

**Path Dependence, VRIN Resource Endowments, and Managers:
Towards an Integration of Resource-Based Theory and Upper Echelons Theory**

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INTRODUCTION

According to the resource-based theory (RBT), a firm achieves sustainable competitive advantage based on valuable, rare, inimitable and non-substitutable resource bundles or endowments (Barney, 1991; Rumelt, 1985; Wernerfelt, 1984). Having access to these resources allows the firm to achieve competitive superiority in the marketplace and enables it to earn super-normal profits (Dierickx & Cool, 1989). Barney (1991) notes that firm-level resource endowments take time to develop and have associated path dependencies. “Indeed, ... not only are firms intrinsically historical and social entities, but that their ability to acquire and exploit some resources depends upon their place in time and space... performance of a firm does not depend simply on the industry structure within which a firm finds itself at a particular point in time, but also on the path a firm followed through history to arrive where it is” (Barney, 1991: 107-108). Even though the early RBT researchers recognized it, the path-dependent nature of evolution of resource endowments has not been studied. Instead, the ever growing body of research in this stream has tended to adopt a rather static or “snap shot” view of the RBT, considering VRIN resource endowments as being either already available to the firm and then accounting for the impact such resources have in providing the firm with competitive advantage. This approach has resulted in researchers critiquing RBT as being tautological and impossible to disprove (Priem and Butler, 2001a; Priem and Butler, 2001b).

In this paper, we contend that the next stage in development of RBT must focus the attention of researchers back to its hitherto ignored dynamic and “action-oriented” aspects. By doing so, researchers will take the theory to the next stage of its evaluation. Specifically, in the paper we discuss how path dependencies associated with resource endowments come to play a critical role in leading some resource bundles (but not others) acquire VRIN characteristics and the critical role the firm’s top management plays in this regard. In doing so, we suggest that time is ripe for a synthesis of two popular theories of the firm: the RBT with the upper echelons view.

PATH DEPENDENCE

Defining Path Dependence

In assessing the economic action by firms and institutions, the idea of path dependence has been offered as a radically different theoretical alternative to conventional neo-classical economics (Liebowitz and Margolis, 1995). While it can be simply stated as “history matters”, various authors have defined path dependence in closely related, even if distinct, ways as:

“...the causal relevance of preceding stages in a temporal sequence”

(Peirson, 1994: 252);

“...the set of dynamic processes where small events have long-lasting consequences that economic action at each moment can modify yet only to a limited extent” (Antonelli, 1997: 643-644);

“...the dependence of economic outcomes on the path of previous outcomes, rather than simply on current conditions” (Puffert, 2003:1);

“...those historical sequences in which contingent events set into motion institutional patterns or event chains that have deterministic properties” (Mahoney, 2000: 507);

“...a system... in which outcomes are related stochastically to initial conditions, and the particular outcome that obtains in any given ‘run’ of the system depends on the choices or outcomes of *intermediate events* between the initial conditions and the outcome” (Goldstone, 1998: 834);
or

“...includes features such as sustained persistency and lock-in” (Sydow, Schreyogg and Koch, 2009: 4).

David (1985) offers a more technical definition by contrasting “path dependent” processes with “path independent” processes. While path independent processes converge to a globally stable equilibrium configuration and are ergodic (i.e. have a capacity to shake free from the influence of their past states), path dependent or *non-ergodic* processes cannot do so and the history of their previous states does matter. David provides the following two contrasting definitions for path dependence:

“*A negative definition:* Processes that are non-ergodic, and thus unable to shake free of their history, are said to yield path dependent outcomes.

A positive definition: A path dependent stochastic process is one whose asymptotic distribution evolves as a consequence (function of) the process’s own history” (1985: 5).

Basically, both these definitions suggest that a path dependent process may not converge to a globally stable equilibrium. Depending on how the process evolves, an innumerable number of end-states are theoretically possible and equally likely.

Path Dependence Characteristics

Researchers (e.g. Ackermann, 2001; Arthur, 1994; Ebbinghaus, 2005) suggest that a path dependent model has the following characteristics: (i) a single set of starting conditions with a fixed probability of occurrence; (ii) any one of multiple, equally likely equilibria or end states; and (iii) self-reinforcing intermediate processes that lead to movement towards an end-state, possibly causing irreversibility, increasing returns and ultimate lock-in, perhaps on an inefficient outcome. Based on this, Liebowitz and Margolis (1995) identify three distinct forms of path dependence. First-degree path dependence occurs when the process begins with specified initial conditions but does not end up on an inefficient end-state. Second-degree path dependence also begins with the specified initial conditions but leads to an outcome that is inefficient (regrettable, with hindsight) and costly or impossible to change. Finally, third-degree path dependence is when the initial conditions are as specified and leading to an inefficient outcome that, nevertheless, may be remedied without incurring significant cost.

