

A Scientific Critique of the Resource-Based View (RBV) in Strategy Theory, with Competence-Based Remedies for the RBV's Conceptual Deficiencies and Logic Problems

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ABSTRACT

Part I of this paper applies the principles of the philosophy of science and the derived scientific method to analyze the foundational concepts and core proposition of the Resource-Based View (RBV) as popularized by Barney (1986, 1991, 1997). This analysis identifies seven fundamental conceptual deficiencies and logic problems in Barney's conceptualization of "strategically valuable resources" and in Barney's VRIO framework for identifying strategically valuable resources that can be sources of sustained competitive advantage. Three problems -- the Value Conundrum, the Tautology Problem in the Identification of Resources, and the Absence of a Chain of Causality -- relate to the RBV's and VRIO's failure to provide an adequate conceptual basis for identifying strategically valuable resources. The Uniqueness Dilemma, the Cognitive Impossibility Dilemma, and an Asymmetry in Assumptions about Resource Factor Markets result in an inability of the VRIO framework to support identification of resources that can be sources of sustained competitive advantage. More fundamentally, the core proposition of the RBV -- that resources that are strategically valuable, rare, inimitable, and organizationally embedded are sources of sustainable competitive advantage -- is argued to result directly in the Epistemological Impossibility Problem that precludes use of the scientific method in RBV research. This paper argues that until these conceptual deficiencies and logic problems are recognized and remedied, the RBV -- in spite of its current popularity -- is and will remain theoretically sterile and incapable of contributing in any systematic way to the development of strategy theory.

Part II of this paper then suggests how foundational concepts developed within the competence perspective on strategy provide essential remedies for the identified deficiencies and problems in the RBV -- and thereby provide a more conceptually adequate basis for representing the nature of firms in the scientific study of their interactions and competitive outcomes.

Key Words: Philosophy of science, Resource-Based View (RBV), resources, competitive advantage, competence perspective, strategy theory, strategic logic.

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INTRODUCTION

In the late 1980s and early 1990s, the publication of papers by Wernerfelt (1986), Barney (1986, 1991), Amit and Schoemaker (1993), and others building on the ideas of Penrose (1956) initiated a new perspective in strategy theory that has subsequently come to be known as the Resource-Based View (RBV). The defining characteristics of the RBV are (i) its focus on the resource endowments of firms as the basis of firm heterogeneity, (ii) its claim that differential performance among firms can be explained by differences in their resource endowments, and (iii) its resulting suggestion that building up stocks of “strategically valuable” resources is the key to achieving competitive success and the generation of economic profits (rents).

By refocusing the strategy field on the important influences of firm heterogeneity on competitive outcomes, the RBV provided an important counterbalance to a nearly exclusive emphasis in two decades of prior strategy theorizing on the structural analysis of industries and the role of firms’ differing industry positions as determinants of sustained profitability. For their contribution in urging an important expansion of the conceptual lens through which strategy theory appraises firms, competition, and performance, the proponents of the RBV deserve considerable credit.

In the 1990s and subsequently, the RBV has become widely invoked in strategy research, as well as in other fields like marketing, human resources, and operations that address strategic competitive issues. Indeed, at least in North America, the RBV has become the most widely invoked perspective on strategic issues in research published in major management and related journals. In addition, for reasons that are not actually explained in the RBV literature, the set of ideas that compose the RBV is occasionally even being referred to as “Resource-Based Theory” (RBT).

By contrast, this paper argues (in Part I) that in spite of the current popularity of the RBV and the success of various promoters of the RBV in propagating the RBV into management journals and academic conferences, the RBV framework put forward by Barney (1991, 1997) suffers from fundamental conceptual deficiencies and logic problems and is far from having a defensible claim to being a strategy or management theory. This paper applies the principles of the scientific method to analyze the conceptual foundations and core proposition of the RBV as popularized by Barney (1986, 1991, 1997). This analysis suggests that Barney’s basic RBV framework suffers from seven fundamental conceptual deficiencies and logic problems that, unless remedied, render the RBV conceptually and theoretically incapable of contributing in any systematic, scientific way to the development of strategy and management theory.

The critical analysis undertaken in this paper first identifies three conceptual deficiencies and logic problems -- the Value Conundrum, the Tautology Problem in the Identification of Resources, and the Absence of a Chain of Causality – that render the RBV incapable of identifying “strategically valuable resources” in any systematic way. Further analysis then suggests that the Uniqueness Dilemma, The Cognitive Impossibility Dilemma, and an Asymmetry in Assumptions about Resource Factor Markets render Barney’s (1991, 1997) VRIO framework incapable of actually identifying which strategically valuable resources might also become sources of sustained competitive advantage. Finally, the Epistemological Impossibility Problem in the RBV’s core proposition is argued to preclude the use of the scientific method in researching and validating the RBV’s claims.

Although some researchers (e.g., Conner and Prahalad 1996) have recognized one or more of these deficiencies and criticized the conceptual foundations of the RBV accordingly, major proponents of the RBV have been remarkably silent and occasionally evasive in responding to fundamental conceptual and theoretical criticism. As a result, the fundamental

deficiencies in the RBV identified here and elsewhere remain largely unaddressed in any adequate sense by many researchers invoking Barney's RBV framework even today. Unless remedied, these conceptual deficiencies assure that the focus on resources advocated by the RBV can at most only be a *view* within -- but by no means an adequate, defensible, and useful *theory* of -- strategy and management.

Part II of this paper suggests how the foundational concepts of the competence perspective (Sanchez, Heene, and Thomas 1996; Sanchez and Heene 1997, 2004) provide essential remedies for the fundamental conceptual deficiencies and logic problems of the RBV identified in the first part of this paper. In effect, this paper argues that fundamental competence concepts derived from its explicitly *dynamic, systemic, cognitive, and holistic perspective* on strategy and management theorizing provide the essential conceptual elements and logical structure for scientific theory building that are missing from the RBV. By elaborating how the concepts that compose competence theory remedy the conceptual deficiencies and logic problems of the RBV, this paper also intends to clarify that the RBV focus on "resources" overlooks an essential set of interrelated conceptual elements needed to represent and theorize about the nature of firms, their processes for creating value, and their competitive interactions. Further, the analysis in this paper seeks to establish (i) that, far from being equivalent perspectives as suggested by some writers, the competence perspective and the RBV are quite distinct in the scope, clarity, conceptual adequacy, and logical consistency of their foundational concepts, and (ii) that the RBV offers only a *view* -- not a theory -- that occupies a definitively subsidiary position within the hierarchy of essential concepts and theoretically defensible propositions about strategy and management that have been proposed by the competence perspective.

PART I

THE RESOURCE-BASED VIEW (RBV): BASIC CONCEPTUALIZATIONS AND CORE PROPOSITION

The essence of the RBV is captured in the notions (i) that firms are heterogeneous in their resource endowments and (ii) that these differences in resource endowments result in, and therefore can explain, differences in firm performance.

Barney (1986, 1991) is widely regarded and cited as providing the basic conceptual and analytic framework on which the RBV's notion of resources is founded. In addition, the "VRIO" framework popularized by Barney (1991, 1997) is widely accepted within the RBV as providing the basis for understanding which kinds of resources can also be sources of competitive advantage that result in superior firm performance. Although a large number of papers in strategy and related management fields invoke the RBV and undertake research founded on RBV concepts and reasoning, Barney's notions about resources and their ability to be sources of sustained competitive advantage remain the most widely invoked concepts within the RBV. Thus, this analysis of the RBV focuses on the ideas and analyses developed in Barney's (1986, 1991, 1997) foundational RBV publications.

The essential features of Barney's conceptualization of resources and the VRIO framework for identifying the kinds of resources that can be sources of sustained competitive advantage are analyzed in detail in following sections, but can be summarized here as follows:

(i) A *resource* is a "firm attribute" that is strategically valuable because it enables a firm to undertake actions in its product markets that improve the firm's efficiency and effectiveness and thereby enable the firm to charge profitable prices for its products.¹ Thus, in the RBV all resources are by definition strategically valuable, and any firm attribute that does not meet the above condition would not be strategically valuable and thus is not considered a resource.

(ii) To be a source of sustained competitive advantage, a resource that is (necessarily) strategically valuable must also be *rare* – that is, the resource must be scarce and thus not readily available to other firms.

(iii) To be a source of sustained competitive advantage, a strategically valuable resource must also be *imperfectly imitable* – that is, other firms must not already possess "strategically equivalent" resources, be able to create such resources through their own internal development, or be able to acquire such resources by transacting in resource factor markets.²

(iv) To be a source of sustained competitive advantage, a strategically valuable resource must be *organizationally embedded* – that is, the resources must be embedded in an organization in ways that enable them to realize their strategic value *and* that thereby make strategically valuable resources imperfectly mobile.

Underlying the argument that a (strategically valuable) resource must be rare, imperfectly imitable, and organizationally embedded to be a source of sustained competitive

¹ In the following discussion, the term *strategic value* (or *strategically valuable*) is used to refer to the value that a firm can create because of its ability to compete efficiently, effectively, and profitably in its product markets.

² Barney's (1991: p.111) original "VRIN" framework held that a resource had to be "nonsubstitutable" to be a source of competitive advantage – i.e., "there must be no strategically equivalent valuable resources" that "can be exploited separately to implement the same strategies [as a successful firm]." However, the criterion of nonsubstitutability has been replaced by the criterion of organizational embeddedness as the fourth element in the VRIO framework (Barney 1997), perhaps because the notion of nonsubstitutability was eventually realized to be subsumed conceptually in the criterion of imperfect imitability,

advantage is Barney's (1986, 1991) representation of resource "factor markets" as "imperfect." In essence, Barney argues that if firms seek to replicate a successful firm's competitive advantages by transacting in resource factor markets to emulate the successful firm's resources, they will not be able to do so because resource factor markets will not provide such resources. Resource factor markets will not provide such resources because *by definition* a rare resource will not be widely available, an imperfectly imitable resource cannot be replicated (functionally if not exactly) in resource factor markets, and organizationally embedded resources will be immobile and thus not available in resource factor markets. To the extent that these posited sources of resource factor market imperfection -- which is more precisely a *market incompleteness* (see footnote below) -- prevent other firms from replicating a successful firm's resource base, its competitive advantages will be *sustained*.³

Given these VRIO conceptualizations about strategically valuable resources and the conditions under which they can become sources of sustained competitive advantage for a firm, the RBV's core proposition for resource-base strategizing may be stated as follows:

A firm that can put in place an endowment of strategically valuable resources that also meet the criteria of rarity, imperfect imitability, and organizational embeddedness will enjoy a sustained competitive advantage in its product markets that will enable the firm to earn economic profits (rents) by charging profitable prices on a sustained basis (at least over some time horizon) because competing firms will not be able to imitate the firm's profitable actions. Competing firms will not be able to imitate the firm's profitable actions because they will lack a similar set of organizationally embedded resources, will not be able to acquire similar resources in resource factor markets, and will not be able to replicate the firm's strategically valuable resources through their own development efforts (at least within some time horizon).

³ In financial economics (the study of asset markets), an ideal asset market is characterized as perfect, efficient, and complete. A market is *perfect* when no market participants have enough market power to directly influence asset prices, and *imperfect* when one or more participants have enough market power to influence asset prices. A market is *efficient* when all available information about an asset is available to all investors and is therefore reflected in the market price of an asset, and *inefficient* when information about an asset's value is unevenly distributed among market participants. A market is *complete* when a full spectrum of assets (defined by their risk and market-determined return characteristics) is available in an asset market, and *incomplete* when there are gaps or omissions in the asset risk-return types available in the market. Clearly, the characterization of resource factor markets advanced by Barney and other RBV writers relates to the *incompleteness* of resource factor markets, not to their "imperfection." To maintain consistency with RBV terminology, however, the term "imperfect" (in quotations) will be used in this discussion, but the reader should understand (and will occasionally be reminded) that the RBV's characterization of resource factor markets actually refers to their supposed incompleteness, not to their "imperfection."

THE PRINCIPLES OF THE SCIENTIFIC METHOD AS THE BASIS FOR THEORETICAL CRITICISM

The scientific method is the accepted basis for building and testing theory in the academic community and much of the world beyond. In this section we draw on the philosophy of science (Popper 2004) to identify the essential features of the scientific method for theory building and testing.

The scientific approach to theorizing begins with the *description* of some phenomenon of interest, seeks to construct credible *explanations* of described phenomena, and aspires eventually to enable *prediction* about such phenomena. We next elaborate the fundamental elements of the scientific method that enable this progression from description to explanation and prediction and that will be used in subsequent sections of this paper to analyze and critique the foundational concepts and core proposition of the RBV.

The first steps in the scientific method are to identify and describe some *phenomenon* to be studied and then to identify the *primitive entities* that are thought to cause or influence the phenomenon. Some primitive entities will be *intrinsic factors* thought to directly cause or contribute to the phenomenon, while other primitive entities may be *contextual factors* (environmental variables) that influence the phenomenon. Identification of both kinds of primitive entities in effect define a *boundary* that delimits the phenomena of interest and any posited primitive entities thought to cause or influence the phenomenon from the rest of the world that is assumed, at least in the first instance, not to have significant involvement in or influence on the phenomena of interest (see **Figure 1**). Once the *boundary* delimiting the phenomena of interest and primitive entities is established, the primitive entities must be characterized. For this purpose, a *systematic description* of the primitive entities thought to cause or influence the phenomenon must be undertaken. To be systematic, the descriptions of primitive entities must provide a clear *conceptual basis for further characterizing and analyzing* the origins and nature of the phenomena of interest. To enable such analysis, a systematic description must *characterize* (or *represent*) the primitive entities by clearly specifying the *functional or behavioral properties* of each primitive entity.

<<<<<<<<<<←----- INSERT **Figure 1** about here ----->>>>>>>>>>

The specifications of functional or behavioral properties of primitive entities must be sufficiently clear and conceptually adequate to enable the next steps in composing a scientific theory:

- (i) The specified functional or behavioral properties must make it possible to distinguish the different kinds of primitive entities thought to cause, contribute to, or influence the phenomena of interest in their distinctive ways.
- (ii) The specified properties must provide an adequate basis for clarifying the specific ways in which each primitive entity causes, contributes to, or influences the phenomena of interest.
- (iii) The specified properties of the primitive entities must enable the logical derivation of hypotheses as to the possible interactions between and resulting cause-and-effect relationships among the primitive entities that enable them to create, contribute to, or influence the phenomena of interest.
- (iv) The specified properties of the primitive entities must enable identification of observable entities in the “real world” (constructs) that have such properties, so that hypothesized cause-and-effect relationships can be tested empirically.

In effect, a system of description that is able to support a scientific approach to theory building must lead to characterizations of primitive entities that can meet an essential

requirement of *conceptual and logical adequacy*. The system of description must provide an adequate conceptual basis for identifying the functional or behavioral differences among primitive entities that enable both clear, unambiguous conceptual distinctions among primitive entities and the identification of empirical constructs corresponding to the different types of entities. In effect, the system of description must enable a hierarchical classification of primitive entities that makes clear, at different levels of abstraction, any properties that the primitive entities and derived constructs are held to have in common (the vertical dimension in hierarchical classification) and the properties that are thought to be sources of significant differences among the primitive entities and derived constructs (the horizontal dimension in hierarchical classification). The logical adequacy requirement that a system of description must meet demands that the properties of primitive entities be sufficiently defined and differentiated to enable (i) the logical derivation of hypotheses about the respective roles and interactions of the primitive entities in causing, contributing to, or influencing the phenomena of interest, *and* (ii) the identification of corresponding “real-world” entities (constructs) that enable empirical testing of such hypotheses.

When characterizations of primitive entities meet both requirements of conceptual and logical adequacy, it becomes possible to construct a *chain of causality* in the interactions among the primitive entities that leads to *propositions* about cause-and-effect relationships affecting the phenomenon of interest and subsequent derivation of *hypotheses* purporting to explain how interactions among constructs representing the primitive entities cause, contribute to, or influence the phenomena of interest. When constructs can be identified that correspond conceptually to the primitive entities in a chain of causality, the hypotheses derived from basic propositions provided by a chain of causality can be tested empirically by ascertaining whether the hypothesized causal relationships among the constructs and their implied outcomes can be observed in empirical settings. In principle, such hypotheses must be *falsifiable* – they must be capable of being refuted by discovering contraindications through empirical research (i.e., performing “experiments”). When observations during experiments consistently provide confirmatory support for a hypothesized explanation, the empirically confirmed explanations provided by the chain of causality become the basis for *predictions* about such phenomena of interest in the future and perhaps in related settings.

Any set of ideas that aspires to be a scientific theory must have the conceptual and logical adequacy required to progress through all of the steps of theoretical elaboration and empirical testing described above if it is to provide any scientific basis for warranted belief in its propositions. In the following two sections, we consider whether Barney’s (1991, 1997) foundational RBV characterizations of resources and his VRIO framework for identifying resources that can be sources of sustainable competitive advantage provide a conceptually and logically adequate basis for (i) deriving a chain of causality explaining how certain kinds of resources can create value or sustained competitive advantage and (ii) enabling empirical testing that can lead to consistent explanations of and (eventually) reliable predictions about resources as sources of value creation or sustained competitive advantage. A further section then considers whether the RBV’s core proposition about the role of resources in creating sustainable competitive advantage can actually be tested scientifically.

A SCIENTIFIC CRITIQUE OF THE RBV'S CONCEPTUALIZATION OF "STRATEGICALLY VALUABLE RESOURCES"

While the RBV's basic notions about resources and its core proposition sound plausible enough on the surface, critical analysis (based on the scientific method) of the RBV's basic conceptualization of resources and of the VRIO framework for identifying which resources can be sources of sustained competitive advantage reveals several fundamental conceptual deficiencies and logic problems. In this section, we critique the RBV's conceptualization of "strategically valuable resources." (The following section critiques the VRIO framework as a basis for identifying strategically valuable resources that will also be sources of sustained competitive advantage.) This critique identifies three conceptual deficiencies and logic problems -- the Value Conundrum, the Tautology Problem in the Identification of Resources, and the Absence of a Chain of Causality -- that effectively render the RBV incapable of providing a basis for actually identifying strategically valuable resources in either theory or practice.

