

AN ASYMMETRY-BASED VIEW OF ADVANTAGE: TOWARDS AN ATTAINABLE SUSTAINABILITY

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The resource-based view of the firm postulates that sustainable abnormal rents can accrue to firms having valuable, rare, inimitable, non-substitutable resources and capabilities. Given these criteria, sustainable resources are hard to attain. Our study of some two dozen firms shows how some of them were able to overcome this dilemma by building not so much on resources and capabilities as on asymmetries. Asymmetries are typically skills, processes, or 'assets' a firm's competitors do not and cannot copy at a cost that affords economic rents. They are rare, inimitable and non-substitutable, although not connected to any engine of value creation, and, in fact, often act as liabilities. By discovering and reconceptualizing these asymmetries, embedding them within a complementary organizational design, and leveraging them across appropriate market opportunities, many firms were able to turn asymmetries into sustainable capabilities. Copyright © 2003 John Wiley & Sons, Ltd.

INTRODUCTION

The problem

The economic theory of the firm assumes that in the normal course, and in the absence of market imperfections, abnormal economic rents will get competed away by rivals or new entrants to an industry.¹ The resource-based view (RBV) of the firm, however, suggests that there are heterogeneity or firm-level differences among firms that allow some of them to sustain competitive advantage (Barney, 1991; Noda and Collis, 2001; Wernerfelt, 1984). These may occur in the form of resources

such as patents, properties, proprietary technologies, or even relationships (Barney, 1991; Collis, 1991; Black and Boal, 1994; Miller and Sham-sie, 1996).

Theorists of the school make clear that abnormal rents can only be earned from these resources to the extent that they are valuable, rare, inimitable, and non-substitutable (Barney, 1991). Such resources are tough to find. Indeed this becomes especially clear when we look at the work done on strategies sometimes characterized as 'economizing' (Porter, 1996). These include reengineering, enterprise systems, downsizing, and other avenues of efficiency. Unfortunately, such techniques are available to all competitors in an industry. They merely raise the bar for everyone, usually in a transparent way, and do not produce long-term competitive advantage (Porter, 1996).

Valuable, sustainable resources, by contrast, might include proprietary processes, properties, even subtle skills and competencies that are too complex for rivals to imitate (Barney, 1991; Collis,

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¹ The school of competitive analysis tries to capitalize on some of the market imperfections by finding niches that are propitious in terms of supplier and buyer power, imperfect information, barriers to entry, etc. (Porter, 1980, 1996).

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1991; Miller and Shamsie, 1996). The very nature of such resources suggests that their value is maintained by their inaccessibility to others. Indeed, if these resources were readily available, they would have little competitive value. But how can companies that do not already have such resources create them when others cannot? Or how could they purchase them, given their obvious value, at costs that would allow a superior return?

There is a dilemma here. Clearly valuable resources that sustain advantage must be inimitable—and therefore not available to those who do not already have them. Imitable resources, on the other hand, can be attained by their aspirants. But as soon as they show clear promise, they risk being competed away: their strength becomes their weakness. Thus attainable resources are not sustainable. Here we have, in effect, a ‘*sustainability–attainability dilemma*’ due to the antagonism of the two respective properties.

More recently, the dynamic capability perspective has extended the RBV to the realm of evolving capabilities (Teece, Pisano, and Shuen, 1997; Hamel and Prahalad, 1994; Morecroft, Sanchez, and Heene, 2002). By developing capabilities based on sequences of path-dependent learning, a firm can stay ahead of its imitators and continue to earn superior returns (Dierickx and Cool, 1991; Teece *et al.*, 1997). There is nothing to say, however, that most firms have the capacity to place themselves on a learning curve that would prevent rivals from leapfrogging them. To do so they would have to pick an optimal capability development trajectory that is (a) strictly path dependent to sustain first mover advantages, and (b) non-substitutable with an equally efficient trajectory. Bounded rationality conditions might obstruct the first aim, conditions of equifinality the second. Again the goal of inimitability is a highly demanding one, and begs the question of how to achieve it with assets, resources, or capabilities the firm does not already have. Thus notwithstanding major advances in the field of strategy, practitioners are left with a dilemma: how to develop *sustainable* advantage that is—for them—not in hand but nonetheless *attainable*.

This qualitative study shows how firms have taken apparently valueless and even burdensome resources, developed them into valuable ones, and gone on to create a unique competitive position. The implication is that by weakening a standard RBV assumption it is possible to develop a more

robust and practical view of competitive heterogeneity.

We proceed by describing our method, defining the key terms of our analysis, and then supplying a preliminary example to orient the reader. Then we describe our findings by ordering them into three sets of activities: asymmetry discovery, development, and market matching—all components of the process by which firms develop asymmetries into valuable assets. Given the unusual nature of the research design, we will interweave conclusions from our observations with case examples.

Method: Description of the research

Our initial intention was to study new forms of organizational design that have emerged in response to emerging strategic challenges such as industry restructuring and globalization. Design determines how a firm allocates, controls, and motivates its resources through formal levers such as structure and systems, and informal aspects such as culture and networks (Galbraith, 2000b). As expected, design did seem to be an important source of adaptive strength (Eisenstat *et al.*, 2001; Galbraith, 2000b). But in going through the histories we found that design did not simply implement strategy. Its real contribution for many of our firms was in building capabilities. Moreover, the *capabilities did not usually emerge out of clear strengths or resources in the economic sense, but rather out of asymmetries: a firm’s inimitable uniqueness and even weakness*. In effect, firms began with modest or even disadvantaged situations and extracted sustainable resources and capabilities. By understanding their asymmetries and growing and exploiting them via design, many of our firms overcame the sustainability—attainability (S/A) dilemma: they started with little and ended up with a lot. Thus a study that began as an inquiry into new forms of design ended up discovering new paths of capability building.

