Dosi, G., 1982. Technological paradigms and technological trajectories: a suggested interpretation of the determinants and directions of technical change. *Research policy*, *11*(3), pp.147-162.

Dyer, J.H. and Singh, H., 1998. The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of management review*, *23*(4), pp.660-679.

Ghemawat, P., 1991. *Commitment*. Simon and Schuster.

Ghemawat, P. and Cassiman, B., 2007. Introduction to the special issue on strategic dynamics. *Management Science*, *53*(4), pp.529-536.

Gómez, J. and Maícas, J.P., 2011. Do switching costs mediate the relationship between entry timing and performance?. *Strategic Management Journal*, *32*(12), pp.1251-1269.

Grant, R.M., 1996. Toward a knowledge-based theory of the firm. *Strategic management journal*, *17*(S2), pp.109-122.

Hatch NW, Dyer JH. 20014. Human capital and learning as a source of sustainable competitive advantage. *Strategic Management Journal.* 25(12):1155-78.

Hawk A, Pacheco-De-Almeida G, Yeung B. 2013. Fast-mover advantages: Speed capabilities and entry into the emerging submarket of Atlantic basin LNG. *Strategic Management Journal*. 34(13):1531-50.

Hawk A, Pacheco-de-Almeida G. Time compression (dis) economies: An empirical analysis. Strategic Management Journal. 2018 Sep;39(9):2489-516.

Helfat, C.E., 1994a. Evolutionary trajectories in petroleum firm R&D. *Management science*, *40*: 1720-1747.

Helfat, C.E., 1994b. Firm-specificity in corporate applied R&D. *Organization Science*, *5*: 173-184.

Helfat CE, Raubitschek RS. 2000. Product sequencing: co-evolution of knowledge, capabilities and products. *Strategic Management Journal*, October–November Special Issue 21: 961–979.

Helfat, C.E. and Peteraf, M.A., 2003. The dynamic resource-based view: Capability lifecycles. *Strategic management journal*, *24*(10), pp.997-1010.

Henderson R, Cockburn I. 1994. Measuring competence? Exploring firm effects in pharmaceutical research. *Strategic Management Journal*.15:63-84.

Henry G. Grabowski H.G., Vernon, J.M., Thomas, L.G. 1978. Estimating the Effects of Regulation on Innovation: An International Comparative Analysis of the Pharmaceutical Industry. *Journal of Law and Economics*, 21:133-163.

Hoopes, D.G., Madsen, T.L. and Walker, G., 2003. Guest editors' introduction to the special issue: why is there a resource-based view? Toward a theory of competitive heterogeneity. *Strategic management journal*, *24*(10), pp.889-902.

Huff, J.O., Huff, A.S. and Thomas, H., 1992. Strategic renewal and the interaction of cumulative stress and inertia. *Strategic Management Journal*, *13*: 55-75.

Jovanovic, B. and MacDonald, G.M., 1994. The life cycle of a competitive industry. *Journal of Political Economy*, *102*(2), pp.322-347.

Kim M. 2013. Many roads lead to Rome: Implications of geographic scope as a source of isolating mechanisms. *Journal of International Business Studies*. 44(9):898-921.

Kim M. 2016. Geographic scope, isolating mechanisms, and value appropriation. *Strategic Management Journal*. 37(4):695-713.

King AW, Zeithaml CP. 2001. Competencies and firm performance: Examining the causal ambiguity paradox. *Strategic Management Journal.* 22(1):75-99.

Klepper, S. and Graddy, E., 1990. The evolution of new industries and the determinants of market structure. *The RAND Journal of Economics*, pp.27-44.

Knott AM. 2003. Persistent heterogeneity and sustainable innovation. *Strategic Management Journal.* 24(8):687-705.

Knott AM. 2003. Persistent heterogeneity and sustainable innovation. *Strategic Management Journal.* 24(8):687-705.

Knott AM, Bryce DJ, Posen HE. 2003. On the strategic accumulation of intangible assets. Organization Science. 14(2):192-207.

Knudsen T, Levinthal DA, Winter SG. 2014. Hidden but in plain sight: The role of scale adjustment in industry dynamics. *Strategic Management Journal.* 35(11):1569-84.

Kogut, B. and Zander, U., 1992. Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization science*, *3*(3), pp.383-397.

Kryscynski D, Coff R, Campbell B. 2021. Charting a path between firm-specific incentives and human capital-based competitive advantage. *Strategic Management Journal.* 42(2):386-412.

Lavie D. 2006. The competitive advantage of interconnected firms: An extension of the resource-based view. *Academy of Management Review.* 31(3):638-58.