The following discussion elaborates the three conceptual deficiencies and logic problems relating to the RBV's characterization of strategically valuable resources, and clarifies the resulting theoretical failures or limitations of the RBV. For each of the three conceptual deficiencies and logic problems, the discussion also identifies the essential conceptual deficiency and logic problem that must be remedied in order to enable a scientific approach to generating theoretically meaningful statements about resources and their role in creating strategic value. Later sections in this paper explain the ways in which the conceptualizations that serve as the foundation for the competence perspective address each of the conceptual deficiencies and logic problems discussed here -- and thereby enable the generation of theoretically meaningful, logically defensible, and empirically researchable propositions about the creation of strategic value.

The Value Conundrum

The Value Conundrum refers to the failure of the RBV to provide an adequate conceptual basis for identifying which entities can be considered resources that are "strategically valuable" to a firm in its current competitive context or which entities will be resources that will become strategically valuable in future competitive contexts. We first closely examine Barney's (1991) foundational conceptualization of resources, and then elaborate the conceptual deficiencies and logic problems in this conceptualization that give rise to the Value Conundrum. We then consider the problems that result from the Value Conundrum in efforts to identify -- either theoretically or practically -- the resources that are currently strategically valuable to a firm. We next consider the even greater difficulties posed by the Value Conundrum in efforts to identify resources that will be strategically valuable in the future -- an undertaking that any "view" within or theory of strategy must be capable of assisting if it is to offer anything useful to strategic management theory and practice. Given the RBV's conceptual and logical problems in identifying strategically valuable resources, we also consider the relative potential of resource-base strategies and luck to explain firm success.

The RBV conceptualization of resources

We now closely examine Barney's (1991) foundational conceptualization of firm resources and consider the extent to which it is possible to use this conceptualization to identify which aspects of a firm may be considered strategically valuable resources.

Barney's (1991: p.101) foundational RBV paper defines *resources* as follows:

...firm resources include all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. [sic] controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness (after Daft 1983).

Barney (1991: p101) then goes on to explain that only certain kinds of "firm attributes" can constitute "firm resources:"

A variety of authors have generated lists of firm attributes that may enable firms to conceive of and implement value-creating strategies....For purposes of this discussion, these numerous possible firm resources can be conveniently classified into three categories: physical capital resources...human capital resources...and organizational capital resources....Physical capital resources include the physical technology used in a firm, a firm's plant and equipment, its geographic location, and its access to raw materials. Human capital resources include the training, experience, judgment, intelligence, relationships, and insight of *individual* managers and workers in a firm. Organizational capital resources include a firm's formal reporting structure, its formal and informal planning, controlling, and coordinating systems, as well as informal relations among groups within a firm and between a firm and those in its environment.

However, Barney (1991:102) then cautions that

Of course, not all aspects of a firm's physical capital, human capital, and organizational capital are strategically relevant resources. Some of these firm attributes may prevent a firm from conceiving of and implementing valuable strategies....Others may lead a firm to conceive of and implement strategies that reduce its effectiveness and efficiency. Still others may have no impact on a firm's strategizing processes. However, those attributes of a firm's physical, human, and organizational capital that do enable a firm to conceive of and implement strategies that improve its efficiency and effectiveness are, for purposes of this discussion, firm resources (Wernerfelt, 1984).

Let us summarize what Barney is saying in these statements:

Resources are "firm attributes" (including its "physical, human, and organizational capital") that "enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness." However, "not all aspects of a firm's physical, human, and organizational capital are strategically relevant resources," because some of these firm attributes "may prevent a firm from conceiving of and implementing valuable strategies," may "reduce its effectiveness and efficiency," or may "have no impact on a firm's strategizing processes."

How then can one determine which aspects of these firm attributes constitute resources that "enable a firm to conceive of or implement strategies that improve its efficiency and effectiveness" -- and importantly, which do not? Barney (1991: p106) explains:

The traditional "strengths-weaknesses-opportunities-threats" model of firm performance suggests that firms are able to improve their strategies only when their strategies exploit opportunities or neutralize threats....Firm attributes...only become resources when they exploit opportunities or neutralize threats in a firm's environment....That firm attributes must be valuable in order to be considered resources...points to an important complementarity between environmental models of competitive advantage and the resource-based model. *These environmental models help to isolate those firm attributes*

that exploit opportunities and/or neutralize threats, and thus specify which firm attributes can be considered as resources [emphasis added]. The resource-based model then suggests what additional characteristics that [sic] these resources must possess if they are to generate sustained competitive advantage.

Taken together, these statements clarify the RBV approach to conceptualizing “strategically valuable resources:”

Resources are those firm attributes that help a firm “exploit opportunities or neutralize threats” in the firm’s environment, and by so doing are *ipso facto* “strategically valuable” and “strategically relevant” resources. Notably, however, the RBV itself offers no ideas of its own as to how such strategically valuable resources can be identified. Rather, Barney suggests that “environmental models of competitive advantage” or traditional SWOT analysis (Barney 1991: 106-107) would reveal which firm attributes constitute strategically valuable firm resources that help a firm exploit opportunities or neutralize threats, and which do not. Thus, *the RBV explicitly defers to other frameworks and models* (e.g., prior strategy theory based on industry structural analysis) to perform the fundamental conceptual task of identifying what constitutes a strategically valuable resource.

One remarkable aspect of Barney’s and the RBV’s conceptualization of resources is that – contrary to the multitudinous claims that the RBV opens the black box of the firm by identifying resources as fundamental sources of firm heterogeneity -- the RBV in fact offers no ideas of its own as to the fundamental nature of firm resources. Instead the RBV relies on “outward in” analysis based on unspecified SWOT frameworks or “environmental models” from industry structural analysis to identify what constitutes a firm resource and what does not. Since in industry structural analysis firms are essentially characterized by their industry structural positions, not by their resource characteristics, in a fundamental sense the RBV adds no new conceptualizations about firms as bundles of resources beyond those already implicitly (or allegedly) included in prior “environmental models” of strategy based on industry structural analysis, notably those advanced by Porter (1980, 1985).

A key aspect of the Value Conundrum in the RBV is the fact that the Porter strategy models derived from industry structural analysis and invoked by Barney by no means describe well all observable competitive contexts. Indeed, other strategy models based on different representations of competitive environments (e.g., Sanchez 1993, 1995) depart very significantly from the Porter models and lead to very different conclusions as to what constitutes a strategically valuable firm resource and what does not (for example, see Table 1 in this paper). Since Barney’s conceptualization of resources is founded on the use of “environmental” strategy models derived from industry structural analysis, the RBV’s view of resources can only be applicable within those environments that are well described by those models, and the RBV as articulated by Barney has no actual basis for its claim to provide a general “view” of resources. Thus, by “outsourcing” the basic conceptual task of characterizing resources to “environmental models,” the RBV fails to offer a *systematic, generally applicable conceptual basis* for characterizing resources as primitive entities on which to construct a general strategy theory -- or even a consistent “view” within strategy.

Similarly, a SWOT analysis based on some invoked framework or frameworks would not lead to any characterizations of strategically valuable resources that are not already contained in the invoked framework(s). SWOT analysis is itself an atheoretic mode of analysis that admits use of an unlimited range of approaches to analyzing strengths, weaknesses, opportunities, and threats -- some of which may (and often do) lead to contradictory conclusions about what kinds of firm attributes constitute a strength or weakness, as well as what kinds of environmental situations constitute an opportunity or threat. Thus, Barney’s invocation of SWOT analysis as a basis for identifying what

constitutes a resource invites polytheoretic interpretations and thereby fails to provide a systematic, consistent, and generally applicable basis for identifying the firm attributes that qualify as strategically valuable and thus can be considered as firm resources, and which firm attributes do not.

In effect, the Value Conundrum is a symptom of the failure of the RBV to meet a basic first requirement for building a scientific theory about resources: The RBV fails to provide a systematic basis for describing resources that would lead to *consistent characterizations* of the functional and behavioral properties of resources and thereby support the generation of hypotheses about the cause-and effect relationships among resources that enable them to create strategic value.

The requisite first step in a scientific approach to identifying strategically valuable resources would be to articulate a clear conceptual basis for describing resources that would lead to consistent characterizations of the functional or behavioral properties of resources that enable them to create strategic value. A scientifically adequate conceptual basis for characterizing resources would also make it possible to distinguish different *kinds* – i.e., different *categories* -- of functionally or behaviorally different resources that may then be evaluated for their differing abilities to contribute to or influence a firm's ability to create strategic value.⁴ Although Barney (1991) suggests that resources may be categorized into physical, human, or organizational capital, he offers no rationale as to (i) why this categorization schema identifies important functional or behavioral differences among such kinds of firm attributes, (ii) how and under what conditions these firm attributes would become strategically valuable resources, or (iii) what differences can be expected in the ways these categories of resources cause, contribute to, or influence strategic value creation. Thus, Barney's *ad hoc* listing of these possible resource types has no systematic conceptual basis -- and therefore adds nothing that is theoretically relevant in the characterization and analysis of resources.

It is perhaps useful here to re-emphasize that the three other VRIO dimensions – rarity, imperfect imitability, and organizational embeddedness – are *not* argued by Barney or the RBV to provide a conceptual basis for determining the strategic value of a resource, and indeed they do not provide a logical basis for such a determination. As Barney (1991: p.106) notes, the three “RIO” dimensions of the VRIO framework are *only* invoked to explain when resources that are (somehow) identified as strategically valuable may also be sources of sustained competitive advantage. Because the VRIO framework *begins* with the value (“V”) dimension, if a resource cannot first be identified as strategically valuable, the VRIO framework cannot be used to evaluate whether the resource is also a source of competitive advantage.

Identifying resources that are currently strategically valuable

Suppose that a firm is enjoying sustained profitability. To what extent can the RBV explain which firm attributes constitute strategically valuable resources that currently enable the firm to “exploit opportunities and neutralize threats,” pursue “strategies that improve its efficiency and effectiveness,” and operate profitably? As previously noted, Barney and the

⁴ The methodology of science recognizes two basic approaches to hierarchically categorizing “primitive entities” that could be used to identify the different kinds of resources in a firm and assess the ways in which each kind of resource may be able to contribute to the creation of strategic value: (i) classification of resource types derived from some *theoretical* argument leading to the identification of conceptually different categories of resources (a taxonomic approach), or (ii) a classification of resource types based on their *empirically observed* (and logically inferred) functionally different properties (a typological approach). We return to this fundamental issue in later discussion (e.g., see Table 2).

RBV simply presume that environmental strategy models or SWOT analysis will enable identification of a firm's strategically valuable resources, but the RBV itself offers no conceptual basis on which to identify such resources. However, as mentioned earlier (and elaborated in following sections), environmental models based on industry structural analysis recognize only the *positions* that firms occupy in their competitive environments and do not attempt to characterize the nature of all the firm-specific resources that are necessary to enable firms to achieve their positions. Moreover, the Porterian industry structural analysis framework does not apply to all competitive contexts, and SWOT analyses motivated by various theories and frameworks may lead to divergent and even conflicting identifications of what constitutes a "resource." As a result, in both theory and practice, the foundational conceptualizations of resources in the RBV provide no generally applicable conceptual basis for systematically and consistently distinguishing which of a firm's current attributes constitute "resources" capable of creating strategic value, and which attributes are "non-resources" that do not create strategic value.⁵ Thus, the Value Conundrum reflects the failure of the RBV to provide a systematic, generally applicable basis for identifying a firm's current strategically valuable resources.

Identifying resources that will be strategically valuable in the future

As Popper (2004) has argued, the proper goal of all scientific theory is prediction. In particular, to be useful to strategic managers, a strategy "view" or theory must provide a basis for predicting future sources of strategic value and sustained competitive advantage that are useful in deciding future strategies, and not just a basis for generating explanations of past competitive outcomes.

Given the conceptual deficiencies that result in the RBV's failure to provide a consistent basis for explaining which firm resources are currently strategically valuable, it is no surprise that the RBV faces even greater difficulties in trying to predict which resources will be strategically valuable in the future. In addition to its conceptual inadequacies, as explained below the RBV also suffers from some fundamental logic problems in its core proposition that firms can succeed by putting in place today resources that will be sources of strategic value (and competitive advantage) tomorrow. To clarify the fundamental nature of these further problems, let us consider the two cases of (i) a future in which there is certainty about which resources will be strategically valuable, and (ii) a future in which there is some level of irreducible uncertainty about such resources.⁶

Certainty. In a context in which there is certainty about which resources will be strategically valuable in the future – i.e., assuming, for the sake of argument, that the Value Conundrum in identifying resources does not exist -- all firms will (somehow) know which resources they should try to obtain today in order to compete successfully tomorrow. Two scenarios are then possible.

In a first scenario in which firms are assumed to have equivalent resource endowments, firms competing to acquire such resources can be expected to bid up the price of such resources (or the inputs for internal development of such resources) until the price of such resources (or inputs) in resource factor markets fully reflects their future value – i.e.,

⁵ As we discuss in the following section, since the RBV provides no consistent, systematic approach to identifying resources that are currently strategically valuable in a firm (the "V" in the "VRIO" framework), the RBV's VRIO framework has no actual capacity to offer either theoretical or practical insights into which firm attributes are resources that are current sources of a sustained competitive advantage, and which are not.

⁶ In the analyses that follow, the supply of a given resource is assumed to be less than the actual demand of firms for the resource. If the supply were to equal or exceed demand, then all firms could obtain as much of the resource as they might want (at low cost), and the resource would not be a potential source of superior value creation or competitive advantage.

until marginal cost equals marginal value -- thereby eliminating any possibility that such resources can result in superior value creation and profitability in the future. In this scenario, therefore, acquiring resources that can be determined with certainty *ex ante* to have *ex post* strategic value will not provide a basis for superior value creation. In effect, such resources, if acquired, can only help a firm to create enough value to remain *competitive*, but not to earn economic profits (or create competitive advantage). Thus, in this scenario the core proposition of the RBV about the role of resources in creating future strategic value (and sustained competitive advantage) simply does not hold.

In a second scenario in which firms have heterogeneous, unequal initial resource endowments, then only some firms may have the type or amount of current resources necessary to identify and acquire or develop the resources known to be capable of generating strategic value in the future. Admitting the possibility of differences in firms' current resource endowments opens the possibility that some firms with advantageous current resource positions (Wernerfelt 1984) may be able to use those positions to identify and acquire or develop resources that will have superior strategic value in the future, while others may not. However, this possibility does not provide any logical support for the RBV's core proposition that accumulating strategically valuable resources today is the key to future strategic value creation, because it is subject to the basic logic problem of *infinite regress*. If a firm has an advantageous current endowment of current resources, one can ask how that endowment came about, and if it came about as the result of a previous advantageous endowment of resources, one can ask how that endowment came about, and so on and so on *ad infinitum*. Thus, in this scenario, the core proposition of the RBV may hold *only* if a firm happens to already have an advantageous endowment of resources, but neither this favorable circumstance nor the RBV offers any explanation as to how a firm might identify and create an advantageous endowment of resources *in the first place*.

Thus, even under conditions of certainty about what will constitute valuable resources in the future (i.e., assuming away the Value Conundrum), the RBV offers no logically defensible basis for its core proposition's claim that managers can improve a firm's future potential for value creation and competitive success beyond the potential that the firm already happens to have simply because of its current resource endowment. As a result, in a context of certainty the basic proposition of the RBV becomes both theoretically unwarranted and practically inoperable.

Uncertainty. In a context in which there is irreducible uncertainty about which resources will be strategically valuable in the future, then by definition resources that will prove to have "strategic value" *ex post* cannot be known with confidence *ex ante*. This context may arise when it is not clear to managers or theorists which kind of SWOT analysis or environmental model is actually able to correctly identify the firm attributes that will be future sources of strategic value. Because the RBV offers no systematic conceptual basis of its own for identifying strategically valuable resources, nothing in the RBV (or VRIO framework) offers any suggestions for overcoming this kind of uncertainty in identifying strategically valuable future resources and formulating superior resource-based strategies for the future. Thus, in a context of uncertainty about the future value of resources, the Value Conundrum obtains, and the basic proposition of the RBV is again theoretically unwarranted and practically inoperable.

Resource-base strategizing and luck

Barney (1986) has argued that favorable current resource positions may result either from superior strategies in acquiring or developing firm resources, or from luck. But as the foregoing discussion and analyses have shown, Barney's RBV framework fails to provide any consistent and conceptually adequate basis for identifying strategically valuable

resources that can be the basis for superior strategies – and thus fails to provide a logical basis for its core proposition’s claim that managers can engage in resource-based strategizing that can improve a firm’s prospects for future competitive success. Thus, given the Value Conundrum in the RBV’s approach to identifying strategically valuable resources, and given the resulting problems that render the RBV’s core proposition logically indefensible and practically inoperable, it would actually be incorrect to agree with Barney (1986) that strategic success must result either from superior resource strategies or from luck. One must recognize that if Barney’s RBV framework (including its reliance on “environmental models” and unspecified SWOT analyses) is all that strategic managers and strategy theorists have to work with in trying to identify strategically valuable resources and define superior resource-based strategies, then the *only* path to future strategic success would be luck.

Essence of the problem:

The Value Conundrum exists because the RBV (and in particular Barney’s “outsourcing” approach to conceptualizing resources) fails to recognize and address fundamental requirements in constructing an adequate conceptual foundation for theory building. To build an actual theory about resources, or even to provide a useful “view” of resources, the RBV would have to offer conceptually clear, consistent, and delimited characterizations of the functional or behavioral properties of resources that would enable the unambiguous identification of resources, the distinguishing of different kinds of resources, and the drawing of logical inferences about the different ways in which different kinds of resources contribute to strategic value creation. Such conceptualizations would then – and *only* then -- enable derivation of meaningful and testable theoretical statements about the role of resources in creating strategic value.