The research was qualitative, and took place over 18 months. The research team, at varying stages, consisted of five academics from the areas of business strategy and organization design, and five consultants (with one possessing a doctorate and two in the process of obtaining one). Three criteria guided sample selection. First, we wanted to study firms confronting new strategic challenges or opportunities—either because of environmental change or firm or industry newness. Second,

we wanted to have access to longitudinal information about the organization designs and strategies of those companies—either from extensive public records or direct access to top corporate or divisional management: for 74 percent of our sample, we had both. Third, we wanted diversity across the sample both in firm size and industry uncertainty. A total of 22 firms or independent profit centers of firms were studied. These organizations, large and small, are listed in Appendix 1.

The researchers employed both primary and secondary data sources. For each firm an exhaustive search of at least 5 years of newspaper, magazine, trade periodical, and book publications was conducted. The research was structured and focused by a detailed research protocol. The research team used the protocol to track the evolution of strategic variables such as mission and goals, competitive advantages, resources, capabilities, and value chain strategy; and also of organizational and design factors such as formal and informal structure, collaborative infrastructure, social context, HR practices, and systems and processes. They assessed performance when possible from financial and 10K reports. Finally, they conducted interviews with upper-level managers for most of the sample firms or units. Appendix 1 summarizes our data sources.

Using this information, researchers wrote detailed case studies about each company or unit and its historical evolution. These averaged about 40 pages in length (with a range of 15 to 60 pages) and formed the basis for our analysis. In a series of six 1- to 2-day meetings that took place over several months, members of the research team gathered to identify patterns in the data. The cases and facts to be discussed here are those that do not violate any confidential information and whose details illustrate best the modes of detecting, embedding and leveraging asymmetries.

Overview of the findings: An asymmetry-based approach

An initial expectation was that firms would begin with small but inimitable strengths, and build them into powerful resources, much in the manner the core-competency or dynamic-competency proponents might suggest (Collis, 1991; Hamel and Prahalad, 1994; Miller and Shamsie, 1996; Teece *et al.*, 1997). Sometimes that was indeed the case. But we found there were other more surprising paths firms could take.

As noted, companies built not on valuable resources or capabilities, which tended to be rare, but on *asymmetries*: inimitable differences between themselves and other firms *that in their initial states could in no way be considered valuable*. These asymmetries might take the form of teams, projects, contacts, knowledge, or even business units that were truly distinctive and could not be imitated by others at a cost that would afford economic returns. It was the inimitability, rarity, and even obscurity of these asymmetries that gave them *potential* as bases for sustainable advantage. And it was their *de facto*, immediate possession that made them 'attainable.' But these asymmetries were not connected to engines of value creation and were as apt to be liabilities as assets. Indeed, in many cases—such as unproductive teams, disastrous divisions, burdensome contacts, or troublesome longtime clients—the starting 'value' of the asymmetries was clearly negative. Thus *inimitability, not value, was the herald of attainable advantage*.

We found that some firms were able to overcome the S/A dilemma and convert asymmetries into valuable resources or core capabilities by doing three things well:

1. Discover the asymmetries—however minor, however buried, however troubled—and discern the potential within them.
2. Turn asymmetries into capabilities by strategically embedding them within an organizational design configuration that exploits them and sustains their development.
3. Match asymmetry-derived capabilities to market opportunities.

Readers should not conclude that *all* of our firms were successful or followed asymmetry-based strategies. More than half of our cases, however, did build capabilities out of asymmetries; virtually all of those did that using organizational design very strategically, and most leveraged their asymmetries across multiple market opportunities. (Appendix 2 summarizes our research results, while Table 1 defines the terms we will be using in our analysis.) The case of Shana Corp. (see inset box) is a good place to begin the discussion.

The Shana example suggests three points of departure in building on asymmetries: discovery, development, and market leveraging. While discovery is a useful starting point, development

Table 1. Defining the terms of our analysis

| | |
|--------------------------|---|
| Asymmetries | Skills, processes, talents, assets or outputs an organization possesses or produces that its competitors do not and cannot copy at a cost that affords economic rents. They are rare, inimitable, and non-substitutable. |
| Resources | Asymmetries that produce superior economic returns: examples include technical skills, patents, scarce raw materials sources, exclusive alliances, and a fine reputation (Collis, 1991; Miller and Shamsie, 1996). |
| Capabilities | Resources can be configured into capabilities—bundles of complementary resources such as tacit knowledge, administrative skills, routines, and physical assets with the flexibility to generate adaptive and valuable outputs (Grant, 1996; Teece <i>et al.</i> , 1997). |
| Core capabilities | Capabilities especially central to competitive advantage that form the basis for the strategic development of the firm (Hamel and Prahalad, 1994). These can often be leveraged across different products and markets, and typically comprise or orchestrate other capabilities. |
| Organization design | How a firm allocates, controls, and motivates its resources. Formal aspects include policies and priorities, structure (authority, role, and task definitions, accountability, liaison devices) and information, human resources, and planning systems. Informal aspects include firm culture (values, beliefs, styles of interaction) and communication networks (Galbraith, 2000b). |
| Capability configuration | System of reinforcing elements incorporating core capabilities and the organizational designs in which they are embedded and that renew, adapt, and support these capabilities (Miller, 1996b, 1999). |

and market leveraging are most useful when done concurrently. Although our narrative will be linear, the process of exploiting asymmetries is evolutionary—and characterized by trial and error, iteration, and chance. What we will be describing should not be read as a series of steps in a routine or program, but rather as components of an overall organizational worldview, approach, and climate.

DETAILED FINDINGS AND DISCUSSION

Discovering asymmetries and related resources and capabilities

The resource-based view of the firm argues that, to do well, firms need to develop important competencies or resources that rivals cannot match (Barney, 1991; Wernerfelt, 1984, Teece *et al.*, 1997). But as we indicated, firms cannot attain sustainable resources by copying others. They need to look inside. It was only when Shana realized that its inimitable capability was bridging operating systems, not writing forms software rivals could match, that the company was able to develop the most profitable outputs.

Ontology: How prevalent are promising asymmetries?