Le Breton-Miller I, Miller D. 2015. The paradox of resource vulnerability: Considerations for organizational curatorship. *Strategic Management Journal.* 36(3):397-415.

Leiblein, M.J., 2003. The choice of organizational governance form and performance: Predictions from transaction cost, resource-based, and real options theories. *Journal of management*, *29*(6), pp.937-961.

Leiblein, M.J., Chen, J.S. and Posen, H.E., 2017. Resource allocation in strategic factor markets: A realistic real options approach to generating competitive advantage. *Journal of Management*, *43*(8), pp.2588-2608.

Leiblein, MJ., Reuer, JJ. and Zenger, T., 2018. What makes a decision strategic?. *Strategy Science*, *3*: 558-573.

Levinthal, D.A., 1997. Adaptation on rugged landscapes. *Management science*, *43*(7), pp.934-950.

Lenox, M.J., Rockart, S.F. and Lewin, A.Y., 2007. Interdependency, competition, and industry dynamics. *Management Science*, *53*(4), pp.599-615.

Li S, Madhok A, Plaschka G, Verma R. 2006. Supplier-switching inertia and competitive asymmetry: A demand-side perspective. *Decision Sciences*. 37(4):547-76.

Lieberman MB, Montgomery DB. 1988. First-mover advantages. *Strategic Management Journal*. 9(S1):41-58.

Lieberman, M.B. and Montgomery, D.B., 1998. First-mover (dis) advantages: retrospective and link with the resource-based view. *Strategic management journal*, *19*(12), pp.1111-1125.

Liebeskind, J.P., 1996. Knowledge, strategy, and the theory of the firm. *Strategic management journal*, *17*(S2), pp.93-107.

Lippman, SA., Rumelt, R.P. 1982. Uncertain imitability: An analysis of interfirm differences in efficiency under competition. *The bell journal of Economics*, pp.418-438.

Lippman, SA., Rumelt, RP. 2003a. The payments perspective: micro-foundations of resource analysis. *Strategic management journal*, *24*(10), pp.903-927.

Lippman, S.A. Rumelt, RP. 2003. A bargaining perspective on resource advantage. *Strategic management journal*, *24*(11), pp.1069-1086.

Madhok A, Li S, Priem RL. 2010. The resource-based view revisited: Comparative firm advantage, willingness-based isolating mechanisms and competitive heterogeneity. *European Management Review*. 7(2):91-100.

Madsen TL, Leiblein MJ. 2015. What factors affect the persistence of an innovation advantage?. *Journal of Management Studies*. 52(8):1097-127.

Madsen TL, Walker G. 2017. Competitive heterogeneity, cohorts, and persistent advantage. *Strategic Management Journal.* 2017 38(2):184-202.

Magliolo, J., Madsen, T.L. and Walker, G., 2020. Growing and shrinking. *Strategic Management Review*, *1*: pp.159-178.

Mahoney, JT, Pandian, JR., 1992. The resource-based view within the conversation of strategic management. *Strategic management journal, 13*(5), pp.363-380.

Maritan, C.A. and Alessandri, T.M., 2007. Capabilities, real options, and the resource allocation process. In *Real options theory*. Emerald Group Publishing Limited.

Maijoor S, Witteloostuijn AV. 1996. An empirical test of the resource-based theory: strategic regulation in the Dutch audit industry. *Strategic Management Journal.* 17(7):549-69.

March, J.G., 1991. Exploration and exploitation in organizational learning. *Organization science*, *2*: 71-87.

Miller, D. and Chen, M.J., 1994. Sources and consequences of competitive inertia: A study of the US airline industry. *Administrative science quarterly*, pp.1-23.

McGahan, AM., Porter, ME. 1997. How Much Does Industry Matter, Really? *Strategic Management Journal,* 18.S1: 15–30.

McGahan, AM., Porter ME. 2002. What Do We Know about Variance in Accounting Profitability? *Management Science,* 48.7: 834–851.

McGahan AM, Porter ME. 1999. The persistence of shocks to profitability. *Review of economics and statistics*. 81(1):143-53.

Minkes AL, Foxall GR. 1980. Entrepreneurship, strategy, and organization: Individual and organization in the behaviour of the firm. *Strategic Management Journal*, 1(4):295-301.

Oliver C. 1997. Sustainable competitive advantage: combining institutional and resource-based views. *Strategic Management Journal.* 18(9):697-713.

Pacheco-de-Almeida G, Zemsky P. 2007. The timing of resource development and sustainable competitive advantage. *Management Science*. 53(4):651-66.