Because the RBV conceptualization of resources advanced by Barney (1991) relies on an environmental model that is not generally applicable and other (unspecified) SWOT analyses to identify strategically valuable resources, the RBV does not provide a generally applicable, consistent conceptual basis for identifying and distinguishing firm resources from “non-resources.” Although the RBV’s “openness” to other theoretical frameworks might provide a rare means of achieving some degree of theoretical synthesis in the strategy field, in fact the other models and frameworks invoked by the RBV are far from having the conceptual coherence necessary to provide a clear, consistent, and delimiting conceptual basis for identifying what constitutes a strategically valuable resource. Given the resulting Value Conundrum, from a scientific perspective, the core proposition of the RBV is shown to be unwarranted theoretically, as well as unimplementable in practice.

The Tautology Problem in the Identification of Resources

The Tautology Problem refers to the practice in RBV research of identifying strategically valuable resources in ways that reduce the RBV’s core proposition to a tautological statement. In essence, empirical “tests” of the RBV’s core proposition commonly assert that resources identified *ex post* as being strategically valuable (by invoking some *ad hoc* environmental model or SWOT framework) were *ipso facto* the *ex ante* strategically valuable resources responsible for a firm’s or firms’ future success. Because the RBV provides no consistent, generally applicable conceptual basis for systematically identifying and evaluating resources in ways that would distinguish firm attributes that are “strategically valuable” resources from those firm attributes that are not, RBV researchers attempting to test the RBV’s core proposition empirically have had no recourse but to revert to such

arguments based on *ad hoc* and *ex post* characterizations of resources that directly result in the Tautology Problem.

Typically in RBV research, firms are categorized by some criteria into successful firms and less successful firms. (Superior profitability is a typical criterion for identifying successful firms, but market share, new products introduced, patents obtained, or other constructs intended to measure firm success may also be used.) As advocated by Barney (1991), various theories, models, and frameworks may then be invoked as a basis for analyzing successful firms to identify some kinds of resources that can be argued to contribute to their competitive success. However, from a scientific perspective, such arguments often appear to be *ad hoc* in nature and inverted in order. Theories, models, or frameworks often appear to be selectively invoked to “fit the data,” rather than truly being invoked *a priori* and then tested against data.⁷ Given the unlimited scope of theories, models, and frameworks that can be invoked to identify strategically valuable resources in RBV research, some plausible argument can *always* be constructed (and appropriate correlations found in data) to support some assertions about the strategically valuable resources that are (putatively) responsible for a firm’s success. The virtual assurance that some significant correlations can always be obtained by sifting through invoked theories, models, and frameworks until a good fit with some data is found no doubt has much to do with the popularity of RBV research conducted in this mode.

The basic proposition of the RBV maintains that strategic value creation will result when a firm *ex ante* acquires or develops resources that have *ex post* strategic value. However, as already noted, the RBV conceptualization of resources fails to provide a consistent, generally applicable conceptual basis for identifying *ex ante* the resources that will have strategic value *ex post* (the Value Conundrum). A consequence of this failure is that empirical research in the RBV mode typically invokes *ex post* frameworks or models that are then claimed to identify *ex ante* valuable resources (as described in the preceding paragraph). This practice has the effect of reducing the RBV’s core proposition to an essentially *tautological* proposition: Resources that are argued *ex post* to be strategically valuable (by selectively invoking some “suitable” theory, model, or framework) are then asserted to have been the resources that had future strategic value *ex ante*. An analogous (but more blatant) mode of RBV research uses multiple models and frameworks to generate lists of possible resources – much like Barney’s (1991) lists of possible resources or examples of “physical, human, and organizational capital” – and then simply looks for correlations between the possible resources on the list and the resources that successful firms seem to have. When some significant correlations are found *ex post* (which is a virtual certainty in any sizeable list), the resources with high correlations *ex post* are asserted to have been the *ex ante* strategically valuable resources for those firms.

The result of this mode of RBV research is a veritable cacophony of claims as to the firm attributes that are asserted to constitute strategically valuable resources and to “explain” firm success in various settings studied. From a scientific perspective, however, such claims only add to the proliferation of *ad hoc*, tautological statements that lack any systematic conceptual and logical basis *derived from the RBV* for explaining firm success. Moreover, claims based on a *mélange* of theories, models, and frameworks fail to provide empirical support for a consistent, coherent set of hypothesized explanations that can become the basis for prediction. As a result, the growing potpourri of RBV claims about resources lacks any

⁷ Of course, RBV research articles rarely admit to following this inversion of order in the scientific method for establishing warranted belief. More commonly, a theory, model, or framework that was actually found *ex post* (i.e., *after* data are gathered and correlations determined) to identify resources that may then plausibly be argued to be strategically valuable is instead presented in a research paper as the *ex ante* basis (i.e., *before* data are defined, gathered, and analyzed) for identifying strategically valuable resources in the research.

systematic conceptual basis for arguing the generalizability of any specific findings. The growing volume of such research positioned within the RBV in major management journals over the last 15 years notwithstanding, research in this mode does nothing, and can do nothing, to make scientifically defensible, theoretically coherent statements that would improve firm strategies -- or that would justify a claim of the RBV to be a theory in any scientific sense.

Essence of the problem

Like the Value Conundrum, the Tautology Problem results from the RBV's failure to address the fundamental need to devise conceptually adequate characterizations that clarify the inherent functional or behavioral properties of resources and that can thereby provide a basis for logically deriving *ex ante* hypotheses as to the kinds of resources that will have *ex post* strategic value. This deficiency can only be remedied by developing a rigorous definition of resources that provides a consistent and coherent conceptual basis for distinguishing the different ways in which different kinds of firm attributes can contribute to creating strategic value and thus qualify as resources. Only then can strategy researchers hope to derive, test, and establish empirical support for generalizable theoretical statements about the role of resources in firm success.

The Absence of a Chain of Causality

As Edith Penrose (1956) pointed out, firms benefit not from the possession of resources *per se*, but rather from the "services of resources" -- i.e., from their *uses of resources*. Thus, any claims that resources can create strategic value must provide at least some explanation about the ways in which *using* resources can contribute to the creation of strategic value (and perhaps competitive advantage).

Barney's (1991) foundational paper suggests that resources may include physical, human, and organizational capital, but it provides no explanations as to why such distinctions might be relevant in understanding how resources actually create value. Further, the paper does not suggest any conceptual basis for systematically distinguishing the differential contributions to creating strategic value of (i) ways of using a firm's resources ("organizational processes" in Barney's listing of possible resources (1991: p.101)), on the one hand, and (ii) everything else that might constitute a firm resource, on the other hand.⁸ Thus, lacking a consistent conceptual basis for making this essential distinction, the RBV is unable to explain how a firm's resources and ways of using resources differentially contribute to the firm's ability to create strategic value

One might argue that just as the RBV outsources the fundamental task of conceptually identifying what constitutes a strategically valuable resource (and what does not) to other frameworks of analysis, the RBV is also deferring the fundamental conceptual task of distinguishing and interrelating resources and ways of using resources to other theories, models, and frameworks. In that case, given the diversity of theories, models, and frameworks about organizing that may be invoked for this purpose, the outsourcing of this essential conceptualizing task is just as unlikely to result in a coherent set of concepts about relationships between resources and ways of using resources as it is to result in a coherent set

⁸ Indeed, Barney (1991: p.106) appears to suggest that mere possession of a "resource" inherently entails the effective use of the resource: "If a particular valuable firm resource is possessed by large numbers of firms, *then each of these firms have the capability of exploiting that resource in the same way*, thereby implementing a common strategy that gives no one firm a competitive advantage." [emphasis added]

of concepts about strategically valuable resources *per se*.

Thus, the RBV fails a fundamental requirement in building a scientific theory about the relation between potential resources and the creation of strategic value: It fails to propose a credible *chain of causality* explaining how firms can actually *use* resources to create strategic value. Given this fundamental omission, the RBV fails to offer an adequate conceptual basis for systematically deriving hypotheses about how different kinds of resources and organizational processes for using resources may result in effective or ineffective realization of the strategic value of a firm's resources. The practical consequence of this fundamental omission is that the RBV has no theoretical basis for providing consistent counsel to managers about how they might improve their skills in defining and implementing organizational processes for using their firm's resources.

Essence of the problem:

The "Absence of a Chain of Causality" problem exists because the RBV fails to recognize the fundamental importance in theory building of constructing an adequate *chain of causality* that can be used to generate hypotheses about how resources and ways of using resources may interact in creating strategic value. In effect, until the RBV recognizes that a firm's *capabilities in using resources* are conceptually distinct from other kinds of firm "resources" (because they operate on other kinds of resources), the RBV will be unable to propose chains of causality explaining how resources *and* their effective use may lead to competitive success. Lacking any conceptually adequate conceptual basis for constructing such chains of causality, the core proposition of the RBV is simply theoretically unjustified, and the RBV provides no actual basis for enacting the core proposition in practice.

A SCIENTIFIC CRITIQUE OF THE “VRIO” FRAMEWORK FOR IDENTIFYING RESOURCES THAT CAN BE SOURCES OF SUSTAINED COMPETITIVE ADVANTAGE

We now apply the principles of scientific theory building in a critique of the RBV’s VRIO framework for identifying which firm resources may be sources of sustained competitive advantage (Barney 1991). Paralleling the preceding critique of the RBV’s conceptual inadequacies in identifying strategically valuable resources, this critique finds that although the RBV’s core proposition sounds plausible enough on the surface, critical analysis of the VRIO framework for identifying which resources can be sources of sustained competitive advantage reveals three fundamental conceptual deficiencies and logic problems. The three conceptual deficiencies and logic problems identified below -- the Uniqueness Dilemma, the Cognitive Impossibility Dilemma, and an Asymmetry in Assumptions about Resource Factor Markets -- effectively render the VRIO framework incapable of systematically and consistently identifying, in either theory or practice, which strategically valuable resources can become sources of sustained competitive advantage. Absent a defensible basis for identifying resources that can be sources of sustained competitive advantage, the RBV’s core proposition is found to be theoretically unwarranted and practically inoperable.

The following discussion first summarizes the conceptual foundations on which the VRIO framework rests. Then we identify and elaborate the three conceptual deficiencies and logic problems in the VRIO framework that result in the RBV’s inability, in both theory and practice, to enable identification of resources that can be sources of sustained competitive advantage. For each of the three conceptual deficiencies and logic problems identified, the discussion also identifies the essential theoretical problem that must be remedied in order to enable the generation of logically consistent, theoretically meaningful statements about causal relationships between resources and sustained competitive advantage. Later sections in this paper explain the ways in which the conceptualizations that serve as the foundation for the competence perspective address the sources of the VRIO’s conceptual deficiencies and logic problems discussed here.

Conceptual Foundations of the VRIO Framework

Barney (1991: p. 105) states that “...in order to understand sources of sustained competitive advantage, it is necessary to build a theoretical model that begins with the assumption that firm resources may be heterogeneous and immobile.” To understand the roles of *resource heterogeneity and immobility* in creating a sustained competitive advantage, it is first necessary to distinguish a (temporary) competitive advantage from a sustained competitive advantage. Barney (1991: p.102) explains:

...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.

As the following discussion will make clear, *resource heterogeneity* may be a source of

(temporary) competitive advantage when a firm's endowment of heterogeneous resources enable the firm to implement a value-creating strategy that current or potential competitors are not simultaneously implementing. However, it is the combination of *imperfect imitability* and *resource immobility* that sustains a firm's competitive advantage by making it impossible for other firms to acquire the firm's resources (or "strategically equivalent" resources) in resource factor markets, thereby denying to other firms the possibility to emulate a successful firm's strategy and resulting competitive advantages.

In the VRIO framework for identifying resources that are sources of sustained competitive advantage, the "V" dimension requires that a resource be *valuable* – in the sense that it "enables a firm to conceive of and implement strategies that improve its efficiency and effectiveness" (Barney 1991: p.101). The "R" dimension requires that a valuable resource also be *rare*. The criterion of rarity is intended to identify heterogeneous resources that can be sources of (temporary) competitive advantage because they are, by virtue of their rarity, impossible for other firms to obtain. The "I" and "O" dimensions – the *imperfect imitability* and *organizational embeddedness* of a resource -- are intended to identify heterogeneous valuable resources that other firms will not be able to imitate (because of their imperfect imitability) or acquire in resource factor markets (because of their organizational embeddedness and resulting immobility). Imperfect imitability and organizational embeddedness are invoked to identify which heterogeneous valuable resources also make it possible for a firm to sustain any competitive advantage(s) derived from its heterogeneous resources.

In the following discussions, we identify fundamental conceptual deficiencies and logic problems in the VRIO framework that give rise to the Uniqueness Dilemma, the Cognitive Impossibility Dilemma, and the use of Asymmetric Assumptions about Resource Factor Markets. We first examine the VRIO concept of rarity. This discussion amplifies the Uniqueness Dilemma inherent in the VRIO's invocation of rarity as the basis for identifying heterogeneous resources that are sources of competitive advantage. In developing the "I" dimension in the VRIO framework, Barney identifies three sources of imperfect imitability of resources: (i) unique historical conditions, (ii) causal ambiguity, and (iii) social complexity. However, critical analysis shows that the criterion of imperfect imitability due to unique historical conditions leads to its own form of Uniqueness Dilemma in efforts to identify heterogeneous resources that can be sources of competitive advantage (sustained or otherwise). On the other hand, efforts to use the criteria of causal ambiguity and social complexity to identify imperfectly imitable resources leads to the Cognitive Impossibility Dilemma. In effect, analysis shows that none of the three bases proposed by Barney for identifying imperfectly imitable resources can actually support such identification. We also show that the concept of "nonsubstituability" originally invoked by Barney (1991) as a criterion for identifying resources that can be sources of sustained competitive advantage also engenders a Uniqueness Dilemma. Finally, we suggest that the VRIO's argument for use of organizational embeddedness as a basis for identifying immobile resources (Barney 1997) rests on a curious Asymmetry in Assumptions about Resource Factor Markets that appears to contradict much well established strategy theory and corporate strategy practice.

The Uniqueness Dilemma

The Uniqueness Dilemma refers to some fundamental problems in identifying different kinds of resources that result from the RBV's failure to provide a systematic, consistent conceptual basis for systematically identifying and classifying resources. The Uniqueness Dilemma arises in three contexts within the VRIO framework for identifying

resources that can be sources of competitive advantage—any one of which is sufficient to prevent the VRIO framework from actually being able to identify such resources, either in theory or practice. The first context concerns the use of *rarity* as the conceptual basis for identifying heterogeneous resources that can be the basis for a competitive advantage. The second context concerns the use of *imperfect imitability* as the basis for identifying resources that are sources of sustained competitive advantage; in this regard, we also consider the extent to which “unique historical conditions” as explained by Barney may enable some firms to acquire imperfectly imitable resources. The third context involves the use of “nonsubstitutability” as a basis for identifying resources that can be sources of sustained competitive advantage. We now consider the ways in which the Uniqueness Dilemma occurs in each of these three contexts.

Rarity and resource heterogeneity

Barney (1991: p.106-107) explains the basic VRIO argument why a firm resource must be *rare* to be a source of competitive advantage as follows:

A firm enjoys a competitive advantage when it is implementing a value-creating strategy not simultaneously implemented by large numbers of other firms. If a particular valuable firm resource is possessed by large numbers of firms, then each of these firms have the capability of exploiting that resource in the same way, thereby implementing a common strategy that gives no one firm a competitive advantage.

How rare a valuable firm resource must be in order to have the potential for generating a competitive advantage is a difficult question. It is not difficult to see that if a firm’s valuable resources are absolutely unique among a set of competing and potentially competing firms, those resources will generate at least a competitive advantage and may have the potential of generating a sustained competitive advantage. However, it may be possible for a small number of firms in an industry to possess a particular valuable resource and still generate a competitive advantage. In general, as long as the number of firms that possess a particular valuable resource (or a bundle of valuable resources) is less than the number of firms needed to generate perfect competition dynamics in an industry (Hirshleifer, 1980), that resource has the potential of generating a competitive advantage.

There is no fundamental problem with Barney’s competitive equilibrium approach to explaining why resources that are *not* “rare” – i.e., resources that are “common,” in the ordinary English sense -- would not *per se* be sources of competitive advantage. However, the basic claim that a resource must be rare to be a source of competitive advantage is clouded by the absence in the VRIO framework of a *conceptual definition of resources* that would clarify the basis for assessing in what ways and to what extent a given resource may be considered *rare*. Instead, the concept of rarity used in the VRIO framework seems simply to correspond to the ordinary meaning of the English word *rare* – i.e., scarce or unique. As Conner and Prahalad (1996) have argued, however, *at some level of analysis, all firm resources become unique* – and thus rare. If all firm resources are unique and thus rare at some level of analysis, then it is logically impossible to use the criterion of rarity as proposed in the VRIO framework to distinguish (even partially) resources that have the potential to be sources of competitive advantage from resources that do not.

The Uniqueness Dilemma encountered in this context also refers to the dilemma that arises in trying to use the criterion of rarity to identify firm resources that are “heterogeneous:” If all firm resources are unique and therefore rare at some level of analysis, then all firm resources must be considered heterogeneous in a VRIO analysis. If all firm

resources are heterogeneous, then the criterion of heterogeneity cannot be used to distinguish firm resources that are sources of competitive advantage from those resources that are not. Indeed, the logical consequence of Barney's use of rarity as a criterion for identifying resources that are sources of competitive advantage is that *all* firm attributes that are considered resources (i.e., valuable) must also be regarded as sources of competitive advantage, because all firm resources are unique (at some level of analysis) and must therefore be considered rare. However, this conclusion contradicts Barney's own arguments (quoted above) that some resources are sources of competitive advantage, while others are not, and that the two can be distinguished by using the concept of rarity.