A question that arises immediately is whether or not most firms actually *possess* potentially valuable asymmetries. Although this is an empirical issue, there are a number of reasons to believe that the answer is affirmative and that at the very least asymmetries are far more common and accessible than resources. First, the scope for organizational variety is vast: organizations are so complex and represent such intricate bundles of properties, people, and relationships that they are apt to be unique in countless ways (Walker, Madsen, and Carini, 2002). Indeed there are many sources of asymmetry. Long-term contracts and distinctive forms of knowledge may be consciously created. But other asymmetries in organizational systems, skill sets, processes, and even cultures evolve out of accidents of history, and unpredictable forces of intra-firm variation, selection, and retention. Many of these asymmetries are complex, subtle, and persist even in the face of market, institutional, and mimetic pressures (Noda and Collis, 2001; Peteraf, 1993).

Often, those differences are inimitable within the time and budget constraints demanded by

Building on asymmetries: The Case of Shana Corp.

Shana Corp. was a small, new software company. Some of its product development efforts, combined with a few technologically related contracts, had allowed the firm, over several years, to develop a budding expertise. At first, Shana's skills were not much different from most of its rivals'. But because of the kinds of jobs it had worked on (jobs richer rivals had refused), and the people it had hired to work together, Shana was acquiring an ability to develop advanced forms-completion software that could run on different computer operating systems. Their asymmetric bundle of human and tacit knowledge resources was becoming a nascent capability. Shana's top managers gradually came to realize that their firm had learned to skillfully and cheaply do jobs that rivals could not do as well or as efficiently; nor would rivals be able to learn Shana's skills fast enough to be a threat. Also, some affinities began to occur among software developers as each began, quite naturally, to specialize according to talent and build on one another's strengths. Work complementarities grew up as a loosely coupled group became an integrated and effective team. And so Shana kept getting better in their increasingly focused sphere.

Soon, Shana's managers began to develop routines, procedures, and incentive policies to further improve team performance. They also started using Shana's growing body of specialized knowledge to concentrate on clients that required its special abilities. These were typically clients that used the two popular operating systems but wanted the same forms software. This evolving market focus and the product development and marketing experience it brought sharpened Shana's expertise, widening the gap between it and its rivals. The convergence around certain skills and a target market also focused selection and training programs, project management protocols, and marketing campaigns. And it enabled Shana to exploit and extend its competitive advantage.

Shana had not *set out* to master a special capability. Nor did it prospect intentionally for promising niches. And the company did not at first possess valuable property or knowledge resources that were unavailable to rivals (they too could have tried to develop forms software to bridge operating systems but decided this was not worth the effort). Rather Shana's managers noticed retrospectively what their firm was becoming especially good at, realized from talking with clients that the emerging talents were rare, tough to match, and worth developing, and pursued clients that would value these emerging talents. The firm, moreover, did not set out to copy the skills of successful rivals. It did not have the wherewithal to accomplish that. Moreover, even if Shana had been able to develop those skills, by the time it did its competitors, most probably, would have moved ahead. Shana's managers realized that emulation would surrender to rivals' product and market leadership, and force the firm to share a market with many other firms.

At Shana, then, managers knew the company well enough to discern where they *already* had some uniqueness—an asymmetric ability that could ultimately bring competitive advantage. To sustain that advantage Shana's managers created an organizational configuration that supported, leveraged, and renewed the capability, and they pursued customers and business that best leveraged those capabilities.

abnormal returns. Knowledge, established contacts, reputation, and team capabilities cannot be easily copied if they rely on historical precedent or are ambiguous and subtle (Hall, 1992, 1993; Lippman and Rumelt, 1982; McEvily and Chakravarthy, 2002; Morecroft *et al.*, 2002). Indeed, many asymmetries are 'asset specific'—of potential value only for the holder of the resources and only when used as a part of an integrated system (Amit and Schoemaker, 1993; Black and Boal, 1994; Henderson, 1994).

There are also many catalysts for extracting value from asymmetries. Unique teams can be matched up with projects that best use their talents; alliances can be built on to make more promising products; capabilities can be exploited by channeling them towards more relevant outputs or markets. In all cases, the organizational context can be used to make these links. That

context may include organizational designs that get the right parties collaborating, reward systems that encourage 'asymmetry-exploiting' behavior, and information systems that detect relevant asymmetries and the opportunities they need to connect to (Eisenstat *et al.*, 2001). Indeed there are many ways to blend asymmetries and other assets to enhance their value, or to embed them within an organizational context to realize that value (Amit and Schoemaker, 1993; Black and Boal, 1994; Helfat, 2000; Miller and Shamsie, 1996).

Finally, there are myriad market opportunities across which to leverage asymmetries. Just as organizations are complex, so are markets. There are many niches, segments, types of clients, untapped needs, etc. Even in the unlikely event that a firm's asymmetries are few and fixed, there are still apt to be some especially appropriate market niches across which the firm can leverage

to attain competitive advantage (Miller, Eisenstat, and Foote, 2002; Porter, 1996).

Discovery: How firms identify useful asymmetries

There are multiple avenues for discovering asymmetries—from experimentation, to self-examination and reflection. Indeed, the best firms are managed so that asymmetries are discovered and tested for potential value on an ongoing basis. Here are a few of the routes some companies have followed to find worthwhile asymmetries, the first three being less commonly described than the last.

Discovery Path 1. Market contacts, experimentation and incremental learning. Given that inimitable talent, knowledge, social systems, and client contacts exist in most organizations, it becomes a matter of experimenting to discover which of these have value, in what combinations, and where. Experimentation may take the form of exploring alternative processes, partnerships, technologies, and products. To the extent that these are indeed unique and subtle, they represent good starting places for firms to add value, find market acceptance, and earn a return. Experimentation may also involve trying different things with different clients.

Shana Corp., for example, worked as hard on its forms completion software as on its cross-operating systems capability—but the latter proved in many cases to be the more valuable asset. It was only by interacting with clients who could not get such ‘ambidextrous software’ elsewhere that Shana realized its distinctiveness. By varying its outputs and reacting to customer responses, Shana began to learn where to focus. It could then add resources to the more promising projects, redirect development efforts, and move further up the learning curve. This enhanced not only the value of initial skill and team asymmetries, but it also brought resources (reputation, relationships) that augmented inimitability.