Peteraf, M.A., 1993. The cornerstones of competitive advantage: a resource-based view. *Strategic management journal*, *14*: 179-191.

Reed R, DeFillippi RJ. 1990. Causal ambiguity, barriers to imitation, and sustainable competitive advantage. *Academy of management review.* 1990 Jan 1;15(1):88-102.

Rivkin JW. 2000. Imitation of complex strategies. *Management science*. 46(6):824-44.

Ruefli TW, Wiggins RR. 2003. Industry, corporate, and segment effects and business performance: A non-parametric approach. *Strategic Management Journal*. 24:861-79.

Rumelt, R. P. 1984. Towards a strategic theory of the firm. R. B. Lamb, ed. Competitive Strategic Management. Prentice-Hall, Englewood Cliffs, NJ.

Rumelt, RP. 1991. How Much Does Industry Matter?, *Strategic Management Journal*, 12: 167 185.

Rumelt, RP. 1995. Inertia and transformation. In C. A. Montgomery, ed., *Resource-based and Evolutionary Theories of the Firm*, pp. 101-132. Kluwer Academic Publishers: Norwell, MA.

Rumelt RP, Schendel D, Teece DJ, editors. 1995. *Fundamental issues in strategy: A research agenda*. Rutgers University Press.

Rumelt, RP., 2008. Strategy in a `structural break, *The McKinsey Quarterly*, December.

Rumelt, RP. 2011. *Good Strategy/Bad Strategy: The Difference and Why It Matters*, New York: Crown Business.

Saunders, CB., Thompson, JC. 1980. A Survey of the Current State of Business Policy Research, *Strategic Management Journal*, Vol. I: 119-130.

Shrapov, D. and MacAulay, S. C. 2022. Design as an Isolating Mechanisms for Capturing Value from Innovation: From Cloaks and Traps to Sabotage. *Academy of Management Review*, 47: 139-161.

Simon HA. 1945. Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization. Macmillan: New York.

Simonin, B.L., 1999. Ambiguity and the process of knowledge transfer in strategic alliances. *Strategic management journal*, *20*(7), pp.595-623.

Smit, H.T. and Trigeorgis, L., 2017. Strategic NPV: Real options and strategic games under different information structures. *Strategic Management Journal*, *38*: 2555-2578.

Srikanth K., Anand J., Stan M. 2021 The origins of time compression diseconomies. *Strategic Management Journal*. 42(9):1573-99.

Suarez FF, Lanzolla G. 2007. The role of environmental dynamics in building a first mover advantage theory. *Academy of Management Review*. 32(2):377-92.

Szulanski G. Exploring internal stickiness: Impediments to the transfer of best practice within the firm. Strategic management journal. 1996 Dec;17(S2):27-43.

Teece, D.J., 1986. Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. *Research policy*, *15*: 285-305.

Teece, D.J., Pisano, G. and Shuen, A., 1997. Dynamic capabilities and strategic management. *Strategic management journal*, *18*: 509-533.

Teece, D.J., 2006. Reflections on "profiting from innovation". *Research policy*, *35*(8), pp.1131-1146.

Tripsas, M. and Gavetti, G., 2000. Capabilities, cognition, and inertia: Evidence from digital imaging. *Strategic management journal*, *21*(10-11), pp.1147-1161.

Tripsas, M., 2009. Technology, identity, and inertia through the lens of "The Digital Photography Company". *Organization science*, *20*(2), pp.441-460.

Villalonga B. 2004. Intangible resources, Tobin's q, and sustainability of performance differences. *Journal of Economic Behavior & Organization*. 54(2):205-30.

Walker G, Madsen TL, Carini G. 2002. How does institutional change affect heterogeneity among firms? *Strategic Management Journal*. 23(2):89-104.

Waring GF. 1996. Industry differences in the persistence of firm-specific returns. The American Economic Review. 86(5):1253-65.

Wernerfelt, B., 1984. A resource-based view of the firm. *Strategic management journal*, *5*: 171-180.

Wernerfelt, B. and Karnani, A., 1987. Competitive strategy under uncertainty. *Strategic Management Journal*, *8*: 187-194.