Under path dependence, the more a current action is adopted, the greater its benefits (i.e. “increasing returns”). This is how the situation comes to be adopted even if, theoretically, a radically different course of action would have yielded a far higher return. Over time, the system achieves a “lock-in” with the current course of action because too many people have adopted it (Page, 2006). In the case of firm resources and capabilities, the impact of path dependence is critical to understand. The resources a firm begins with

at inception and develops or nurtures over time may not lead to the best combination (i.e. a globally stable equilibrium) of resource endowments for achieving competitive advantage. What critically matters is the historical trajectory traced by these resource endowments over time. Further, even if two competing firms possess nearly the same resource bundles to begin with, because of their unique histories the end-state resource endowments may markedly differ, thus providing the firms with varying levels of competitive advantage.

NEW VENTURE CREATION, ENTREPRENEURIAL ACTION AND EMERGENCE OF RESOURCE ENDOWMENTS

Resource-Based Theory of the Firm

In the last two decades, resource-based theory (RBT) of the firm (Barney, 1986, 1991, 2001; Rumelt, 1984; Wernerfelt, 1984) has been recognized as a powerful framework to explain how firms achieve sustainable competitive advantage through possession of unique resources. With its origins in the seminal works of Selznick (1957) and Penrose (1959), RBT posits that strategic resource bundles or endowments (Wernerfelt, 1984, 1995) owned or controlled by the firm (Barney, 1991) form the basis of its competitive advantage, provided these resource endowments are heterogeneous (unique), sticky (immobile), only imperfectly imitable, imperfectly substitutable (Dierickx & Cool, 1989; Peteraf, 1993; Silverman, 1999) - collectively termed as VRIN or valuable, rare, inimitable, and non-substitutable (Barney, 1991).

According to Barney, firm resources include “all assets, capabilities, organizational processes, firm attributes, information, knowledge etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency

and effectiveness” (1991: 101). While this definition is sufficiently broad-based to include within its ambit a number of organizational attributes all of which can qualify as firm resources, it is important to note that resources do not arise in isolation but rather combine as bundles or endowments. Firms balance their efforts at acquiring strategic resource endowments in a ‘strategic factor market’ (Barney, 1986) with creation of a ‘privileged asset position’ (Dierickx & Cool, 1989) in-house, thus making themselves distinct from their competitors. Competitors find it difficult to imitate/replicate VRIN resource endowments because of time compression diseconomies, asset mass inefficiencies, inter-connectedness of asset stocks, asset erosion, and causal ambiguity associated with their development (Dierickx & Cool, 1989). In effect, the incumbent firm is able to build certain ‘isolating mechanisms’ (Rumelt, 1984) around itself (akin to mobility barriers) that keeps competitors at bay and allows it to earn super normal profits.

Entrepreneurial Action and Creation of Resource Endowments

While possession of unique resource bundles allows a firm to achieve sustainable competitive advantage, a question that remains unanswered is how does a firm achieve this pre-eminent position? Because every firm must begin its existence as an entrepreneurial venture, it is reasonable to assume that action taken by the entrepreneur at the early stages of the firm’s life-cycle, followed by the path dependent nature of such actions, must have led the firm to its position of competitive advantage. In fact, resource bundles develop within a new venture as the outcome of entrepreneurial action, as the entrepreneur identifies and goes about exploiting an opportunity at hand (Galunic and Rodan, 1998; Matthews, 2002).

As a field of economic activity, entrepreneurship has been defined as the nexus of enterprising individuals and valuable opportunities (Eckhardt and Shane, 2003; Shane and Venkataraman, 2000; Venkataraman, 1997). Entrepreneurs work with a number of constraints: they must identify, capture and exploit a fleeting opportunity, and be able to do this mostly with limited resources at their disposal. In effect, entrepreneurship turns out to be a disequilibrating process of allocating limited resources to meet emerging needs, and optimization of the process through exercising creativity (Eckhardt and Shane, 2003). In considering the linkages between entrepreneurship and RBT, Alvarez and Busenitz (2001) suggest that cognitive ability of manager-entrepreneurs plays a critical role assembling of resources for a new venture that can take advantage of an emerging opportunity. In sourcing resource combinations and setting a path and direction for building resource endowments, entrepreneurs must strike a delicate balance between current versus future needs of the firm. As resource acquisition and utilization processes within the new firm get constituted and come to be practiced, it becomes increasingly difficult to substantially modify or change the contours of these processes because of irreversible commitments (Ghemawat, 1986), rules, routines and incentive structures that are now firmly in place (Heffernan, 2003). It is possible that some entrepreneurs accomplish this task more effectively than others. Those that are able to achieve such an effective balance set in motion path dependent processes that lead the firm towards future lock-in, but towards development of appropriate resource bundles to achieve future sustainable competitive advantage.