Discovery Path 2. Resources, introspection, and insight. Occasionally firms detect crucial asymmetries just by reconceptualizing their non-productive assets. They come to view a facility or system as a potential resource not because of new information from the market but because of a new

way of thinking—a new insight. There is a reframing of the way they perceive the organization and its components.

This was the case of John Reed at *Citicorp* in the early 1990s. For several decades, Citi had been struggling with a global banking unit that was not only unpopular and losing ground to rivals such as *Hong Kong Shanghai Bank Corp. (HSBC)*, but also alienating major domestic clients with poor international service. The Global Corporate Banking unit was in every respect a liability, and Reed and other managers had good reason to get rid of what was turning out to be a drain not only on reputation but also on human and financial resources. Reed, however, was not willing to give up. First, he was convinced that Citi’s extensive network with banks in over 100 countries was entirely unique—no rival could match it. The closest rival, HSBC, served fewer than 40 countries. It had taken Citi decades to establish its international banking network due to legal and political obstacles, and it would take potential rivals a long time as well. Reed knew he had an inimitable asymmetry he just might be able to turn into a resource. Second, Reed saw the trend to globalization as a long-term one, and a potential market for the network. Third, Reed believed that Citi had auxiliary talents—knowledge, contacts, and resources—that could be redirected to serve the Global Bank. Ultimately, Reed was right—he had detected an asymmetry with real potential. But as we will see, this required a great deal of ‘organizational embedding’ to become a capability.

Discovery Path 3. Weakness, scarcity and problemistic search. Some asymmetries arise within and because of a context of weakness, and are detected or even created because of their tie to disadvantages or problems (Cyert and March, 1963). Disadvantages such as organizational newness, small size, inadequate capital, and a paucity of established clients can, paradoxically, drive firms into promising underserved markets and technologies of the future. The result is that firms leapfrog stronger, more established rivals (Christensen, 1997; Noda and Bower, 1996).

The young *Dell Computer* with its limited capital was impelled to begin selling computers over the phone and Internet. They did not have the finances or customer contacts, nor the political obstacles, of Compaq, IBM, or HP and were forced

(and free) to embrace a different business model. The same was true for Amazon.com, which had modest resources and thus had to offer their services with only minimal bricks-and-mortar infrastructure. The result was a creative discount Internet service. Powerhouse Barnes & Noble were much slower off the mark to enter this promising market—they did not want to cannibalize their retail outlet business or alienate their agents. The same dynamic is being played out in the telecommunications industry with wireless Internet. Smaller telecoms are more willing to embrace new technology as they have fewer options and fewer constraints than, say, Deutsche Telecom with its major installed base and infrastructure. Here, the initial asymmetry, in a sense, is a willingness (indeed necessity) to pursue paths less traveled; to enter into unoccupied niches, try new approaches, and perhaps gain a foothold that leads to first-mover advantage. Asymmetries (and inimitability) here are only cognitive and political—but potentially productive nonetheless.

Discovery Path 4. Building on budding capabilities. The most natural path is left to last as it is well known and has been developed by scholars such as Hamel and Prahalad (1994) and Teece *et al.* (1997). Clearly, firms can build simple, unharnessed strengths into complex, exploitable ones tied closely to engines of value creation. They may make use of path-dependent development (Dierickx and Cool, 1991), and a thematic focus around core competencies (Hamel and Prahalad 1994). Here, in essence, firms start with valuable resources and capabilities, and build them up by learning, investment, focus, and leveraging.

In all cases, the search for asymmetries is informed by thorough and persistent inquiry across the breadth of an organization and its markets. It encompasses an evaluation of how the firm appears to differ from its competitors in the assets it possesses or in what it does well. It assesses the underlying mindsets, people, knowledge, relationships, and assets that may give rise to potential advantages. And it evaluates how asymmetries might be connected to other organizational assets, infrastructure, and market opportunities to create value (more about these last two requirements in the major sections to follow).

Challenges in identifying asymmetries

Asymmetries that bring advantage may be hard to detect for a number of reasons. First, they may be far removed from their favorable consequences. At Willamette Paper, for example, an apparent ability to follow the market by quickly changing grades of paper was really grounded in plant flexibility, which was in turn founded in superior engineering abilities and paper plant operation, which were supported by a broad set of training and other human resources practices. It was the depth and the systemic nature of the capabilities that made them especially hard for rivals to copy—but also hard to fathom for the firm itself.

There is a tendency too to attribute success to whatever a firm's managers have been paying the most attention to, even when it is irrelevant. This 'superstitious learning' is especially common in successful firms. Marketing-focused companies credit marketing excellence for their success, while technology-oriented firms credit their R&D departments (Levitt and March, 1988; Miller, 1990). But these apparent capabilities may not be real—or may rely on ignored support factors—and it may take a good deal of questioning and soul-searching to determine that.

Many asymmetries also go unnoticed because they are buried within a system and are therefore *subtle and causally ambiguous*—even to managers of the firms that possess them. Managers know their firms are superior at some activity, but do not know why. This ignorance sometimes manifests itself in the tremendous differences in plant productivity that arise within the same organizations, which managers cannot explain (Teece *et al.*, 1997). The subtlety may stem from the systemic and uncertain capabilities that underlie productivity—many drivers need to be in place, and these have to be configured just right to work together effectively (Henderson, 1994).

In fact, promising asymmetries may go unrecognized because they *do not generate positive outcomes*. One or two subtle weaknesses—a problem of accountability, training, or morale, for instance—may hobble a state-of-the-art operational or innovative capability. For example, although Citi's branch system did represent a potentially powerful asymmetry, in 1995 it was by no means a realized capability because of key weaknesses in the organization (see below). Other so-called *capabilities are not asymmetric*;

they are not inimitable and thus do not confer lasting advantage. Citibank delivered excellent foreign exchange and cash management products, but so did major rivals. Shana was reliable in delivering software, but was by no means unique in that respect.