The Uniqueness Dilemma arises in the rarity dimension of the VRIO framework because the RBV fails to take seriously the need to characterize resources as primitive entities in ways that make it possible to distinguish the ways in which resources may be regarded as significantly different to be characterized as "rare" in its context for theorizing. Because the RBV simply invokes other "environmental models" or SWOT analysis to identify the firm attributes that may constitute a (valuable) resource, it fails to offer any consistent basis for systematically specifying the functional or behavioral properties of resources that make it possible to distinguish the different kinds of resources that may be considered "rare." The resulting failure – indeed, inability -- of the RBV to establish either a taxonomic or typological hierarchical categorization of resources based on their differing functional and behavioral properties makes it impossible to understand at what level of analysis identified differences between resources would become a valid basis for characterizing some resources as "rare." In this sense, the RBV invokes the concept of *heterogeneous* resources without first establishing the conceptual basis for distinguishing one kind (*genus*) of resource from others (*hetero*), as implied by the Greek roots of the word. Without a clear conceptual basis for distinguishing different kinds of resources and the degree to which different resource properties may be considered "rare," the fundamental RBV notions of heterogeneity and rarity of resources have no actual meaning, and the VRIO framework becomes both theoretically and practically incapable of identifying resources that can be sources of competitive advantage.

Imperfect imitability and unique historical conditions

The VRIO framework further maintains that a resource that is valuable and rare must also be *imperfectly imitable* if it is to be a source of sustained competitive advantage. Barney (1991: 1p.107) explains:

It is not difficult to see that valuable and rare organizational resources may be a source of competitive advantage. Indeed, firms with such resources will often be strategic innovators, for they will be able to conceive of and engage in strategies that other firms could either not conceive of, or not implement, or both, because these other firms lacked the relevant firm resources....

However, valuable and rare organizational resources can only be sources of sustained competitive advantage if firms that do not possess these resources cannot obtain them....these firm resources are imperfectly imitable.

The VRIO notion of *imperfect imitability* as basis for identifying resources that can be sources of sustained competitive advantage may sound plausible, but on closer inspection the VRIO notion of imperfect imitability is seen to founder on the same conceptual and logical problems that arise in the VRIO's notion of rarity. In essence, just as the RBV provides no conceptual basis for systematically determining whether some resources are similar or different in assessing rarity, it is equally impossible to determine when a firm's resources

have been “imitated” (imperfectly or otherwise) by another firm. Again, the failure of the RBV to provide a systematic conceptual basis for distinguishing and comparing different kinds of resources makes it logically impossible to determine when one firm’s resources’ functional or behavioral properties are being successfully imitated by another firm’s resources. Lacking such a conceptual basis for characterizing and distinguishing resources, the VRIO notion of imperfect imitability is found to have no actual meaning, and the VRIO framework becomes both theoretically and practically incapable of identifying resources that can be sources of sustained competitive advantage by virtue of their (unexplained) “imperfect imitability.”

Putting aside this fundamental (and theoretically fatal) problem in identifying resources that are “imperfectly imitable,” we nevertheless go on to examine the first of the three reasons provided by Barney (1991: pp. 107-108) as to why a resource may be imperfectly imitable: unique historical conditions. As Barney explains:

The resource-based view of competitive advantage...asserts that 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. Once this particular unique time in history passes, firms that do not have space- and time-dependent resources cannot obtain them, and thus these resources are imperfectly imitable.

If a firm obtains valuable and rare resources because of its unique path through history, it will be able to exploit those resources in implementing value-creating strategies that cannot be duplicated by other firms, for firms without that particular path through history cannot obtain the resources necessary to implement the strategy.

Extending the logic of Conner and Prahalad’s (1991) critique of the VRIO notion of rarity, however, it is clear that *at some level of analysis* all historical conditions or circumstances that a firm might face are unique. Again, the essential -- but missing -- conceptual dimension in the RBV is a clear conceptual basis on which some historical situations can be identified as “unique” in ways that enable one firm to acquire certain kinds of “space- and time-dependent” “valuable and rare resources,” while prohibiting other firms from doing so.

Barney (1991: p.108) appears to try to clarify what may constitute “unique historical conditions” and “space- and time-dependent resources” by listing examples of physical, human, and organizational resources (locations, scientists, and a “unique and valuable organizational culture”) that are asserted to be space-and-time-dependent resources and that some firm is asserted to have been able to acquire because of its unique historical circumstances. However, reciting such examples clearly begs the questions as to (i) what makes a resource “space-and-time dependent” and (ii) what actually constitutes a “unique historical condition” that would enable a firm to acquire such resources, while excluding other firms.

In essence, Barney’s argument is simply that (i) some valuable and rare resources are (asserted to be) space- and time-dependent; (ii) the ability of a firm to acquire valuable and rare resources that are “space-and-time-dependent” may “depend upon the unique historical position of a firm” (Barney 1991: p.108), (iii) some firms are asserted to have acquired “space- and time-dependent” resources because of their (asserted) “unique historical positions;” and (iv) the possession of resources asserted to be “space-and-time dependent” provides evidence that those firms experienced “unique historical conditions” that enabled the firm to acquire such resources. However, without some clear conceptual basis for *ex ante* systematically identifying in what ways a resource can be considered “space-and-time-

dependent,” and without some *logically derived* basis for *ex ante* identifying the characteristics of “unique historical conditions” [or circumstances or positions] that would enable a firm to *ex post* acquire such resources while other firms cannot, Barney’s argument reduces to circular logic. Indeed, without clear conceptual bases for distinguishing resources that are “space- and time-dependent” from those that are not, and for distinguishing “historical conditions” that uniquely enable a firm to acquire such resources from those that do not, all we have to go on are Barney’s assertions that such resources and historical conditions exist – whatever they may happen to be, and however they happen to come about.

Given these conceptual and logic problems inherent in the VRIO criterion of imperfect imitability and in its (unspecified) notion of “unique” historical conditions as a source of imperfect imitability, it is clear that both of these aspects of the VRIO framework also suffer from the Uniqueness Dilemma. If all firm resources are arguably unique and thus imperfectly imitable, and if all firm historical conditions are arguably unique, then it is logically impossible to use the VRIO criteria of imperfect imitability or unique historical conditions to distinguish a firm whose resources enable it to create a competitive advantage from a firm whose resources do not provide this benefit, because *all* firms will meet these criteria.

Non-substitutability of resources

In his original “VRIN” framework for identifying resources that can be sources of sustained competitive advantage, Barney (1991: pp. 111-112) argues that *non-substitutability* of a valuable, rare, and imperfectly imitable resource is also essential for that resource to be a source of sustained competitive advantage. Barney (1997) later replaces the VRIN non-substitutability dimension with the VRIO’s *organizational embeddedness* dimension, which is discussed further below. However, we first examine Barney’s arguments for the use of non-substitutability as an essential property of a resource that is a source of sustained competitive advantage.

Barney (1991: pp.111-112) explains the notions of the non-substitutability of a resource and its role in competitive outcomes as follows:

The last requirement for a firm resource to be a source of sustained competitive advantage is that there must be no strategically equivalent valuable resources that are themselves either not rare or imitable. Two valuable firm resources (or two bundles of firm resources) are strategically equivalent when they each can be exploited separately to implement the same strategies.

Note that the key notion invoked by Barney in characterizing “strategically equivalent valuable resources” is that such resources enable competing firms to “implement the same strategies.” In effect, if other firms have or have access to resources that are “strategically equivalent” to another firm’s valuable, rare, and imperfectly imitable resources and use those resources to implement the “same” strategy, then the first firm’s valuable, rare, and imperfectly imitable resources cannot be sources of sustained competitive advantage.

Barney (1991: p.111) then explains that “strategically equivalent resources” come in two forms:

Substitutability can take at least two forms. First, though it may not be possible for a firm to imitate another firm’s resources exactly, it may be able to substitute a *similar* resource that enables it to conceive of and implement the same strategies.

Second, very *different* firm resources can also be strategic substitutes. For example, managers in one firm may have a very clear vision of the future of their company because of

a charismatic leader...Managers in competing firms may also have a very clear vision of the future of their companies, but this common vision may reflect these firms' systematic, company-wide strategic planning process...From the point of view of managers having a clear vision of the future of their company, the firm resource of a charismatic leader and the firm resource of a formal planning system may be strategically equivalent, and thus substitutes for one another.

If strategically equivalent resources may be either similar or different (in ways that are only illustrated, not explained conceptually), then the only way to identify strategically equivalent resources (i.e., strategic substitutes) is to determine if one set of resources enables one firm to "conceive of and implement the same strategies" as a second firm. Remarkably, as vital as the notion of a firm *strategy* is to identifying whether or not strategically equivalent resources exist -- not to mention to understanding what Barney means when he uses the term "strategy" throughout his paper's overall RBV argument -- a formal *concept* of a strategy is never defined in Barney's 1991 paper. At most, Barney only suggests that a strategy has the *effect* of improving a firm's "efficiency and effectiveness," and of course he argues that resources meeting at least some of the VRIO criteria are the *sources* of such improvements.⁹

Defining the sources and effect of a strategy, however, is not the same thing as defining a strategy *per se*, a definition of which should explain at least something about how a strategy is involved in transforming sources of success into actual success. Lacking an explicit conceptualization of a strategy in Barney's paper, there is no conceptual basis for identifying in what sense a firm's strategy could be the "same" as another's, because *all* firm strategies (like their resources) are arguably *unique* at some level of analysis. Lacking a conceptual definition of a strategy that would provide a basis for identifying significant *versus* insignificant similarities and differences among firm strategies, the notions of "strategically equivalent resources" or "substitutable resources" -- and their opposite, "non-substitutable resources" -- have no actual conceptual meaning. In this case, the lack of a clear conceptual basis for identifying similarity and differences in firm strategies leads to another form of Uniqueness Dilemma in Barney's original VRIN framework, which therefore also fails to actually enable identification of resources that are sources of competitive advantage.

Essence of the problem

The essence of the several forms of Uniqueness Dilemma discussed above is the failure of the VRIN/VRIO frameworks to provide conceptualizations of *rarity*, *imperfect imitability* (*due to unique historical conditions*), and *non-substitutability* that are adequate to enable identification -- in either theory or practice -- of resources that are *rare*, *imperfectly imitable*, and *non-substitutable*. (Problems in using the VRIO notion of *organizational embeddedness* are discussed further below.) Because a resource must meet *all* of the VRIN/VRIO criteria of valuable (discussed in the preceding section), rare, imperfectly imitable, and non-substitutable (or organizationally embedded, as discussed further below), the consequence of these conceptual failures to enable identification of resources with *any* such properties is that the VRIN/VRIO frameworks cannot be used to systematically identify resources that are, or can be, sources of competitive advantage, either temporary or sustained.

Remedying these identified failures can only be accomplished by developing clear, consistent conceptualizations of resources as primitive entities adequate to provide a

⁹ One might *infer* from these characterizations that a strategy in the RBV consists of the selection and acquisition of the resources that are the sources of a (desired) effect, but this meaning seems to be left to the reader to infer rather than being stated formally.

foundation for systematic scientific theory building – something that both the RBV notion of “valuable resources” and the VRIN/VRIO criteria clearly lack. These conceptual foundations would have to characterize resources by their functional or behavioral properties in ways that make it possible to distinguish the *different kinds of resources* that are critical in elaborating the notions on which the RBV’s core proposition rests.

The Cognitive Impossibility Dilemma

Having discussed the problems encountered in trying to use “unique historical conditions” to identify imperfectly imitable resources in the VRIO framework, we now consider the extent to which it may, or may not, be possible to use the two other bases for identifying imperfectly imitable resources suggested by Barney (1991: p.p.108-111): *causal ambiguity* and *social complexity*.

Barney invokes Lippman and Rumelt’s (1982) argument that resources may be subject to causal ambiguity such that the link between a firm resource and a firm’s competitive advantage will not be understood by *either* managers of the firm possessing the resource *or* by managers of other firms. Then, in a remarkable line of reasoning, Barney (1991: 109) argues:

To be a source of sustained competitive advantage, both the firms that possess resources that generate a competitive advantage and the firms that do not possess these resources but seek to imitate them must be faced with the same level of causal ambiguity (Lippman & Rumelt, 1982)...If a firm with a competitive advantage understands the link between the resources it controls and its advantages, then other firms can also learn about that link, acquire the necessary resources (assuming they are not imperfectly imitable for other reasons), and implement the relevant strategies. In such a setting, a firm’s competitive advantages are not sustained because they can be duplicated.

On the other hand, when a firm with a competitive advantage does not understand the source of its competitive advantage any better than firms without this advantage, that competitive advantage may be sustained because it is not subject to imitation (Lippman & Rumelt, 1982). Ironically, in order for causal ambiguity to be a source of sustained competitive advantage, *all* competing firms must have an imperfect understanding of the link between the resources controlled by a firm and a firm’s competitive advantages.

In a related line of reasoning, Barney (1991: 110) also proposes that a firm’s resources may be “very complex social phenomena, beyond the ability of firms to systematically manage and influence.” Even if a given socially complex resource is understood to be important in creating competitive advantage (i.e., it is not causally ambiguous), firms without these attributes may not be able to “engage in systematic efforts to create them” because such resources “are not subject to such direct management.”

What Barney is essentially arguing is that for a resource to be a source of sustainable competitive advantage, managers *cannot* understand why or how a resource can be a source of sustainable competitive advantage (either because of the social complexity of the resource or because of causal ambiguity resulting from other factors), because if they did that knowledge would diffuse to other firms who could imitate the strategically valuable resource. This logic immediately leads to the Cognitive Impossibility Dilemma: If managers do understand why and how a resource can be a source of sustainable competitive advantage, then the resource cannot be a source of sustainable competitive advantage. If on the other

hand managers do not understand why or how a resource is or can be a source of sustainable competitive advantage, or if they cannot manage such a resource even if its potential is understood, then one must wonder why or how a firm would come to possess such resources. Under this logic, no manager can acquire or develop imperfectly imitable resources through “resource-base strategizing.”

Clearly, this logic contradicts the core proposition of the RBV that managers can engage in resource-base strategizing to create sustainable competitive advantage. Moreover, this reasoning raises the question as to how strategy researchers would manage to identify resources that can be sources of sustainable competitive advantage -- if managers of firms cannot manage to do so. More to the point, Barney’s argument implies that the scientific method cannot be used to research which “causally ambiguous” or “socially complex” resources can be sources of sustainable competitive advantage, for the simple reason that any resources that could be identified as such could not -- by that very fact -- be manageable sources of sustainable competitive advantage. If one accepts Barney’s logic, then one must also conclude that it is simply not possible to conduct scientific research into which resources can be sources of sustainable competitive advantage because of their causal ambiguity or social complexity, or how they can be created within firms through resource-base strategizing.

Essence of the problem

The essence of the Cognitive Impossibility Dilemma is that, according to Barney’s reasoning, if a resource can be recognized (by managers or presumably researchers) as a source of sustainable competitive advantage, then it cannot be a source of sustainable competitive advantage. If only resources that cannot be understood by managers (or researchers) as sources of sustainable competitive advantage can be sources of sustainable competitive advantage, then it is not possible to engage in scientific research to verify such claims in the RBV’s core proposition. Thus, once again, under the RBV the only explanation for past or future success in creating sustainable competitive advantage would have to be a firm’s *luck* in acquiring or possessing such resources.

An Asymmetry in Assumptions about Resource Factor Markets

The basic proposition of the RBV also rests importantly on the argument (Barney 1986, 1991) that the resources that enable firms to create sustained competitive advantages will not only be rare and imperfectly imitable, but also immobile. Because strategically valuable resources derive their strategic value from their organizational embeddedness, Barney’s argument goes, if a resource that has been able to create strategic value by becoming embedded within a given firm were to become available in a factor market, it would lose the organizational embeddedness that enabled it to create strategic value in its former firm and thus would no longer be a strategically valuable resource. Because a loss of organizational embeddedness is assumed to lead to a loss of strategic value, organizationally embedded, strategically valuable resources will in effect be immobile – i.e., not available in factor markets. Because of this posited factor market “imperfection” (incompleteness), firms that would like to acquire a currently successful firm’s strategically valuable resources through factor markets will not be able to do so, and firms that happen to already have endowments of organizationally embedded, strategically valuable resources will be able to enjoy sustained competitive advantages.

This RBV argument rests on a curious asymmetric assumption about the effects of

organizational embeddedness on resource factor markets. In effect, the RBV argument assumes that a resource that is capable of creating strategic value when it is embedded in Firm A would *necessarily* have a lower potential to create strategic value if it were traded in a factor market and became embedded in Firm B – thereby depriving Firm B of the ability to emulate Firm A’s strategic advantage. However, no theoretical or empirical justification for this assumption is offered by Barney.

By contrast, there is ample reason to think that the potential of a resource to create strategic value may vary greatly according to the firm it becomes embedded in, and that the potential strategic value of a resource may be as great or greater in the context of another firm as in its current firm context.¹⁰ In effect, the VRIO framework’s characterization of the strategic value of a resource as being derived from its organizational embeddedness provides no logical basis for the further – and quite extraordinary – implicit claim that a resource loses its strategic value when it loses its *current* organizational embeddedness.¹¹ If on the other hand a resource traded in a factor market has the potential to create equal or greater value in the context of an acquiring firm, then the RBV argument underlying its claims about the sustainability of competitive advantage derived from the organizational embeddedness of a firm’s resource endowments simply collapses.