In contrast, entrepreneurs that have failed to achieve such a balance will have put in place associated path dependent processes that may meet immediate requirements of

resources but that lock the firm into a resource position scenario that is clearly inadequate to meet the firm's future needs for sustainable competitive advantage. And yet, once such path dependent processes are put in place, they acquire a life of their own and are difficult, if not impossible, to change. Therefore, we suggest:

Proposition 1a: The basis of a firm's sustainable competitive advantage comes from the salient entrepreneurial actions initiated with regard to building resource endowments at the firm's inception, and the subsequent path dependent nature of these actions.

Proposition 1b: Entrepreneurs who are able to more effectively project the new venture's immediate versus long-term resource needs and creatively manage the process of building resource endowments under path dependence lead the firm towards future sustainable competitive advantage.

The path dependent process for building resource bundles for sustainable competitive advantage or otherwise commences with entrepreneurial action during the inception of the new venture. But this process is further affected through managerial action during the subsequent stages of the firm's life cycle. This happens in different ways.

FIRM EVOLUTION, MANAGERIAL ACTION, AND

FURTHER DEVELOPMENT OF RESOURCE ENDOWMENTS

Upper Echelons Theory

As the new venture progresses and grows, usually there arises an expansion in the firm's top management team (TMT), with induction of a group of professional managers. Sometimes, the lead entrepreneur may even relinquish charge and hand over the reins of

managing the organization in the hands of a newly recruited TMT. The upper echelons theory (Hambrick and Mason, 1984) suggests that a firm is a reflection of its top managers; the TMT (including the CEO) exercise a dominant influence on the firm's strategy and outcomes. By drawing upon their knowledge, experience and values, executives act based on their personalized interpretation and judgment of the strategic situations they face (Hambrick, 2007). As the TMT goes about exercising strategic choice and managing the firm, their executive decisions lead to path dependent outcomes. Specifically, the firm's managers bring about a transformation in the resource endowments, and through this, on the firm's sustainable competitive advantage position. They accomplish this in two different ways.

Managers as Sources of Superior Rents

There is a growing body of literature in the RBT tradition that identifies managers as a critical VRIN resource within the firm. Castanias and Helfat (1991) have elaborated on the role the firm's top management play in generating firm rents. Because competent senior managers come with superior levels of generic, industry-related, and firm-specific rare skills, they are able to generate both Ricardian (scarcity) rents and quasi (difference in values between an asset's first best use and next best use) rents for the firm. For example, in an industry at a specific point in time if only one competing firm amongst several has available to itself the services of a highly talented CEO with some very rare skills, knowledge, leadership talent and charisma, then following from RBT that firm will have a unique source of competitive advantage that is not available to its competitors.

The processes involved in recruiting, training, and placing the firm's TMT on assignments that have the greatest fit with their talent and experience background are not

stand-alone outcomes but have associated path dependencies. It is reasonable to expect that a firm that commences its operations with a highly talented pool of TMT will have a head start over rivals that did not have access to such managerial talent. Also, during periods of strategic change within the firm, we can expect that an earlier sequence of path dependent TMT processes will be dissolved and a new sequence of path dependent processes will be put in place. At this time too, the managerial talent and quality of the TMT that is ushering in such strategic change will have an important bearing on the competitive advantage that will result. Therefore, we suggest:

Proposition 2a: A firm having access to high quality managerial talent during the early stages of its life-cycle will display higher subsequent performance compared to a rival that did not have access to such talent.

Proposition 2b: A firm having access to high quality managerial talent during a period of episodic strategic change will display higher subsequent performance compared to a rival that did not have access to such talent.

Managers as Creators of Superior Rents

Penrose (1959) had noted that what is done with administration of strategic resources is as important as the resources themselves. She classified resources as falling into two categories – productive versus administrative. While productive resources constitute the strategic resources themselves, administrative resources signify the quality of administrative or managerial decisions that are made connected with these resources, which ultimately leads to resource performance (Hansen, Perry & Reese, 2004). Similarly, in his ten-year retrospective on the RBT Wernerfelt identifies the “governance

structure within which a firm can leverage its resources” as being a critical missing piece of the RBV (1995: 172).