There is also a *time bias* that overrates developed capabilities and underestimates asymmetries (Christensen, 1997). The resource-based and dynamic capability schools emphasize the importance of augmenting established resources and capabilities (Barney, 1991; Dierickx and Cool, 1991; Teece *et al.*, 1997). Developed capabilities may be dead ends, especially if they are tied to a single product-market opportunity, or are becoming subject to imitation by serious rivals. Nascent capabilities may be unproductive, but if developed or harnessed may hold tremendous potential for competitive advantage because they will be so unfamiliar to rivals.

Qualifications

Asymmetries are more apt to become capabilities if they can be used *reliably* to generate favorable outcomes. This requires profound understanding. Some forms of tacit knowledge, for example, are not understood and thus impossible to shape or reproduce. While valuable for a time, these resources are fleeting. Thus although resource-based theorists are correct in viewing tacit knowledge as a potentially critical advantage, it is one that is easily lost when those who own it do not know how to control, sustain, or resurrect it. It is only once managers thoroughly understand the elements that go into making up tacit knowledge that it can be harnessed (Hall, 1993; Schroeder, Bates, and Junttila, 2002). Asymmetries also are unlikely to give rise to sustainable capabilities unless they become a *priority*: unless managers take the trouble to embed them within the organization. Managers must focus, fund, and build on asymmetries, and accord them strategic primacy at the expense of other resources and capabilities.

Summary

Given their myriad generating mechanisms, resistance to imitation, and scope for application, promising asymmetries are apt to be quite prevalent in most organizations. There are numerous

paths for asymmetry detection, including experimentation, systematic organizational introspection, problemistic search, and bootstrapping on nascent capabilities. But detection cannot be a casual process as it can be hampered by factors such as causal ambiguity, superstitious learning, system embeddedness, and remoteness from positive outcomes.

Developing and supporting asymmetries

Asymmetries convert more readily into valuable resources and capabilities when embedded within a cohesive configuration. One might distinguish two kinds of configurations. The first are composed simply of a combination of complementary asymmetries, resources and capabilities. One might contrast simple or elemental resources such as patents or a proprietary property, with a team configuration comprising a complex mix of social and technical capabilities (Miller and Shamsie, 1996). Such configurations may be more inimitable and robust than simple resources (Black and Boal, 1994; Helfat, 2000). Configurations, however, can be especially effective when they incorporate levers of organizational design. These configurations embed asymmetries within an infrastructure that leverages, sustains, and develops them (Miller, 1996b).

Organization design turns asymmetries into capabilities

By identifying key asymmetries, managers are able to make them a high priority, fund them, and turn them into valuable resources or capabilities. Organization design can play a key role. In fact, the design of the organization may itself be one of its most profound and empowering capabilities. Design, broadly defined, is the way an organization organizes, controls, and motivates its resources to perform the most critical tasks. Its formal aspects include policies and priorities, structure (authority, task, and role definitions, accountability, liaison devices) and information, human resources, and planning systems. Informal aspects include corporate culture (values, beliefs, styles of interaction), personal contacts, and communication networks (Galbraith, 2000b).

Recall that at Citicorp the international branch network at first was just an asymmetry, not a valuable resource. It could only become profitable within the context of a supportive organizational

design. Specifically, the system of branches that had been set up in 100 countries over many decades did not at first appear to be a significant asset. Many branches were unprofitable, and margins were being squeezed in developed countries by competing local banks with better ties to customers and government. Meanwhile, in developing countries, market volatility and political instability were real and costly hazards. Also, local managers refused to give good service to multinationals who demanded bargain interest rates and service fees. CEO John Reed, however, realized that the international network could prove enormously valuable to MNCs with lots of cross-border business. But this value could only be achieved with a new organization design—one that leveraged the network to better serve multinationals.

At Citibank a multitude of design levers helped convert the network from an asymmetry to a capability. First, John Reed's strong policy priorities directed that the international network be recognized by all as a potential core capability, and that markets be selected that would most value that capability. To that end he made the cross-border business of large MNC clients a top priority. This in turn determined how Citi's international capabilities had to be developed. It became clear, for example, that structural mechanisms such as key account teams were needed to better serve each of the MNCs. High-status, influential managers were appointed to lead these teams, which were composed of members from all relevant functions, product units, and geographies. Such teams allowed Citi to integrate and adapt its international capabilities to make them especially attractive and useful to MNC clients. Reed obtained support from local managers by assessing them against their ability to serve MNC teams and clients. In fact, geographic profit centers were abolished to make sure local managers would not be penalized for doing low-margin business with MNCs. Information and planning systems were then redesigned to serve account teams by providing information for every large client on their business needs, deals, and revenues—broken down by product and by region. Moreover, a comprehensive planning system got members to commit to—and be evaluated against—specific objectives for each client. At the same time, HR training, recruitment, and job rotation programs supported global capability by stressing mobility and international experience. Reed also worked on the informal aspects of design.

The corporate culture at Citi, which had been independent at the best of times, was prodded to become more collaborative to better integrate the bank network. Support for key account teams now became a top priority and a source of recognition and reputation for functional, product, and country managers alike. Informal norms evolved so that it was mandatory to reach out to people from other units, and a very good thing to help out with other people's clients. As a result of all these changes, Citi's Global Bank converted a multibillion dollar loss into a profit in excesses of a billion dollars, in a space of 2 years.

These are just a few ways in which design levers can draw resources or capabilities from asymmetries. Of course each of the levers may play additional roles. For example, formal policies and priorities not only identify and fund potential capabilities, but relate these to market opportunities and strategies for addressing those opportunities. Effective leaders supply the resources and support needed to exploit those capabilities (Eisenstat *et al.*, 2001).