Interestingly, the RBV’s characterization of the role of organizational embeddedness in enabling the realization of the strategic value of a resource seems to reflect the view (which is fundamental in the competence perspective) that it is the way a firm uses (coordinates and targets) its resources that creates competitive advantage – not just the resources themselves. If anything, this aspect of the RBV seems to provide clear support for recognizing the fundamental importance of a firm’s *capabilities in using resources* in creating competitive advantage. Curiously, however, rather than taking seriously and theoretically elaborating the role of embeddedness *per se* in enabling resources to create strategic value in an organizational context, the embeddedness dimension of the VRIO framework is simply invoked as an (unexplained) basis for claiming that factor markets are “imperfect.” In effect, organizational embeddedness in the RBV seems more like a conceptual “patch” added by Barney to cover over the other conceptual inadequacies and logical problems that arise as the RBV attempts to hold to an exclusive focus on resources as the source of competitive advantage. Obviously, however, this patch has a strong and unwarranted assumption about the asymmetric effects of organizational embeddedness that seriously undermines the RBV’s arguments about how strategically valuable resources become sources of sustained competitive advantage.

Essence of the problem:

The RBV’s contention that resources are the source of sustained competitive

¹⁰ If nothing else, the ongoing high rates of inter-firm transfers of resources through merger and acquisition activities suggest that at least some resources may be able to create greater value in an acquiring firm than in their current firm because of differing *synergy* potentials in the two firms (Sanchez and Heene 2004). Given that people, machines, distribution relationships, intellectual properties, and other “resources” can and do move from one firm to another – and in many cases seem to create value as well or even better in the context of another firm -- further criteria are obviously needed to determine whether the potential for a resource to create strategic value can or cannot be transported from one firm context to another. However, the VRIO framework provides no clues as to how one might actually resolve this issue.

¹¹ A further curiosity in Barney’s reasoning is the obvious contradiction between (i) the claim that valuable knowledge about the sources of competitive advantage can and will diffuse to industry participants, as discussed in the preceding subsection, and (ii) the claim discussed here that valuable resources cannot diffuse to other firms because they are organizationally embedded. Why valuable knowledge – which would seem to be as “organizationally embedded” as any other resource -- can diffuse to competitors, while other forms of valuable resources cannot do so, is not explained.

advantage rests importantly on an unwarranted asymmetric assumption that resources lose their strategic value when they are removed from the firm in which they are *currently* embedded, are traded in factor markets, and become embedded in other firms. Rather than simply trying to use organizational embeddedness as an explanation for factor market “imperfections,” a viable strategy theory will have to look beyond resources *per se* and recognize firm’s differing approaches to and abilities in embedding resources – i.e., firm’s different *capabilities* in coordinating and targeting resources -- as an essential mediating variable in the chain of causality that explains how the *use* of resources can create sustained competitive advantage.

A SCIENTIFIC CRITIQUE OF THE RBV AS A TESTABLE THEORY

The foregoing discussions have highlighted the RBV's six conceptual deficiencies and logic problems in systematically identifying strategically valuable resources or resources that can be sources of sustainable competitive advantage. These conceptual deficiencies and logic problems make it impossible to actually test the RBV's core proposition in a scientific manner, for the simple reason that it is not possible to systematically identify strategically valuable resources or resources that are sources of sustainable competitive value using the RBV's criteria for conceptual criteria for identifying such resources.

However, this section addresses an even more fundamental problem in the RBV's core proposition. If we put aside the RBV's fundamental (and theoretically fatal) problems in identifying strategically valuable resources and resources that can be sources of competitive advantage – if, in other words, we imagine for the sake of argument that such resources can be identified using the RBV criteria – then we are faced with an even greater theoretical problem. If we take at face value the RBV's core proposition that a firm's competitive success is the result of the firm's heterogeneous and imperfectly imitable endowment of resources, then it is simply not possible to subject this proposition to *scientific empirical testing* or to *generalize* the findings of empirical tests if they could be conducted.

A fundamental requirement of empirical testing in the scientific method is *reproducibility of experiments*. An empirical finding obtained in one experiment must be capable of being reproduced in a similar (homogeneous) context. The core proposition of the RBV that a firm can only create strategic value and sustainable competitive advantage if its resource endowments are not replicated in other firms rests fundamentally on the notion of *firm heterogeneity*. To the extent that firms are heterogeneous because of their resource endowments, every firm constitutes a different context for conducting empirical research, and there is no possibility to reproduce research conducted in one firm by finding a similar context in another firm. One can only claim that some kind of heterogeneous resources are responsible for a firm's success in creating a sustainable competitive advantage, but by definition this assertion can never be verified by testing in other firms.

A further requirement of the scientific method is the *falsifiability* of a proposition -- it must be possible (in principle) to refute a proposition by finding contraindications through empirical research. As noted in the previous discussion of the Tautology Problem, however, it is always possible to find some "heterogeneous" resources in a successful firm that can be argued (using the RBV criteria) to be the sources of a firm's success. Thus, the infinitely malleable notion of resources in the RBV – and the impossibility of reproducing experiments in other firms – make it impossible to definitively reject the proposition that certain kinds of resources (however loosely specified conceptually) are the sources of a given firm's success.

Finally, the claim that heterogeneous resource endowments are the sources of sustained competitive advantages leads to the logical impossibility of making *generalizable* statements – the hallmark of any scientific theory -- about the effects of firm resources on competitive outcomes. Given the RBV's basic claim that a given firm's competitive success is the result of the firm's heterogeneous endowment of resources, then there is no logical basis for any meaningful generalization of research findings purporting to explain the resources that have led to a given firm's success. In effect, the founding of such claims on the notion of heterogeneity in firm resources precludes any possibility of performing confirming experiments involving other firms that would be needed to support a generalized proposition, because other firms would have to have their own "heterogeneous" resource endowments.

Given these impossibilities in using the scientific method in RBV research, the RBV's core proposition directly results in the Epistemological Impossibility Problem: Taken at face value, it is impossible use the scientific method – the accepted epistemology in

academic research – to test the RBV’s core proposition in any scientific way, and thereby to generate new knowledge or understanding about the role of resources in firms’ competitive outcomes.

Essence of the Problem

The ability to generate and test theoretical, generalized statements about resources as sources of sustained competitive advantage logically requires conceptual characterizations of resources that would enable identification of the *kinds* of resources that can be sources of sustained competitive advantage in more than one firm’s context. In essence, making any theoretically meaningful and scientifically testable statements about the role of heterogeneous resources in firm success (or failure) will first require a conceptual characterization of firms and competitive contexts adequate to support testing across homogeneous populations of firms (*not* just in single firm contexts) and in various kinds of competitive contexts.

PART II

THE COMPETENCE PERSPECTIVE: FUNDAMENTAL PRESUMPTIONS, CONCEPTUALIZATIONS, AND REPRESENTATIONS

The evident conceptual deficiencies and resulting theoretical limitations of the RBV were very much on the mind of the strategy and management researchers who gathered together under the banner of the “competence-based management” (CBM) movement in the mid 1990s. Their common concern was to define a conceptual foundation that would be sufficiently well articulated and intellectually rigorous to provide a viable basis for the development of strategy theory, and at the same time would be capable of yielding insights that could provide useful guidance to managers who must formulate viable strategies in their respective firm and competitive contexts.

The concern to develop theory that would be relevant to the real challenges faced by managers eventually crystallized in the stated goal of developing new theory that would be inherently *dynamic, systemic, cognitive, and holistic* in its conceptualizations and representations of firms, markets, and competitive interactions (Sanchez, Heene, and Thomas 1996). These four presumptions motivating the competence perspective became known as the “four cornerstones” on which the competence theory-building process was founded in the 1990s. Given their relevance to the conceptual deficiencies and resulting theoretical failures of Barney’s (1991, 1997) original RBV framework identified in the foregoing discussion, the first section below summarizes briefly these four presumptions in the competence perspective and their theoretical implications for building strategy and management theory.

Early competence researchers also recognized that providing a viable conceptual foundation for any theory building effort requires clear and adequate conceptualizations of the “primitive entities” to be invoked in representing any phenomena to be studied systematically and scientifically. Thus, an essential first step in launching the competence perspective was the careful definition of the key concepts (and associated terminology) that would serve as the conceptual building blocks in constructing new strategy theory (Sanchez, Heene, and Thomas 1996). To achieve logical coherence, the fundamental competence concepts were carefully interrelated in a classification schema that established key taxonomic distinctions among primitive entities (e.g., “resources” are distinguished from “capabilities”) that would serve as the conceptual foundations for building theory within the competence perspective. Since these conceptual distinctions equip the competence perspective with the means to look beyond the RBV’s vague notion of “resources” in understanding how firms create value and sustained competitive advantage, the second section below summarizes these foundational conceptualizations and associated terminology.

A further fundamental aspect of the competence perspective is the view that the competitive contexts can be *qualitatively different* in different industry settings at any point in time. To suggest that competitive contexts can be qualitatively different is to suggest that firms would then have to have qualitatively different kinds of resources, capabilities, management processes, and strategic logics to compete successfully in different competitive contexts. Thus, a basic task in competence theory building is to develop representations of competitive contexts that are qualitatively different in this important sense. Although research to develop typologies of competitive contexts is still ongoing in the competence perspective, the third section below presents a basic typology of qualitatively different kinds of competitive contexts that appear to call for different kinds of resources, capabilities, management processes, and strategic logics to compete successfully.

Fundamental Competence Presumptions: The Four Cornerstones

The four cornerstones of the competence perspective define its *dynamic*, *systemic*, *cognitive*, and *holistic* presumptions about the nature of firms, markets, and their interactions.

The *dynamic* cornerstone presumes that the world of firms, markets, and competitive interactions may be, and usually is, changing -- sometimes gradually, but often quite rapidly. Therefore strategy and management theory must not be exclusively static in its representations of and speculations about firms and their competitive environments. Stable environments and associated concepts of competitive equilibria are admitted as a special case, not the norm, and both the industry structural analysis framework developed by Porter (1979, 1981) and notions of competitive advantages sustained by factor market incompleteness are seen as representative of this special case. The normative context for strategy theorizing in the competence perspective, however, recognizes the challenge of devising strategies for ongoing value creation when both market demands and the organizational and technological means for meeting those demands may be changing, usually in imperfectly predictable ways. Thus, strategy theory developed within the competence perspective must recognize and address the significant uncertainty about future market conditions and resource availabilities that many (if not most) real firms actually face. As a result, the competence perspective takes seriously the fundamental intellectual challenge of identifying *ex ante* strategies that could lead to *ex post* competitive success under conditions of significant change and uncertainty.¹²

The *systemic* cornerstone demands that firms, markets, and industries be viewed as systems of interacting resources, processes, strategies, and external competitive and environmental contexts. This presumption follows from the perception that none of the resources available to firms are capable of creating value on their own, but must be interrelated and *coordinated* with other resources to achieve coherent firm processes that are capable of creating and producing successful products for markets. Thus, a foundational presumption in the competence movement is that (i) resources (i.e., useful assets available to a firm) are essential to competitive success, but must be complemented by (ii) *management processes* that interrelate and coordinate a firm's resources to develop (iii) *capabilities*¹³ in using its resources, and (iv) *strategic logics* for effectively targeting the use of a firm's resources and capabilities in various competitive contexts to achieve its goals – all of which can profoundly affect competitive outcomes. Thus, in the competence view, attention to a firm's "resource base" would be a necessary -- but by no means sufficient -- aspect of any viable strategy theory. This more complete view of firms as systems of resources and capabilities coordinated by management processes in pursuing strategic logics for attaining a firm's goals is represented in summary form by the systems view of firms shown in **Figure 2**.¹⁴

<<<<<<<<<----- INSERT **Figure 2** about here ----->>>>>>>>

¹² An important characteristic of the ongoing research process in the competence perspective in this regard is that it aspires to a high standard of intellectual honesty -- and thus does not try to obscure the fundamental intellectual challenge of building strategy theory by laying veneers of superficially plausible arguments on inadequate conceptualizations and theoretically empty notions, or by avoiding frank discussion of the challenges of building strategy theory in this mode.

¹³ *Capabilities* are defined as "repeatable patterns of action" in the competence perspective (Sanchez, Heene, and Thomas 1996).

¹⁴ Figure 1 is a simplified version of the original open-systems view of firms presented in Sanchez and Heene 1996.

The *cognitive* cornerstone requires that strategy theory recognize, address, and reflect the actual limitations of human cognitive capacities when confronted by the significant irreducible uncertainties that result from change dynamics in firms, markets, and competitive interactions. Strategic competition between firms can therefore be characterized as “a contest between cognitive processes” of firms’ managers (Sanchez and Heene 1996) as they try to solve the puzzle of which system design of resources, capabilities, management processes, and strategic logics for competing has the best chance of generating firm processes for creating value and achieving a given firm’s goals in its competitive environment. The outcome of this essentially intellectual puzzle-solving process is represented in Figure 2 by the strategic logic of the firm –its “operative rationale for achieving its goals through coordinated deployments of resources and capabilities” – and is implemented through its management processes. Note that the use of the term *deployment* denotes the strategic targeting of a firm’s resources and capabilities towards some defined market objective(s). Thus, in the competence view, the potential for a firm’s resources to contribute to value creation will depend not just on the nature of the resources themselves, but on how well a firm’s managers coordinate the firm’s resources in creating capabilities, and on how well the firm’s managers have chosen the strategic goals and market objectives to which the firm’s resources and capabilities will be applied in its competitive environment.

The *holistic* cornerstone reminds that strategy theory must also address the need for a firm’s managers to build sustained value creation processes by *distributing* the value a firm creates in ways that attract and retain the best possible resources in its value creation processes. This concern reflects a significant difference in the way the RBV and the competence perspective interpret the role of resource markets in achieving sustained value creation. As noted earlier, in the RBV the supposed “imperfection” (incompleteness) of factor markets assures that a firm with resources that are currently strategically valuable will not have its resulting competitive advantages eroded by competing firms seeking to replicate its resource base. By contrast, the competence perspective emphasizes the importance of (i) continuously competing in resource markets to attract the best available “firm-addressable resources” to a firm’s value-creation processes, (ii) continuously improving management processes to be more effective in attracting and using both firm-specific and firm-addressable resources in creating value, and (iii) returning some current resources back to resource markets as the resource needs of the firm change. This process of continuous engagement with evolving resource markets is seen as essential to maintaining the *strategic flexibility* of a firm (Sanchez 1993, 1995) to respond effectively to changing competitive conditions. While the competence perspective recognizes that resource factor market imperfections, inefficiencies, and incompleteness may contribute in various ways to the sustainability of a firm’s competitive advantages, competence researchers are generally more concerned with understanding how competitive advantage can result from management processes and strategic logics that are more effective in accessing, coordinating, and targeting the resources that are available and useful to a firm.

Fundamental Competence Conceptualizations: Resources, Capabilities, Management Processes, and Strategic Logics

In the philosophy of science, conceptualizations of the *primitive entities* that are used to represent some phenomena of interest must make clear the significant differences in functional or behavioral properties that warrant defining categorical differences between recognized entities. To this end, the competence perspective adopted a set of foundational conceptualizations of the primitive entities that would represent – and serve as the basis for

analysis of – firms, markets, and their interactions (both competitive and cooperative). These conceptualizations embody functional and behavioral distinctions that are essential in developing meaningful theoretical statements about how firms create value and competitive advantage (Sanchez, Heene, and Thomas 1996; Moorecroft, Sanchez, and Heene 2002).

The effort to develop adequate conceptualizations about and clear terminology for the primitive entities that are the constituent elements of firms was – and continues to be -- complicated by the proliferation of inconsistent and often contradictory terminology within strategy and other management fields. Surveys of relevant literature in the 1990s revealed extensive conceptual differences in the meanings ascribed – either explicitly or, more commonly, implicitly – to terms like resources, capabilities, and competences by authors within and outside the strategy field. Unfortunately, the terminological confusion in the strategy field has not noticeably improved, and even among researchers in the competence perspective, inattention to the need for careful, consistent use of terminology is an ongoing problem. Such problems of practice notwithstanding, the set of conceptual definitions and associated terminology developed by Sanchez, Heene, and Thomas (1996) continue to provide an essential set of distinctions for identifying and analyzing the primitive entities that are taken to be the constituent elements of firms and markets and the different ways that they interact to enable firms to create value and competitive advantage in their markets.

<<<<<<<<----- INSERT **Figure 3** about here ----->>>>>>>>

Figure 3 summarizes in graphic form the essential conceptualizations of and interactions among the primitive entities that are taken to be the constituent elements of firms and that are embedded in the competence vocabulary proposed by Sanchez, Heene, and Thomas (1996) and used in developing strategy theory within the competence perspective (e.g., Sanchez 2004a, Sanchez and Heene 2004). (Conceptual differences invoked in representing competitive contexts are discussed in a section below.) In brief, the rationales behind the basic conceptualizations of a firm’s constituent elements and their interactions summarized in Figure 3 are as follows:

Assets are anything tangible or intangible that *could be useful* to a firm in developing and realizing products (hardware, software, or services) to create economic value in its product markets. Assets may be *firm-specific* (internal to the firm) or *firm-addressable* (able to be accessed by the firm in resource factor markets). *Resources* are assets that a firm *can actually access and use* in developing and realizing products to create value in its product markets. The distinction between assets and resources is intended to make clear that not all assets will necessarily be resources for a given firm – e.g., some firms may have assets that are not currently useful in a given competitive context, assets that a firm’s managers do not recognize as useful in a given market context, or assets that they do not know how to use effectively in creating value. *Capabilities* are *repeatable patterns of action* that are created through a firm’s management processes for *coordinating* its resources in processes for value creation. For example, capabilities may be created by coordinating the various *skills* of a firm’s individual workers to create teams of people who can perform routines (repeatable patterns of actions) that enable the firm to perform a given task effectively. Note that under the definition of resources above, capabilities might be considered a resource, but because they would then be a special class of “resource” that operates on (uses) other resources, capabilities are always distinguished conceptually and terminologically from (other kinds of) resources in the competence perspective.