Following from the upper echelons theory, executive managers play the role of facilitators and creators of superior rent based on their actions towards developing other VRIN resource endowments. Because members of the TMT are greatly influenced by their own set of experiences, values, biases, and personality characteristics, this leads them to view and interpret emerging strategic situations differently. Most environmental, institutional and organizational issues executives need to consider in their decision-making are not only complex but also characterized by a lack of full information. This lack of full information, together with the boundedly rational nature of managerial work, makes it necessary for executives to fall back on their own experiences in assessing an external situation and making the best decisions they can under the circumstances. In effect, managerial discretion comes into play as executives make decisions with complex and partial information (Hambrick and Abrahamson, 1995; Hambrick and Finkelstein, 1987).

Castanias and Helfat note that “managerial discretion may be an important ingredient in the production of rents” (1991: 157). It is not difficult to see that the discretionary role of managers has an impact on the creation of VRIN resource endowments. Even though strategic resource endowments form the basis of the firm’s sustainable competitive advantage *at any point in time*, what perhaps matters even more are the path dependencies that such resource bundles trace *over time*. Coff emphasizes this when he remarks, “...if... the firm is a unique bundle of resources, it stands to reason that we must define the firm to highlight what holds the bundle together” (1999: 120).

We suggest that this critical role is played by the firm's TMT. The firm's managers need to synchronize their power of discretion with the path dependent nature of the emergent process of development of resource bundles. Managers that do so will lead the firm in coming up with resource endowments that are more apt for developing and maintaining sustainable competitive advantage. At the same time, if managers do not have the motivation and energy to direct such efforts or if they are misdirected, the firm's resources will fail to generate rents (Castanias and Helfat, 2001). Therefore, we suggest:

Proposition 3: A firm whose managers exercise discretion in building resource endowments under emerging internal and external changes will perform better than rival firms whose managers do not do so.

MANAGERS AND PATH DEPENDENCE OF THEIR ACTIONS:

RECIPROCAL INFLUENCES

As noted earlier, the principal characteristics of path dependence include: (i) multiple equilibria, even if the starting conditions were the same with same probabilities; (ii) self-reinforcing processes with increasing returns; (iii) lock-in; and (iv) potential for reinforcing inefficient paths (Ebbinghaus, 2005). In the context of evolution of resource endowments and the ways by which managers influence this process, these characteristics have important ramifications. First, action initiated on resource acquisition, allocation, revamping and addition by managers over time may lead to differences in outcomes in different firms, even if these firms happen to be in the same industry, are rivals, and/or were set up with similar initial resource configurations. Second, given the self-reinforcing nature of these processes, it will most likely be the case that after an elapsed time the firm's leadership will come to accept the resource endowments that have so far emerged.

They will likely have little inclination to radically change these. In fact, use of available resource endowments by a group of users will lead others in the firm to adopt them too. Thus, return on the use of such resource endowments will increase over time. Third, resource endowments will come to demonstrate lock-in. The sunk costs of the managers' efforts at developing resource endowments will preclude them from switching over to a radically different/alternate path for developing new resources. Finally, it is likely that resource endowments and their utilization might lead firms to actually adopt inefficient paths in their attempt to build sustainable competitive advantage.

These are the potential negative influences of path dependence on resource endowments. Yet, it is quite possible that an alternate positive spiral can be set in motion by the TMT, one that leads firms to build resource endowments fulfilling the VRIN characteristics. This will come about provided managers exercise care in using the catalytic effects of path dependence in a positive direction. Carpenter, Geletkanycz and Sanders (2005) suggest that in making organizational decisions, managers are guided not just by the past events but also their goals and aspirations. If managers engage in introspection and careful continuous assessment of the likely implications of their past decisions, they will be able to overcome some of the debilitating influence of path dependence associated with resource endowments. Therefore, going forward we suggest that the essentially reciprocal nature of the influence of managers and the associated path dependence of their actions in building resource endowments should become a key focus area for future RBT research. As this happens, we expect to see closer integration of the two currently dominant theories in strategic management – RBT and Upper Echelons Theory. To conclude, we suggest that the next generation of RBT researchers must go

beyond studying and assessing the cross-sectional elements of the theory, i.e. the impact or otherwise of resources and capabilities on sustainable competitive advantage. They must begin to consider the dynamic, processual, path-dependent aspects of the phenomenon by engaging in rich theory development as well as incorporating innovative methods of longitudinal design and modeling in their empirical assessments.

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