Structural mechanisms such as project teams, cross-functional committees, and communities of practice develop capabilities and share knowledge across different parts of the organization. They also integrate and adapt capabilities to special challenges and opportunities. Routines institutionalize knowledge and add to the stability and range of an asymmetry (Nelson and Winter, 1982). Information systems target attention and monitor progress in developing an asymmetry.

Informal aspects of design are every bit as important. The culture and values of an organization focus effort on harnessing asymmetries and enhancing capabilities. Values define which functions or activities should receive the most support. They energize people to do better the things that matter most. And they serve as natural selection devices to attract people who best fit the company and capabilities.

Culture also gets people together informally and spontaneously to collaborate on new opportunities or unanticipated problems. It creates the climate for interaction, social networks, and collaboration needed to identify asymmetries and develop them into sources of advantage (Barney, 1986; Fiol, 1991; Galbraith, 2000b; Lado and Wilson, 1994). Culture also can destroy organizational silos. For example, Reed's work to shift Citi's culture created a more collaborative climate that not

only maximized the value of the banking system resource, but also made it less imitable. In these ways and others, organization design—often itself a sustainable advantage—becomes a central tool for unlocking, developing, and leveraging asymmetries.

Virtuous circles enhance capabilities

Design elicited not only static capabilities, it launched ‘virtuous circles’ that turned asymmetries into *ever-growing* capabilities. In a typical circle an initial asymmetry or capability attracted clients as well as very talented managers, employees, and partners—all of whom augmented the capability. Capabilities also generated superior performance that in turn fueled those capabilities with more resources and attention. They also built reputation that brought opportunities, and extracted feedback from the market that helped select the right people, skills, and products (Noda and Bower, 1996; Noda and Collis, 2001). Design generally played a key role in these virtuous circles: in identifying and prioritizing a capability, assembling the resources, people, systems and mechanisms to develop it, disseminating the capability within the organization, and in leveraging it across the right market opportunities (Knott, 2001).²

Denmark’s International Service System (ISS) is one of the largest service firms in the world. In its early years the company accepted contracts for cleaning abattoirs. This was a challenging job as complex equipment had to be dismantled for cleaning, and special disinfectants and pressurized cleaning techniques were needed to exterminate different varieties of bacteria. Also vital was expertise in sterility testing. Experience with different types of clients eventually enabled ISS to develop unusually efficient routines for doing the work, as

² A ‘law of increasing returns’ has been identified whereby the initial popularity of a product or technology gives it an enduring edge over rivals, even if the latter are superior. Popularity is argued to create advantages that breed more popularity (the Microsoft operating system, for instance). First-mover advantages may also occur due to ‘path dependence.’ A capability may require progression through a fixed, time-consuming evolutionary path, giving pioneering firms a sustainable lead over late starters (Dierickx and Cool, 1991; Teece *et al.*, 1997). Capability accumulation sustains advantage wherever rivals cannot skip stages or take shortcuts. Organization design can play a critical role in sustaining and indeed enhancing first-mover advantages by launching virtuous circles.

well as the ability to cost and price cleaning services by machine, square meter, or type of food. Moreover, their proprietary technical knowledge in food hygiene enabled ISS to form partnerships with clients to develop procedures for evolving types of bacteria. This enhanced skills, giving ISS even greater advantage and expanding the client base. Ultimately, expertise grew to encompass related hygiene-food businesses such as poultry and fish (Galbraith, 2000a). Organization design fueled the circle. Leaders, for example, realizing the benefits of focus, tried to acquire ‘customer density’ in special market segments. Scale in a segment led both to buying power and greater specialization, with resulting learning and customer intimacy advantages. Leaders also prioritized opportunities that were coming within range because of growing skills or reputation. Databases were then evolved on costs and customers that facilitated better pricing and scheduling, while human resource systems codified selection and training criteria.

We found a variety of virtuous circles. For example, *technical capabilities* could draw the most talented employees as word gets out about a company’s prowess. Winners got to choose the best teams—and their experience told them what kinds of teams to pick. Also, as capabilities became apparent to desirable business partners, joint development efforts were launched that grew those capabilities.

Another virtuous cycle started with *reputation resources*. A reputation for style or quality could draw prestigious clients whose patronage enhanced reputation still further. Or a reputation for technical excellence could attract talented alliance partners, scientists, or engineers, who then boosted reputation—and of course capabilities—still further. So capability and reputation cycles reinforced one another.

Matching market opportunities and asymmetry-based capabilities

The only way our firms could earn superior returns from their asymmetries and capabilities was by satisfying the needs of a viable segment of the market. Thus, our more successful firms tended to shape resources, capabilities, and configurations according to the needs of key target niches (Afuah, 2002).

Citibank’s GCB unit decided to target large multinational firms that could most benefit from its international branch network. But these were

exactly the kinds of clients that Citi had had a hard time serving with its old structure: local managers were used to making significant spreads on their business—spreads that the credit-worthy multinationals were unwilling to pay. Indeed, local managers resisted taking on this business unless it represented a considerable contribution to their profit centers. Typically, it did not. In choosing the MNC target market, Citi's leaders realized that they would have to make their international branch network valuable to those clients. The only way to do this was to ensure that the branches made these clients a much higher priority than they had been. As we have seen, this required Citi to redesign its administrative structure by using empowered key account teams and specialized information and planning systems to adapt its international network and acumen to the needs of a specific niche. Indeed because Citi's target market was so clear, the company was able to develop detailed databases on prospective clients that provided good information on who they did business with, and how profitable the business was. This enabled Citi's representatives to home in on the best fine-grained business opportunities.

As the Citi example shows, when adapting capabilities to a market opportunity the design configuration again plays a central role, converting a generic potential capability into one targeted to a specific set of customers. However, notwithstanding these crucial efforts to adapt capabilities to profitable market niches, *our bias is still to use initial asymmetries not market opportunities as a starting point for strategy*. First the organization needs to determine how it is or can be superior to its competitors; and then it needs to find a niche that will value those differences. The competitive analysis school argues that firms must position themselves according to market factors such as competitive and supply chain challenges and customer demands (Porter, 1980, 1996). But unless this positioning satisfies a need or niche that corresponds to a firm's *unique* capabilities, competitive advantage will remain elusive, no matter how attractive the niche. Rivals would simply appropriate most of the profits.