A firm’s *management processes* are a firm’s activities intended to build, leverage, maintain, and perhaps retire its competences. These activities include gathering and interpreting data about its internal and external environment, making decisions about the

tasks to be done and about the resources to be allocated to different tasks, communicating decisions, selecting and disseminating information, developing internal resources, acquiring and accessing resources in resource markets, retiring resources, and designing incentives to motivate resources.

A firm's management processes are derived from its *strategic logic* – its operative rationale for coordinating and deploying its resources and capabilities in ways that help it to achieve its *strategic goals* in its *competitive context*. In effect, a firm's strategic logic defines the *strategy* of a firm – the strategic intent of the firm (Hamel 1989) for creating value in its competitive context. Its management processes then elaborate the specific ways in which the firm will seek to carry out that intent.

Note that a key aspect of a firm's strategic logic is the objective of attaining a defined set of *strategic goals* for the firm (Sanchez and Thomas 1996), including not just goals for creating value in its product markets, but also goals for the distribution of value to the firm's resource providers (Sanchez and Heene 2004). Unlike the usual presumption in other strategy perspectives that the goal of a firm is simply maximization of profits or shareholder wealth, the competence perspective's basic conceptualization of firms allows for a diversity of firm-level strategic goals that would be effective in serving the collective goals of the stakeholders who provide the firm with its resources. Devising strategic logics that offer the best prospect of attaining the individual goals of a firm's various resource providers (which may be quite diverse and even competing) is seen as essential in initiating and sustaining value creation processes. Thus, *designing the firm as a system for sustainable value creation and distribution* is taken to be the fundamental – and quite challenging -- task of a firm's strategic managers. .

When a firm's strategic logic for pursuing its strategic goals chooses its targeted markets and market objectives well, when its management processes are effectively designed to support the sustained implementation of its strategic logic, and when a firm has acquired and accessed resources and developed capabilities in using resources that are effective in carrying out its strategic logic in its chosen competitive context, then a firm is said to have achieved *competence(s)* – the ability to sustain coordinated deployments of resources and capabilities in ways that help a firm achieve its goals in its competitive context.¹⁵ Thus, the competence perspective emphasizes that this conceptualization of competence does *not* imply that a competent firm will therefore *always* generate economic rents, be the most profitable or biggest firm in its markets, or enjoy complete success in achieving its goals. Rather, this conceptualization of competence recognizes that ongoing organizations may have varying forms and levels of competence that enable them to achieve varying levels of goal attainment. (Casual observation suggests that in some organizations goals, competence, and goal attainment may all be very low).

This conceptualization of competence also allows and invites theorizing about and research into the kinds and degrees of competence that may help firms achieve various kinds and degrees of goal attainment in different competitive contexts. In this regard, competence theorizing driven by this conceptualization of competence will necessarily be focused on developing *mid-range strategy theories* – i.e., strategy theory that identifies different kinds of competences (and measures for different degrees of competences) and generates testable propositions about how different kinds and levels of firm competences can lead to varying degrees of success in achieving various kinds of firm goals in different competitive contexts (see further discussion in following sections).

¹⁵ In this sense, a firm can be said to have a competence with respect to *each* competitive context in which it is able to sustain coordinated deployments of resources and capabilities in ways that help it achieve its strategic goals.

serving those preferences are subject to change and uncertainty. The stability or dynamics of customer preferences and available technologies for serving those preferences will largely determine the kinds of strategic logics, management processes, capabilities, and resources that are likely to constitute viable approaches to creating value and achieving a firm's goals in a given competitive context. Table 1 summarizes how these fundamental differences in *stable, evolving, and dynamic* market preferences and technologies give rise to significantly different kinds of strategic logics, management processes, capabilities, and resources for competing.

Stable competitive contexts

Stable competitive contexts are those in which customer demands and the technological means for serving those demands are both known and stable. Consistent with much theory in industrial organization economics and derived Porterian strategy concepts (Porter 1980, 1985), achieving low costs through scale and efficiency is likely to be the driver of competitive success in product markets with stable technologies and market preferences.

Accordingly, viable strategic logics are likely to emphasize making significant (possibly pre-emptive) commitments to efficient specific-use assets, creating production cost advantages by expanding capacity to achieve economies of scale, efficient application of existing technologies in producing standard products, vertical integration to achieve control of important production inputs and distribution channels, and defense of established market positions and market power (including pre-emptive investments intended to prevent new entries). To support these strategic objectives, management processes will be likely to use traditional hierarchical structures to achieve tight control of processes, to emphasize processes for continuously improving productivity and efficiency, to seek opportunities to expand capacity in an effort to increase scale and market power, and to implement controls within a vertically integrated supply chain intended to maintain stability in primary production processes.

Key capabilities to be developed in support of these management objectives will include design of optimized (cost-minimized) processes, continuous control of operational processes, and the ability to raise capital to finance investments in large-scale and vertically integrated production assets. Key resources will include large-scale production facilities yielding significant economies of scale, technical knowledge relevant to the firm's production processes, reliable sources of low-cost inputs, and a stable (perhaps even captive) customer base.

Evolving competitive contexts

A competitive context may be characterized as evolving when market preferences and/or available technologies are changing in more or less predictable ways. Significant market changes are likely to be driven by the evolving preferences of customers who are becoming increasingly sophisticated and demanding in the products they seek to support their lifestyles or business processes. Technological change is likely to follow more or less predictable trajectories (e.g., Moore's Law) that periodically make possible new kinds of products and that support continuous improvements in existing products' performance levels, features, and performance/price ratios. The defining focus of viable strategies in such a competitive context is likely to be early identification of and effective organizational responses to opportunities and threats created by ongoing changes in markets and technologies.

As evolving technologies and/or market preferences come to define the competitive context, viable strategic logics are likely to include a heavy emphasis on identifying and

developing next-generation products and technologies, using financial criteria in deciding the optimal timing of new product introductions and technology transitions, and periodically repositioning a firm's brands and distribution channels to maintain alignment with evolving market preferences. Because new product development will be undertaken frequently and perhaps even continuously, management processes will seek to implement efficient product development processes. Because developing new kinds of products and continuously improving products are likely to require a changing array of resources and capabilities, management processes will actively seek to acquire and integrate new resources with new skills and capabilities, and to establish partnerships and alliances with other firms to access new market and technology capabilities. Managers will be engaged in frequent organization redesigns (e.g., business process re-engineering and distribution channel redesign), and will be heavily involved in managing ongoing organizational transitions in technologies, products, and processes.

Key capabilities to be developed by management processes in an evolving competitive context include marketing research to identify market trends, technology roadmapping to support planning for orderly technology transitions, reliable new technology and product development and acquisition processes, and effective management of partnerships and alliance relationships. Key resources will include relationships with lead users who can help firms identify requirements for successful new product concepts (von Hippel 1988), technology gatekeepers who can help a firm predict evolutions of current technologies and identify emerging technologies, a good reputation in a firm's product markets and industry that helps the firm attract and retain good customers and value-chain partners, and partner relationships that enable a firm to identify and respond to new market and technology opportunities.

Dynamic competitive contexts

Competitive contexts can be characterized as dynamic when both markets and technologies are subject to high rates of change – and when such change results in significant levels of irreducible uncertainty about the kinds of products markets will demand next and the technologies that will be best suited to provide those products (Sanchez 1995, 1996, 1999, 2003). Rapid technological change accelerates changes in the product concepts on which product markets are based, as well as in the processes that can be used to create, produce, distribute, and support products. At the same time, partly as a result of rising customer expectations fueled by rapid technological change, and partly as a result of growing customer awareness and sophistication about emerging product concepts, market preferences become increasingly varied and customer expectations much more demanding. The rising sophistication of customers tends to result in positive market responses to firms that offer more frequent introductions of new product concepts, higher performing product models, and a wider choice of product variations (Sanchez 1999). As a competitive context becomes dynamic in this sense, firm strategies are likely to be focused on the need to fashion the firm as a rapid-sense-and-respond enterprise (Haeckel 1993) while managing high levels of irreducible uncertainty about market and technology changes.

Strategic logics will therefore tend to focus on increasing a firm's *strategic flexibility* – the ability to respond advantageously and quickly to imperfectly predictable changes in markets and technologies (Sanchez 1993, 1995, 1996). Rather than committing to strategic investments in specific technologies or products, firms will explore multiple new technologies and product concepts in an effort to create *strategic options* to adopt the new technologies and product concepts that will eventually prove to be most advantageous as the future unfolds (Sanchez 1993, 1995, 2003). Firms will proliferate large numbers of new

product variations to test markets in real time (Sanchez and Sudharshan 1993), leading to rapid turnover in product models.

While seeking to sense and respond in this way to a rapidly changing array of technology and market opportunities and threats, a viable strategic logic will emphasize fixed-asset parsimony. In the face of significant uncertainty about where technologies and market preferences are headed in the long term, accumulating specific resources that will have future strategic value becomes problematic, because the specific assets that will have strategic value in a future with significant irreducible uncertainty cannot be determined with confidence. The resulting high risk of investing in inflexible specific-use fixed assets leads firms to focus on creating and assuring access to flexible resources -- especially intellectual assets like knowledge that can be leveraged in a variety of ways as market and technology conditions change. To increase the firm's strategic options, the strategic logic will emphasize acting as a "network actuator" that can access the technology, development, production, and market resources and capabilities of a network of firms to quickly configure now value chains as new technologies and market opportunities emerge and are detected (Sanchez 1993, 2004a).

Management processes in dynamic competitive contexts will emphasize various processes for improving the ability of the firm as an open system (Sanchez and Heene 1996) to sense and respond to rapidly changing technology and market opportunities, including intensive monitoring of its resource networks for ideas about future technologies, product possibilities, and competitive threats. Product designs will be based on modular architectures to enable fast, low-cost development of new products, proliferation of new product variations to support real-time market research, and rapid technological upgrading of products (Sanchez 1995, 1999; Sanchez and Collins 2003). Managers will implement modular process architectures for product creation and realization to enable rapid reconfiguration a changing array of resources and fast redeployments of value chains using network-sourced resources and capabilities. To expand the firm's strategic options, managers will simultaneously maintain multiple distribution channels for serving markets (Sudharshan and Sanchez 1998).

Modular design and development capabilities become key in dynamic competitive environments, as is the ability to conduct real-time market research in fast-evolving markets by using modular product architectures to rapidly configure new product variations. A related key capability is the effective use of modular architectures to coordinate multiple distributed development processes within a potentially global network of development resources (Sanchez and Mahoney 1996).

Key resources for a viable firm in a dynamic competitive context would include its current modular platforms (modular product architectures supported by coordinated modular process architectures) that determine its current capabilities to configure and support new product variations (Sanchez 2004b), its knowledge of and access to resources networks that provide resources that can "plug and play" in its modular platforms (Sanchez 1995), and a reputation as a capable network player that attracts cooperation from other network participants (Sanchez 2002a).

THE COMPETENCE PERSPECTIVE'S REMEDIES FOR THE CONCEPTUAL DEFICIENCIES, LOGICAL PROBLEMS, AND RESULTING THEORETICAL LIMITATIONS OF THE RBV

The beginning of wisdom is the definition of terms.

-- Socrates

The fundamental representations of firms, markets, and competitive interactions embodied in the four cornerstones of the competence perspective suggest that the RBV's vague notion of firm resources fails to make fundamental conceptual distinctions that are essential in generating any logically sound and theoretical meaningful propositions about how firms create strategic value and competitive advantage. At minimum, as suggested in Figures 1, 2, and 3, the conceptual basis for viable strategy theory must include clear, adequate, and distinct conceptualizations not just of *resources*, but of firm *capabilities* in using resources, of *management processes* that define and build a firm's capabilities, and of a firm's *strategic logic* that defines its strategy for deploying a firm's capabilities in pursuit of its particular strategic goals. Just as fundamentally, while the RBV's conceptualization of success is the sustained generation of (Ricardian) rents, the competence perspective's concept of success is the attainment of a given firm's particular goals - which may include many different ideas about how to provide economic rewards, work environments, professional experience, and other benefits that are the basis for a good life for *all* of its stakeholders, not just the more commonly stipulated goals in strategy of profit maximization or shareholder wealth maximization.

These fundamental conceptual differences in the foundations of the RBV and competence perspective can be summarized in this compact form:

RBV assumptions:

Firm Success = Sustained generation of (Ricardian) rents

Firm Success = $f(\text{resources})$

Competence Perspective assumptions:

Firm Success = Ongoing satisfactory level of attainment of a firm's goals

Firm Success = $f(\text{resources, capabilities, management processes, strategic logic})$ ¹⁶

The following discussion explains how the fundamental presumptions, conceptualizations, and representations of the competence perspective make it possible to go beyond the exclusive focus of the RBV on "resources" to develop representations of resources, capabilities, management processes, and strategic logics that provide a more viable basis for meaningful strategy theorizing.

Resources in the Competence Perspective

¹⁶ The reason for the use of an italicized symbol "*f*" for function in the competence perspective's assumptions and a non-italicized symbol "f" in the RBV's assumptions will be explained later in this section.

contribute to the creation of strategic value depends importantly on the way it is embedded organizationally, as previously noted the main inference drawn from this insight within the RBV is that organizational embeddedness creates a barrier to mobility for strategically valuable resources. (As the discussion of section 3.5 has shown, however, this inference rests on an unwarranted asymmetric assumption that a resource cannot create equal or greater value in the context of another firm.) However, a more important (and defensible) implication of this property of resources is that the different ways that various firms embed their resources is likely to be an important determinant of the strategic value that can be derived from the use of a resource.

The systemic cornerstone in the competence perspective leads to a view of firms not as “bundles of resource endowments” (however broadly “resources” may be conceptualized), but rather as *systems of interrelated and coordinated resources*. Viewing firms as systems of resources enables categorization and classification of resources based on their system properties in ways that are support meaningful theorizing, empirical testing, and practical implementation (Sanchez 2002b). Dierickx and Cool (1989) identified several important system properties of resources that can help firms to create strategic value and sustained competitive advantages to varying degrees in different competitive contexts. The strategically significant systemic properties of resources identified by Dierickx and Cool include the following:

Time compression diseconomies. Some resources may cost more to develop in a hurry than they cost to develop in a more measured and orderly manner. For example, a firm may find that a “crash program” to develop a new technology costs more than developing the technology through its normal research processes, because mistakes and oversights are more likely to happen when a process is rushed. Because such resources would impose higher costs on competitors who would have to rush to catch up with a firm that already has such resources, this system property of such resources can contribute to the sustainability of competitive advantage by a firm that already has such resources.

Asset mass efficiencies. In developing or acquiring some resources, a firm may find that already having a critical mass of some resources makes it possible to create or acquire new resources more efficiently. For example, a firm may find that creating a new technology costs less and can be accomplished faster when it already has a critical mass of related technological capabilities. Adding a specifically human dimension to Dierickx and Cool’s important conceptualization, we may also recognize the special case of “asset mass feasibility” – the possibility that a critical mass of certain resources may be essential to attracting new resources. For example, a university that has achieved a critical mass of outstanding faculty may be able to develop a reputation that enables it to attract more outstanding faculty, while a university that lacks such faculty and reputation may not succeed in recruiting top faculty. Organizations that have achieved critical masses of such resources may thereby enjoy a sustained competitive advantage relative to organizations that lack such resources.

Asset stock interconnectedness. Recognizing that human resources are assets with important cognitive characteristics, Dierickx and Cool suggest that having certain resources reduces the difficulty of identifying and acquiring other useful resources. In effect, a firm with certain kinds of expertise may be better able to recognize, absorb, and use new kinds of expertise that could be strategically valuable to the firm than firms that lack such expertise.

Sanchez and Heene (2004) suggest that the following sources of strategic value and potential competitive advantage widely recognized in the economics and strategy literatures are also systemic properties of resources:

Learning-curve economies. A resource that “learns by doing” may accumulate knowledge that leads to lower costs and/or improved quality of its outputs as the resource is

used more extensively. Such resources may help to lower the costs and improve the performance of a system of resources in carrying out a value-creation process.

Capture of the value of positive externalities. Some resources may make it possible for a firm to capture some of the value created by network externalities. For example, a firm may have technology and design resources that enable it to identify, understand, and create modular interfaces that enable its customers to “plug and play” its products in larger systems that bring its customers additional functionalities and value -- e.g., products that connect easily to the internet (Sanchez 1999, 2002a).

The cognitive cornerstone in the competence perspective -- i.e., the need to take the cognitive limitations of managers seriously -- helps to identify an important cognitive property of some resources:

Causal ambiguity. Some resources may help a firm to reduce uncertainty among its own managers as to the reasons for its competitive success, or to create uncertainty among competitors as to the reasons for its success and thereby limit their ability to emulate the firm’s successes. For example, a resource that can be kept secret (like a proprietary technology) may make it difficult for competitors to identify what kind of resource a firm is using in its value-creation processes. Note that the competence perspective differs from the RBV in requiring that a firm’s managers actually understand the importance of a resource and the value of making it difficult for other firms to discover the resource’s value.

The holistic cornerstone in the competence perspective helps to recognize important properties of human and organizational resources that may result when a firm’s strategic logic is successful in distributing value to its stakeholders in ways that provide satisfactory levels of goal attainment for its resource providers and assure their continuing participation in the firm’s value creation processes.

Committed and motivated resources. The effort and performance that various individuals, teams, and firm-addressable human resources may provide can vary greatly with the level of commitment and motivation of those resources, which in turn can vary greatly with the satisfaction of those resources with the way the firm distributes the value it creates to its resource providers. Even if the skill sets of individuals and the capabilities of teams are similar in two different firms, the ability of the firms to create strategic value can vary greatly depending on the commitment and motivation levels of the human resources in the two firms.

Given the fundamental importance of such properties of resources in determining and realizing a firm’s potential for creating value and competitive advantage, explicitly recognizing such properties of resources derivable within the competence perspective is an essential precondition to substantive, meaningful strategy theorizing.