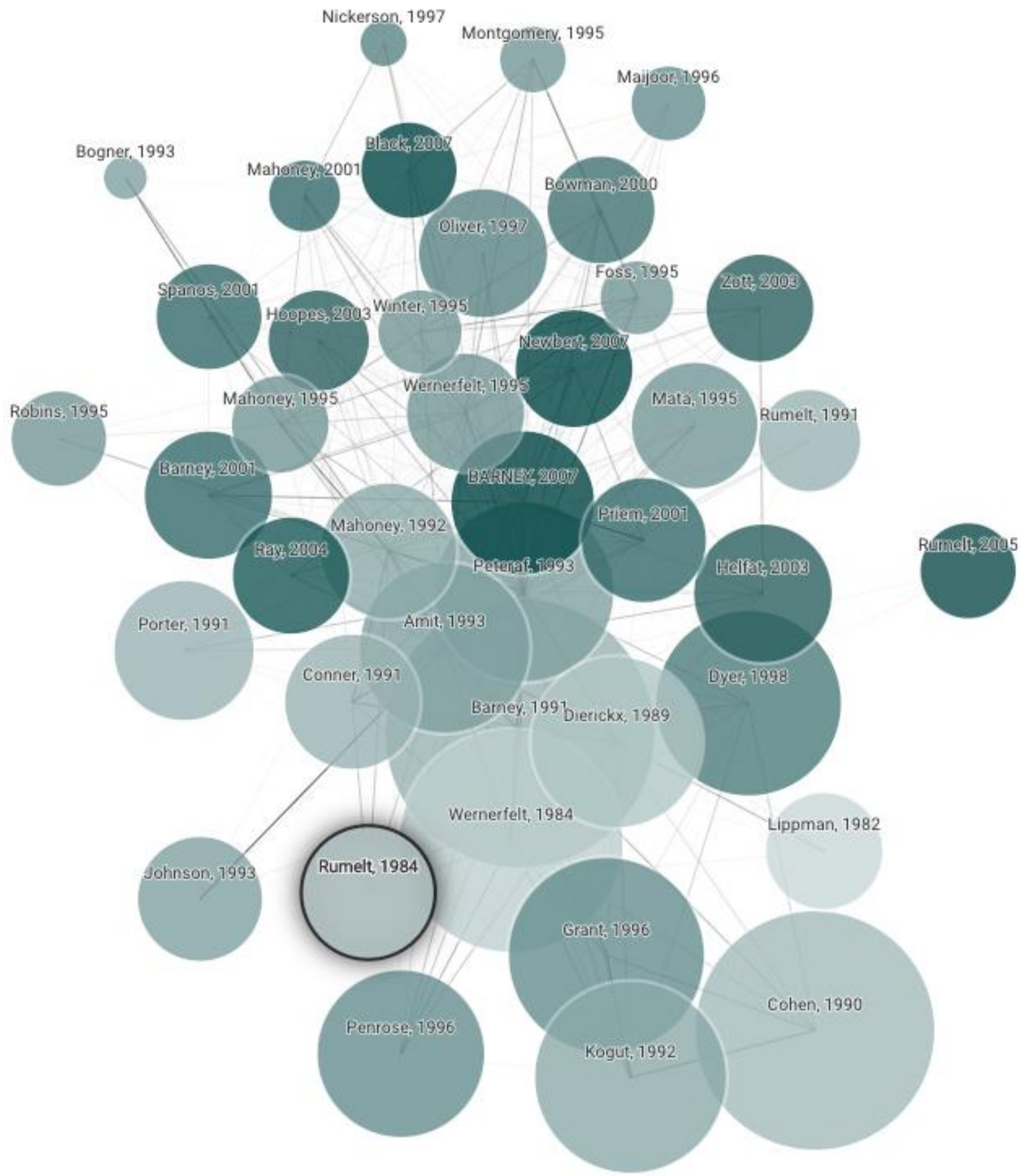
Wiggins RR, Ruefli TW. 2002. Sustained competitive advantage: Temporal dynamics and the incidence and persistence of superior economic performance. *Organization science.* 13(1):81-105.

Winter, S.G., 1984. Schumpeterian competition in alternative technological regimes. *Journal of Economic Behavior & Organization*, *5*(3-4), pp.287-320.

Winston, C. 1998. U.S. industry adjustment to economic deregulation. *Journal of Economic Perspectives*, 12: 89–110.

Zollo, M. and Winter, S.G., 2002. Deliberate learning and the evolution of dynamic capabilities. *Organization science*, *13*: 339-351.

Figure 1. Articles Connected to Rumelt 1984.[1,2]



1. Source: https://www.connectedpapers.com/main/3f0052fc26f1a3a18429ba0dd55d3ff1944c9656/Towards-a-Strategic-Theory-of-the-Firm/graph, date of access: March 1, 2022.
2. Key: each note represents an academic article related to the origin paper, Rumelt (1984). Node size is the number of citations; node color reflects the publishing year and ranges from light green (1982) to dark green (2007); similar papers have strong connecting lines and cluster together.