Identifying opportunities

Our firms view their environments and markets as sets of opportunities they chose from to leverage their asymmetries and capabilities. In regarding

environments, managers adopt a dual emphasis: they ask not only where are the opportunities, but also *why their firm should be able to capture and exploit them better than the competition*. And this comes back to asymmetries. The attractiveness of a niche is evaluated in the context of a firm's capabilities—those present, *or those the firm, via its asymmetries, can attain more readily than its rivals*.³

Appropriate niches and opportunities should be *complementary*; otherwise synergies will be lost and capabilities underutilized or underdeveloped. But it is not similarity of outputs or industry boundaries that define complementarities. Rather opportunities are complementary if they benefit from related asymmetry-based capabilities. Such complementarities become especially manifest in the context of trying to leverage them.

Leveraging capabilities across opportunities

We have referred to virtuous circles of capability development. These set the stage for leveraging capabilities or even asymmetries in different ways. As learning takes place, a firm is able to apply the capabilities learned and resources earned in one situation to serve a different market or opportunity. This can happen in a number of ways.⁴

1. *The same capabilities can be applied across different products and industries*. ISS leveraged its special capabilities in cleaning and sterilizing slaughterhouses to enter the hospital services field. A deep knowledge of bacteria, chemicals, sterilization, cleaning, and testing techniques allowed ISS to enter a completely different industry, with similar capability requirements. Thus being capability driven does not restrict a firm to a narrow market—it may be quite the opposite, as the same capabilities lead firms to very different types of customers and even industries.

³ Without an effective value chain strategy, a firm's resources will drift away from its capabilities. Managers must ask whether the firm is concentrating on those opportunities—and those stages of the firm *and* industry value chain—that maximize value added by optimally exploiting capabilities. For example, can a company afford to outsource activities it does not do well, that return low margins, and that if contracted would not erode key knowledge assets? Would pursuing fewer or more stages of the industry value chain allow resources and capabilities to be allocated more effectively?

⁴ This discussion relies extensively on Miller *et al.* (2002).

2. *Customer-related expertise and reputation developed around one output can be used to sell others to the same customer.* ISS-Mediclean used the reputation and customer knowledge it gathered by cleaning a hospital to get other service contracts with the same institution. According to Jay Galbraith (2000a: 10), 'Mediclean uses its entry service to create customer satisfaction. By being excellent at one service, the references open the doors for contracts in other areas.' Customer-specific knowledge helps as well: 'Knowledge of a specific customer and a broader range of services gains Mediclean access to the customer's senior management. ... It is this access that leads to the deepening and expanding of the relationship. According to Mediclean's Managing Director: "Knowing how your customer's top management thinks enables you to respond very quickly to their changing needs, or even preempt them when you have spotted an opportunity the customer [and ISS's rivals] has not"' (Galbraith, 2000a).
3. *Segment-related expertise developed with one customer can be used with others in the same segment.* ISS leveraged its knowledge across different health care institutions based on its deep segment-specific knowledge. It is successful in part because it appreciates the needs of the British hospital customer, and because its capabilities span a vast range of hospital cleaning and management services. It has also learned to operate within the framework of the National Health Service, and is populated by those with hospital backgrounds who can work very intimately with hospital clients.

ISS employed all three kinds of leverage. They adopted an organization design that encompassed entrepreneurial, opportunity-seeking leadership, systems that effectively gathered and disseminated information on both capabilities and market opportunities, a culture that shared knowledge across SBU boundaries, and a flexible administrative structure that could manage capabilities and exploit new opportunities.

CONCLUSIONS

The asymmetry view vs. prevailing approaches

For purposes of clarity, it is useful to contrast and compare the asymmetry view with prevailing

schools and approaches in the field. The *Porterian* view of strategy advocates analyzing competitive forces to find a market niche in which the firm can differentiate itself from rivals and so garner sustainable superior returns (Porter, 1980, 1996). We believe that the sources of sustainable and effective differentiation are based on organizational asymmetries and capabilities. In that light, strategy should not be market driven, just market relevant. For example, it should be guided not so much by what customers want and what competitors do but by which of those market forces a firm can exploit better than its rivals.

The *resource-based* and *dynamic competency* theorists believe that sustainable advantage can only come from 'rare, valuable, non-imitable, non-substitutable resources' (Barney, 1991; Wernerfelt, 1984; Teece *et al.*, 1997). Although these authors are adept at describing the properties required of such resources, their very descriptions suggest practical unattainability. To circumvent this barrier firms must look inwards to discover not full-fledged resources as these are apt to be rare; rather they may start by examining how they are different in inimitable—but not necessarily profitable or positive—ways. Organization design must play a role in identifying, configuring, and developing and exploiting these differences.

Most *learning* literature (Lant and Montgomery, 1987; Miller, 1996a; Milliken and Lant, 1991) maintains that managers must learn from their own past defeats and from the successes of others. We maintain that it is even more important to learn from one's own past victories and from others' defeats. A firm's own victories contain more relevant cues about what the organization does well; they also point to activities and competencies that the company may be able to utilize and build on. In fact, Miller *et al.* (1999) found that firms did best when they built on their own successes rather than emulating the hot offerings of rivals. A company's own failures can be instructive as well, but they only suggest a wide array of possibilities about what it has done wrong, and not enough about what must be done right. Focusing on the victories of rivals also may suggest activities, resources, or product attributes that a firm cannot hope to attain or excel at. By contrast, the failures of rivals may signal what they cannot do well and hence, suggest where a firm may gain superiority.

Benchmarking is seen by many as a fine way of reaching state of the art capability. We, however, suggest that it be used for secondary rather than primary activities; otherwise the firm resigns itself to second place. Benchmarking is for fixing problems, not building advantage.