Resources as potential bottlenecks in value creation processes

The RBV asserts that it is the “strategically valuable” resources a firm possesses that enable it to create strategic value and sustained competitive advantages. The competence perspective on firms as systems of resources, however, makes clear that this conceptualization reflects an inadequate and indeed flawed understanding of how value creation processes actually work in a firm. In a firm as a system of resources, *all* the resources involved in a value creation process are interdependent to some degree and thus must perform well together in order to create value and compete effectively. If any resources in a firm’s system of resources are below the level of performance of its (supposedly) “strategically valuable” resources, then the resources with the *lowest level of performance* will act as a bottleneck that lowers the performance of the overall system of resources in its value creation process (Sanchez 1995, 2004a). In effect, the value creation potential of a firm as a system of resources is *not* determined exclusively -- or even primarily -- by the abilities of its best resources, as the RBV suggests, but by the abilities of the weakest links in its

“chain of resources” (Sanchez 1995).

The need to recognize theoretically the strategic importance of a firm’s least able resources is reflected in the competence perspective’s representation of managers’ interventions in their firms to undertake “strategic gap-closing” activities (Sanchez and Heene 1996, 1997, 2004). Managers are characterized as monitoring their firm to identify any *strategic gaps* between the desired and actual state of a firm’s system elements (e.g., its resources), and then to intervene to close such gaps when the actual level of performance of a system element falls too far below the desired or intended level of performance (e.g., by improving or replacing resources whose performance is seen as unacceptably poor).

This system view of the way firms actually create value by using systems of resources suggests an approach to analyzing – both theoretically and empirically -- how a firm’s resources affect its potential for creating value that is the inverse of the RBV approach: Rather than focusing on some presumed “strategically valuable” resources within a firm, one could more usefully try to determine which resources in a firm are actually the least able to support value creation -- and thereby constrain a firm’s ability to create strategic value even if it has other resources that are potential sources of competitive advantage. In effect, identifying the least able resources in a firm’s value creation processes and analyzing the constraints they impose on overall firm performance is much more likely to lead to good predictions of firm performance than an exclusive focus on identifying some resources argued to be the most “strategically valuable” within a firm.

Capabilities in the Competence Perspective

A basic presumption of the competence perspective is that resources *per se* cannot be sources of competitive advantage, as alleged by the RBV, but rather that it is the resources available to a firm *and* the way a firm *uses* (coordinates and deploys) its resources that enable a firm to create value and competitive advantage. In the competence perspective, *capabilities* are created within a firm when resources are coordinated in ways that result in *repeatable patterns of action* (Sanchez, Heene, and Thomas 1996). The patterns of action that can be repeated on demand (such as product development, production, and supply chain execution) create a portfolio of capabilities that a firm’s managers can draw on in responding to market opportunities and competitive threats. Thus, from the competence perspective, the capabilities a firm has managed to develop with its resources are a more fundamentally important unit of analysis in representing and analyzing firms than firm resources *per se*.

A common tactic of the promoters of the RBV in responding to this critique is simply to insist that capabilities are also “resources.” Indeed, as noted earlier, the RBV labels as a resource *anything* that is potentially useful in explaining how a firm creates value or achieves a competitive advantage. Coordination capabilities, management processes, strategies, market positions – *everything* can be, and usually is, called a “resource.” However, this open-ended inclusion of virtually all possible variables involved in creating competitive advantages under the heading of “resources” essentially renders the RBV an “Everything-Based View” (EBV). A theoretical consequence of this common practice is that the RBV loses any power to discriminate among the many qualitatively different kinds of entities whose functional or behavioral properties have significantly different kinds of impacts on a firm’s ability to create value and competitive advantages.¹⁹

¹⁹ An institutional – and thus potentially more damaging – consequence of this practice, however, is that the RBV shows signs of becoming an effort (conscious or unconscious) to reshape the field of strategy in its own likeness through a process of semantic subversion that implicitly pre-empts other approaches seeking greater intellectual clarity and rigor in articulating foundational concepts for the field of strategy. This process seeks to

As with the conceptualization of resources, the dynamic, systemic, cognitive, and holistic cornerstones of the competence perspective provide essential approaches to characterizing firm capabilities in ways that are conceptually and empirically useful in strategy theorizing.

The competence view of organizations, environments, and their interactions as (often) *dynamic* in nature leads to conceptualization that recognizes two basic kinds of firm capabilities (Sanchez 2001). The first conceptualization of capabilities recognizes the importance of repeatable patterns of action when an environment is stable enough to benefit from doing “more of the same” (i.e., competence leveraging). This conceptualization has much in common with the concepts of *firm routines* (Nelson and Winter 1982) and *industry recipes* (Spender 1999) long discussed in the strategy literature as potential sources of strategic value when environments are stable.

Taking change in competitive environments seriously, however, also leads to the recognition that a firm must be able to adapt its patterns of action as changes in the competitive environment lead to the need to act in new ways (competence building). Thus, a second kind of capability akin to Teece, Pisano, and Shuen’s (1997) concept of *dynamic capabilities* must also be recognized. Such capabilities are qualitatively different from the first concept of capability as routine or recipe because they operate on the first kind of capabilities to adapt them to new requirements – and in some cases they may even act to create wholly new capabilities of the first type. In essence, dynamic capabilities are repeatable patterns of action in changing a firm’s other repeatable patterns of action. In the hierarchy of system elements in firms as organizations suggested in Figure 2, dynamic capabilities would (hopefully) be a feature of a firm’s management processes that work to design and implement (ordinary) capabilities that the firm can use in carrying out its current operations for value creation.²⁰

A firm’s ability to change the resources it uses and/or the ways it uses those resources determines its ability to respond to a dynamic environment. Recognizing that capabilities arise from firms as systems of resources -- and thus both exhibit and are subject to system properties -- makes it possible to distinguish some further aspects of the capabilities a firm needs to respond effectively to a changing world.

In conceptualizing “ordinary” capabilities, for example, it is important to recognize that firms as systems of interdependent elements have the potential to be destabilized by disturbances and disruptions of their usual processes. They may then exhibit chaotic behaviors that can seriously degrade a firm’s production, supply chains, and other value-creating processes. Thus, in environments subject to change and uncertainty, the extent to which managers as system designers of their firms (Sanchez and Heene 2004) are able to interrelate resources in ways that are more robust and adaptable to variations in conditions at the working level becomes an important variable in determining a firm’s ability to sustain its current value-creation processes. In **Figure 4**, which presents a hierarchy of capabilities discussed in this section and of management processes and strategic logics as discussed in following sections, this kind of capability is characterized as *operating flexibility* (Sanchez 2004a). It determines the extent to which a firm’s managers can actually use the flexibilities

enshrine the RBV’s basic ideas -- however inadequately conceived and poorly articulated – as the overarching strategy framework to which all other strategy concepts must be related and relegated, while largely excluding from serious consideration other perspectives on strategy that seek to look beyond the RBV’s vague and infinitely elastic notions of “resources” in building strategy theory. In this respect, the RBV has begun to exhibit the self-referential, exclusionary regimen of an institutionalized paradigm (Kuhn 1962; Douglas 1987).

²⁰ In this regard, recognition of the need for a concept of dynamic capabilities that operate on other capabilities reflects Howard Thomas’s call for the strategy field to conceptualize and investigate the “first derivative” variables that determine a firm’s ability to change in a dynamic world (Thomas 1996).

managed to enable efficacious reconfiguration of its resources as competitive and other environmental conditions change. As suggested in Figure 4, a third form of strategically important capability recognized in the competence perspective is the cognitive flexibility of its managers in imagining alternative approaches to managing value creation processes that enable design and implementation of new management processes that enable it to use existing and new resources to greatest effect in pursuing current or new strategies.

Amit and Schoemaker (1993) argue that the cognitive and social processes of a firm's managers will determine the resources a firm acquires and thus the firm's potential for generating rents. While unfortunately framed within the narrow focus of the RBV on resources and rents, Amit and Schoemaker's basic insight into the importance of a firm's management processes can readily be extended to include the impact of managers' cognitive and social processes on the capabilities they choose to develop from the firm's resources, on the management processes they put in place to interrelate a firm's capabilities in carrying out a strategic logic effectively, and indeed on their processes for defining a strategic logic for a firm. Thus, management processes as a strategic variable not only occupy the upper levels of the hierarchy of strategic variables presented in the system representation of a firm in Figure 2; management processes must also be recognized as a "higher-order" strategic variable (Sanchez and Heene 1996) that operates on – and thus cannot be conceptually equated with -- resources and capabilities of less broad importance to competitive outcomes.

The competence perspective has yet to produce a definitive taxonomy or typology for identifying types of management processes. However, Sanchez and Heene (2004) have proposed an "Organization Concept" framework for analyzing organizations that includes the constituent elements of management processes that would lead to significant differences in approaches to managing and that therefore could be taken as the basis for generating taxonomies or typologies of management process types. Each of these elements can occur in a limited number of basic alternative forms (indicated in parentheses in the following list). These elements include the governance structure for a firm's resources (4), the basis for management task allocations (5), the approach to authority distribution (2), the basis for designing information flows (2), the kinds of control systems used (4), and the firm's approach to defining incentives (2). Of course, even this simple set of basic possibilities would lead to $5 \times 4 \times 2 \times 2 \times 4 \times 2 = 640$ possible combinations of management process variables, so some basis for further abstraction and categorization would be desirable to arrive at a more tractable number of management process types.

In this regard, identifying sets of management process characteristics that can be hypothesized to succeed (or that are observed to succeed) in various competitive contexts could lead to useful taxonomies or typologies of generalized management process types (Sanchez 1996). Propositions and testable hypotheses based on identified management process types may then be researched to determine if there are any consistent patterns in which specific management process types are more or less successful in pursuing various kinds of strategic logics in various kinds of competitive environments, as suggested in Table 1.

Strategic Logics in the Competence Perspective

In the RBV, a firm's ability to create value and maintain competitive advantage are said to result from its possession of resources of superior strategic value. By contrast, the competence perspective maintains that an organization's competence(s) is the overarching aspect of an organization that determines whether or not it is capable of creating value and competitive advantages.

universally applicable may have to be articulated at such a high level of abstraction that they may lose any capacity for effectively addressing the specific conditions that distinguish qualitatively different competitive contexts. More fundamentally, such strategy propositions may have to invoke conceptualizations so abstract and so broad in the scope that they simply cannot be operationalized practically or empirically. As noted earlier, the core proposition of the RBV – which purports to be a universalistic strategy proposition -- exhibits exactly these symptoms of logical impossibility resulting from excessive abstraction.

CONCLUSION

From time to time, all fields of inquiry may be subject to episodes of fads and false starts. The current fascination in the strategy field with the Resource Base View will no doubt be seen one day as such an episode. The (superficial) plausibility of the RBV's core proposition, the (facile) applicability of its concept of "resources" to virtually anything, and the (absolute) assurance that competitive success can always be argued *ex post* to result from some kind of rare or unique firm "resources" – these features of the RBV weave a seductive web that has ensnared a surprising amount of strategy "research" in the past decade. Yet as this discussion has undertaken to show, there is no doubt that from a scientific point of view, the foundational conceptualizations offered by Barney (1991, 1997) virtually assure that the RBV will remain a theoretically sterile undertaking, no matter what its current popularity may be.

Offering criticism that identifies conceptual and theoretical problems is always easier and less productive than offering solutions to those problems. This discussion has therefore also tried to suggest how the foundational concepts of the competence perspective provide remedies to the fundamental conceptual deficiencies of the RBV, and how research in strategy into the effects of firm heterogeneity can be improved by adopting a research program that adequately represents essential sources of firm heterogeneity by explicitly incorporating the conceptual remedies proposed here.

The challenge in building a theoretically fruitful research program founded on competence concepts now lies in the basic scientific work of elaborating taxonomies and typologies of resources, capabilities, management processes, strategic logics, and competitive contexts. These categorizations should eventually provide the foundation for generating empirically testable (and practically actionable) propositions about the kinds of resources, capabilities, management processes, and strategic logics that may afford an "ongoing, satisfactory level of attainment of a firm's goals" in various kinds of competitive contexts. The extent to which competence research progresses in this regard may well determine whether this explanandum of the competence-based perspective is one day recognized as the essential task facing researchers in the field of strategic management.

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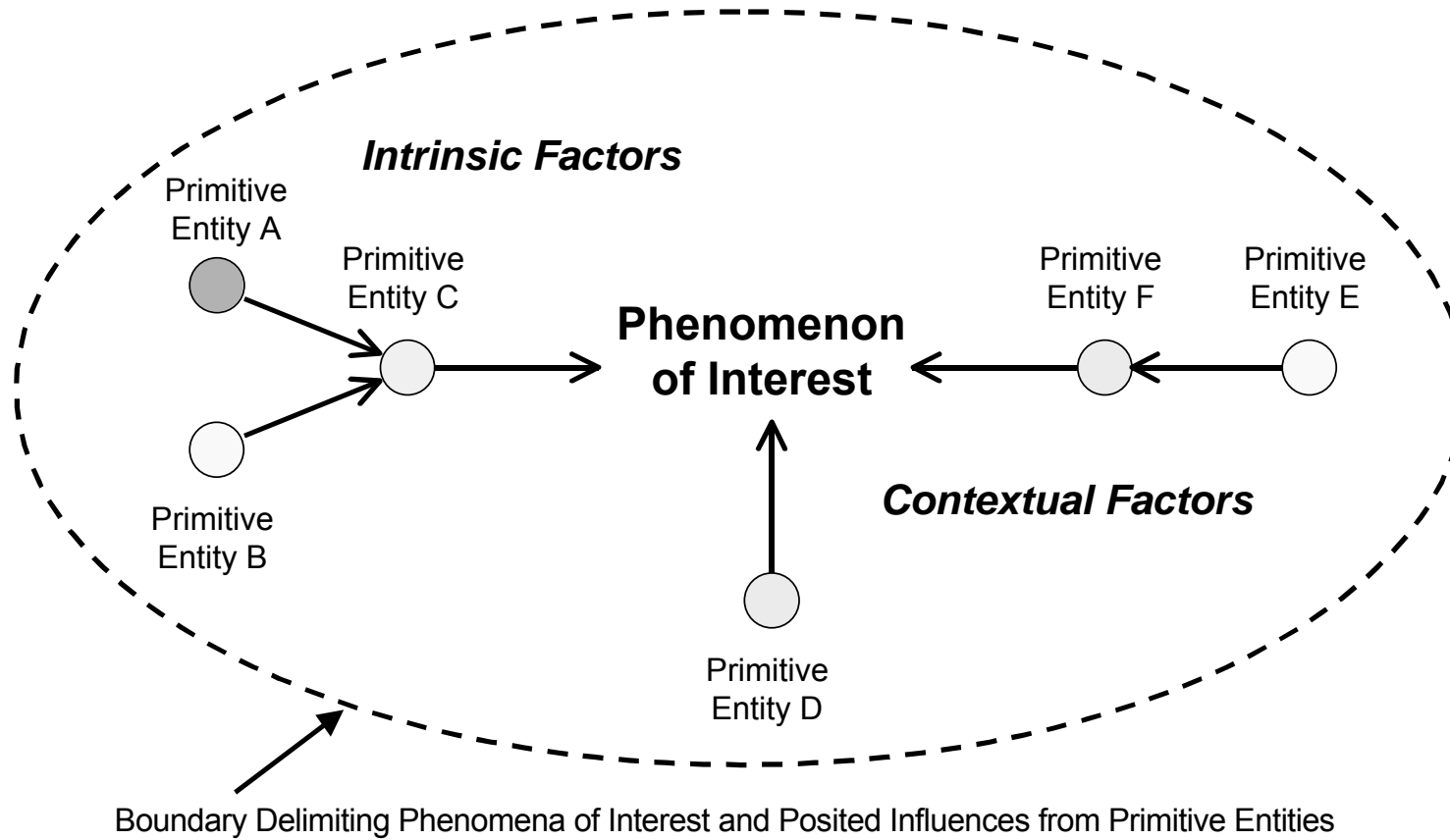


Figure 1: Essential Conceptual Elements in Scientific Theorizing

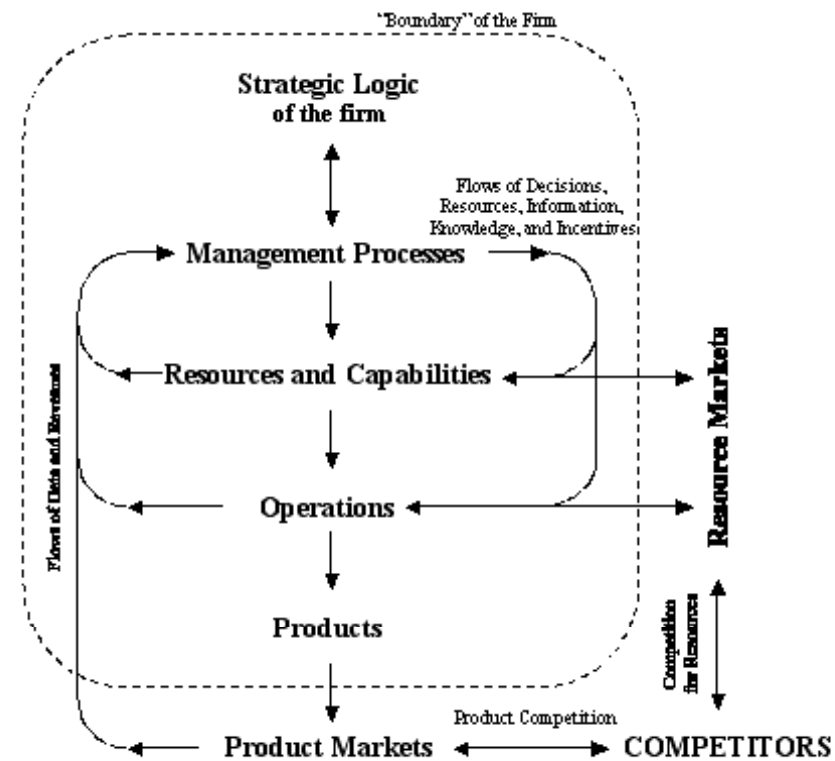


Figure 2: A Systems View of the Firm

(Source: Sanchez and Heene 2004)