Cautions

Most capabilities become obsolete unless they are continually renewed and periodically reinvented. Major sources of obsolescence include rival imitators eroding value, product lines reaching maturity, and transformations in industry technology. The threat of imitation was frequently countered by the virtuous cycles we described for renewing capabilities. The threat of product obsolescence, perhaps more serious, could be met by adapting capabilities to new opportunities. But a prominent way of coping with the growing irrelevance of technological and knowledge capabilities was through organization designs that kept surfacing, exploiting and leveraging promising asymmetries. Managers were aided by being eternally on the lookout for asymmetries that could develop into capabilities, and for configurations that could address a new set of opportunities.

Final words

The strategy literature of the past 20 years has developed in two main directions: Resource-based theorists concentrate on the valuable resources needed to sustain competitive advantage, and Porterians focus on discovering market opportunities. These schools, full of insights as they are, fall short of telling managers *how* a company can develop the distinctive resources required to compete. The sustainability–attainability dilemma we started with reflects this gap. Organizations can overcome this dilemma by discovering asymmetries, which are more common than full-fledged resources or capabilities and easier to defend than imitable assets. Organization designs can be used to discover asymmetries, to convert them into resources and capabilities, and to grow these capabilities and leverage them across the appropriate market opportunities.

Our results and our analysis, however, are preliminary and there are many further avenues to

explore. First, work needs to be done to distinguish different types of asymmetries and determine how they may be best identified and developed. It could be, for example, that tacit knowledge asymmetries can rarely be understood with enough precision to control and develop into a resource (Hall, 1993; Nelson and Winter, 1982). Indeed, if control is a criterion for a resource, then tacit knowledge may rarely fit the bill. Property-based asymmetries, on the other hand, may be too specialized and fixed, with little scope or flexibility to develop into resources (Miller and Shamsie, 1996). Knowledge- and system-based asymmetries may have more potential given their fungibility and resilience. But their identification requires subtlety (Winter, 1987).

Paths for asymmetry development also need to be explored. One might ask which design levers are most critical for building which asymmetries. There is a growing literature on path-dependent capability development, that is, building on established resources and strengths to sustain advantage. Certainly this can be a promising avenue (Dierickx and Cool, 1991; Teece *et al.*, 1997). Such a targeted pursuit, however, may blind some companies and confine them to a narrowing opportunity set. Admitting asymmetries and nascent resources into the strategic trajectory may enlarge the opportunity set, add robustness to strategy, and forestall obsolescence. Careful probing of the strategic advantages of unique ‘weaknesses’ may be an especially valuable exercise.

Finally, better modes of opportunity spotting need to be explored. Our bias has been to look inside the firm for inimitable asymmetries that can become resources and capabilities. Here the opportunity set is, in essence, circumscribed by an organization’s uniqueness, driving firms towards niches that it serves better than its rivals. This logic runs against much of the institutional theory and best practices literatures that see imitation as a major competitive option. We found that our own firms used this option sparingly. More research is needed on when these internally vs. externally driven modes of opportunity-seeking work best.

Currently, few papers explain the origin of competitive heterogeneity. This paper shows how such heterogeneity can come about in a relatively natural way, with modest assumptions about starting conditions, by developing non-strategic asymmetries into inimitable resources and capabilities.

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APPENDIX 1: THE SAMPLE AND DATA

| Firm or Unit | Longitudinal secondary data | Interviews | Approximate focal dates |
|------------------------|-----------------------------|------------|-------------------------|
| ABB | x | x | 90–99 |
| ABB Norway | x | x | 90–99 |
| Aegon-Spaarbeleg | x | x | 94–99 |
| Amazon | x | | 97–99 |
| Citi GRB | x | x | 84–99 |
| Degussa AG | x | x | 94–99 |
| Delphi | x | | 96–00 |
| DuPont Fibres | x | x | 96–00 |
| H-P | x | x | 90–99 |
| IBM | x | x | 90–99 |
| IBM Europe | x | x | 90–99 |
| Intel Architecture Lab | x | x | 96–99 |
| ISS | x | x | 90–99 |
| Johnson Controls | x | | 96–00 |
| Lucent | x | x | 97–99 |
| Monsanto | x | x | 97–00 |
| Nokia Networks | x | x | 97–00 |
| Nokia Terminals | x | x | 97–00 |
| P&G | x | x | 85–99 |
| Shana | | x | 93–97 |
| Sun Micro | x | x | 96–00 |
| Willamette | x | | 92–97 |
| Xerox | x | | 92–96 |

APPENDIX 2: ASYMMETRY-BASED STRATEGY IN THE SAMPLE

| Firm | Type of asymmetry* | Resource-capability configuration | Design configuration | Virtuous circles | Opportunity relatedness | Opportunity leveraging |
|------------------------|--------------------|-----------------------------------|----------------------|------------------|-------------------------|------------------------|
| ABB | | x | x | x | x | |
| ABB Norway | a, c | x | x | x | x | x |
| Aegon-Spaarbeleg | a, d | | x | x | x | |
| Amazon | a, d | | | x | | x |
| Citi GRB | b, d | x | x | x | x | x |
| Degussa AG | a, c | x | x | | x | |
| Delphi | a | | | | x | |
| DuPont Fibres | | | x | | | |
| H-P | b, c | | | | x | |
| IBM | a, c | x | x | | | x |
| IBM Europe | a, c | x | x | x | x | x |
| Intel Architecture Lab | c | | x | | | |
| ISS | a, c | | x | x | x | x |
| Johnson Controls | | | | | x | |
| Lucent | | | x | | | |
| Monsanto | a, d | | | | | |
| Nokia Networks | a, d | x | x | x | x | |
| Nokia Terminals | | | x | | | |
| P&G | a, b | x | | x | | |
| Shana | a, c, d | x | x | x | x | x |
| Sun Micro | a, b, c | x | x | x | | x |
| Willamette | c | x | x | x | | |
| Xerox | b | | | | x | |

* a, privileged market contact or information; b, potential resource; c, nascent capability; d, weakness (motivational asymmetry); blank, indicates non-detection rather than non-existence.