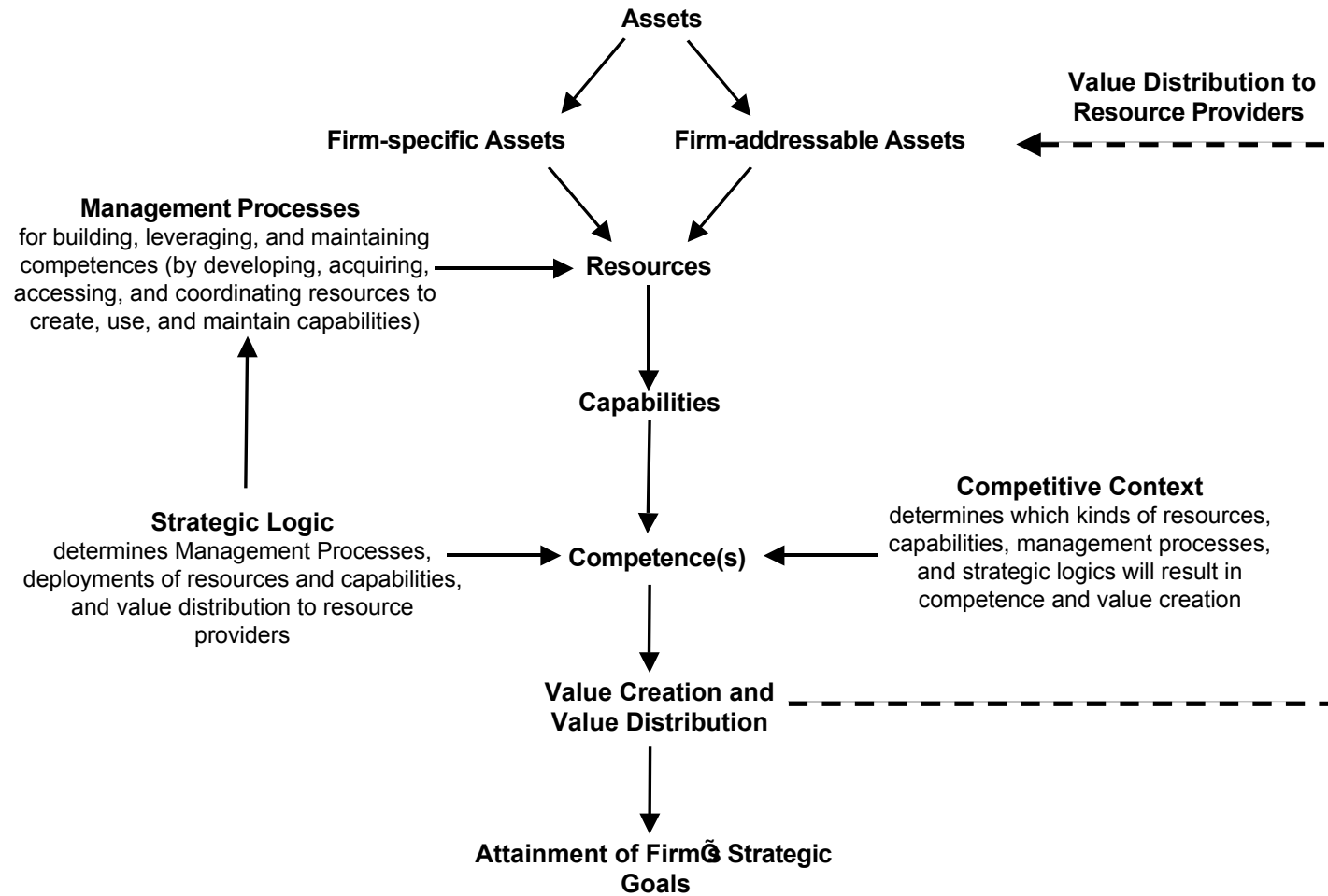


Figure 3:
Primitive Entities Invoked in Competence Perspective

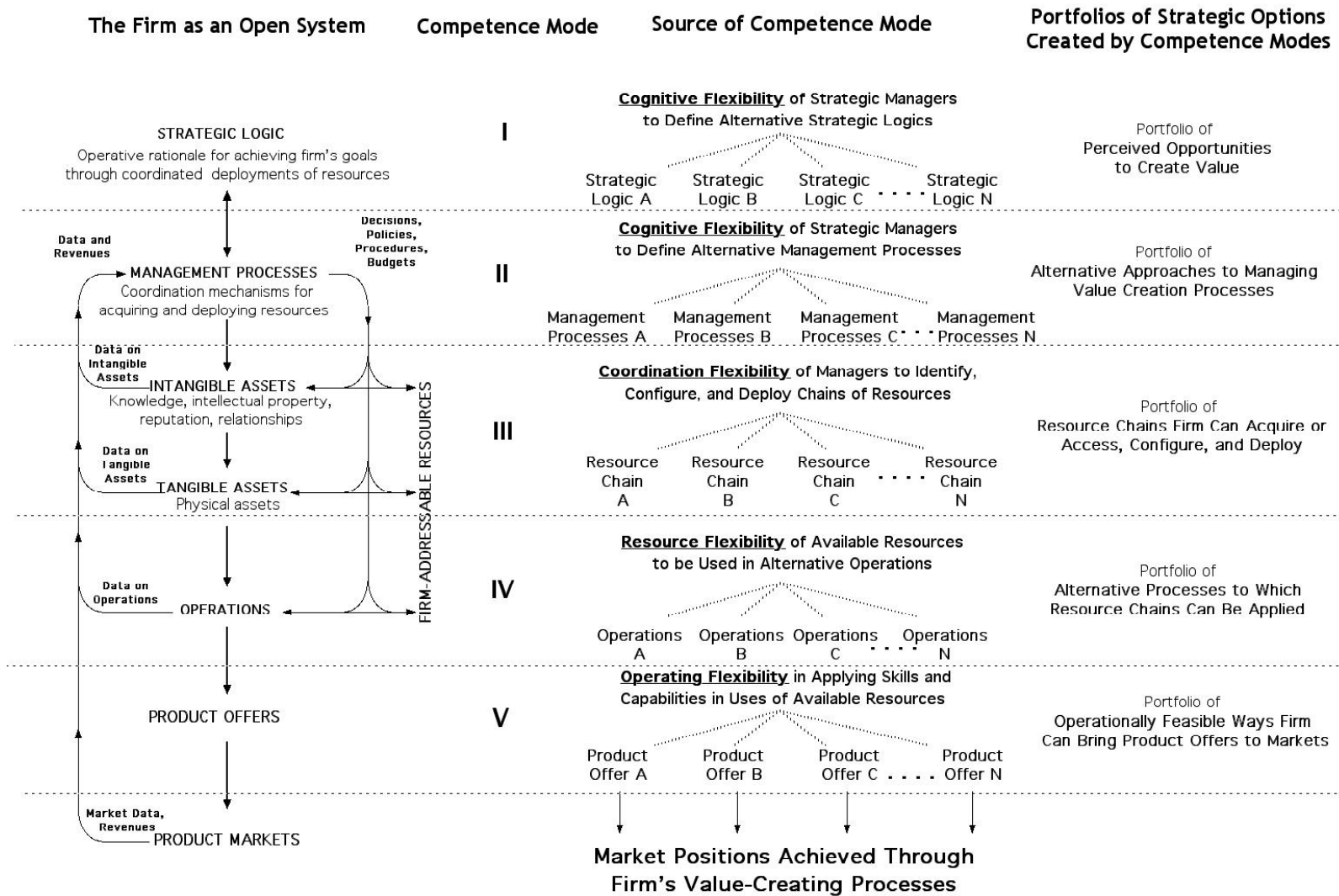


Figure 4: Hierarchy of Capabilities, Management Processes, and Strategic Logics

(Source: Sanchez 2004)

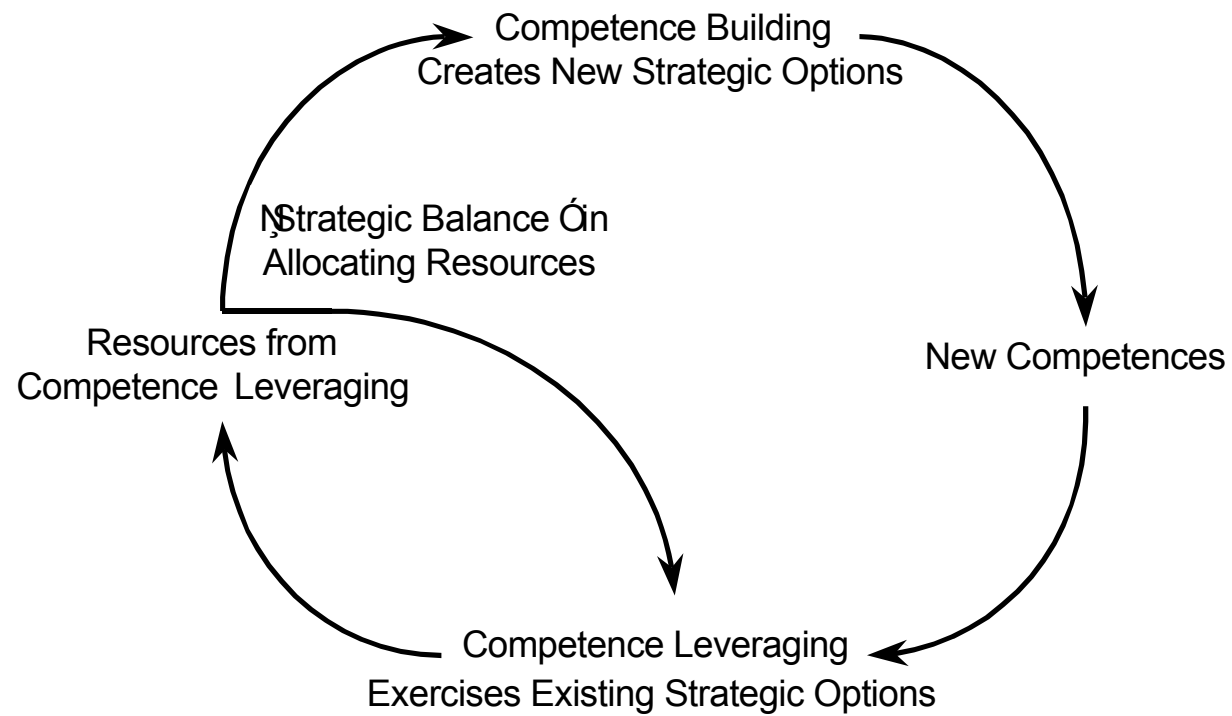


Figure 5: Strategic Balance in Allocating a Firm's Resources

(Source: Sanchez and Heene 2004)

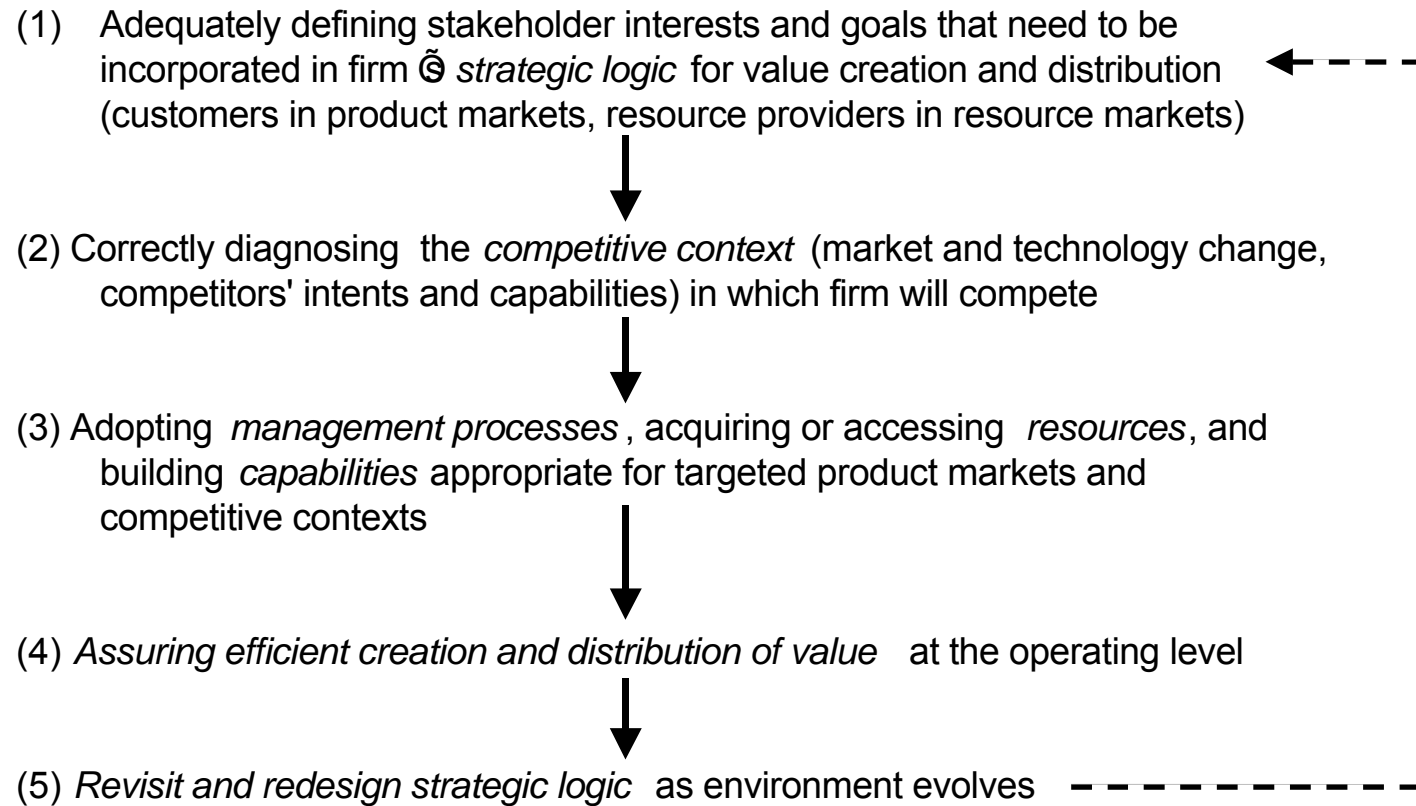


Figure 6: The Strategic Management Process in the Competence Perspective

<i>Competitive Contexts</i>			
	<i>Stable</i>	<i>Evolving</i>	<i>Dynamic</i>
<i>Key Concepts In Strategic Logic</i>	<ul style="list-style-type: none"> □ Strategic (pre-emptive) commitment to specific assets □ Achieve low costs through economies of scale □ Efficient use of existing technologies in low-cost production of standard products □ Vertical integration to gain control of inputs and outputs □ Defense of market positions 	<ul style="list-style-type: none"> □ Identification and adoption of next generation products and technologies □ Optimal timing of new product introductions and technology transitions (based on financial criteria) □ Repositioning of brands to align with evolving market preferences 	<ul style="list-style-type: none"> □ Create strategic options that confer strategic flexibility to respond to changing market and technology opportunities □ Proliferation of new product variations, rapid model turnover □ Fixed-asset parsimony □ Fast leveraging of intellectual assets □ Firm acts as network actuator in organizing new value chains in technology, development, production, and market resource networks
<i>Emphases in Management Processes</i>	<ul style="list-style-type: none"> □ Hierarchical management structures to achieve tight control of processes □ Increasing efficiency in use of existing technologies □ Capacity expansion to achieve economies of scale and market power □ Control of supply chain to create stable production environment 	<ul style="list-style-type: none"> □ Efficient new product development □ Acquisition and integration of new resources (e.g., human resources) □ Partnering and alliances to access new market and technology resources □ Organization redesign (e.g., business process re-engineering, distribution channel re-design) □ Managing organizational transitions 	<ul style="list-style-type: none"> □ Processes to sense and respond to changing markets and technologies □ Use of modular product architectures to accelerate product development and rapidly upgrade products □ Use of modular process architectures to enable rapid reconfiguration of value chains □ Management of multiple distribution channels
<i>Key Capabilities</i>	<ul style="list-style-type: none"> □ Process optimization (design) □ Process control (operations) □ Financing large-scale investments 	<ul style="list-style-type: none"> □ Conventional marketing research □ Technology roadmapping □ New product development □ Managing partner relationships 	<ul style="list-style-type: none"> □ Modular design □ Real-time market research □ Coordination of multiple network-based development processes
<i>Key Resources</i>	<ul style="list-style-type: none"> □ Large scale production facilities □ Process technology knowledge □ Sources of low-cost inputs □ Stable (captive) customer base 	<ul style="list-style-type: none"> □ Relationships with lead users □ Technology gatekeepers □ Market and industry reputation □ Partner relationships 	<ul style="list-style-type: none"> □ Current modular platforms □ Knowledge of and access to resource networks □ Reputation as capable network actuator

Table 1: Key Elements of Viable Firm Strategies in Three Competitive Contexts

(adapted from Sanchez 1996)

Cornerstone of Competence Perspective	Derived Properties of Resources
<i>Dynamic</i> view of product markets	Resource flexibilities
<i>Systemic</i> view of firms	Time-compression diseconomies
	Asset mass efficiencies
	Asset stock interconnectedness
	Learning-curve economies
<i>Cognitive</i> view of managers	Capture of positive externalities
	Causal ambiguity (to other firms)
<i>Holistic</i> view of organizations	Commitment and motivation

Table 2:
Properties of Resources Derived From Four Cornerstones of Competence Perspective