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Competition and Business Strategy in Historical Perspective

A review of theories of competition and business strategy over the last half-century reveals a fairly linear development of early work by academics and consultants into efforts to understand the determinants of industry profitability and competitive position and, more recently, to add a time or historical dimension to the analysis. The possible implications of the emergence of a market for such ideas are also discussed.

“Strategy” is a term that can be traced back to the ancient Greeks, for whom it meant a chief magistrate or a military commander in chief. The use of the term in business, however, dates only to the twentieth century, and its use in a self-consciously competitive context is even more recent.

After providing some historical background, this essay focuses on how the evolution of ideas about business strategy was influenced by competitive thinking in the second half of the twentieth century. The review aims not to be comprehensive but, instead, to focus on some key topical issues in applying competitive thinking to business strategy. Particular attention is paid to the role of three institutions—Harvard Business School and two consulting firms, the Boston Consulting Group and McKinsey & Company—in looking at the historical development and diffusion of theories of business competition and strategy. The essay concludes with some discussion of how the emergence of a market for ideas in this broad domain is likely to affect future developments in this area.

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Historical Background

Until the nineteenth century, the scope for applying (imperfectly) competitive thinking to business situations appeared to be limited: intense competition had emerged in many lines of business, but individual firms apparently often lacked the potential to have much of an influence on competitive outcomes. Instead, in most lines of business—with the exception of a few commodities in which international trade had developed—firms had an incentive to remain small and to employ as little fixed capital as possible. It was in this era that Adam Smith penned his famous description of market forces as an “invisible hand” that was largely beyond the control of individual firms.

The scope for strategy as a way to control market forces and shape the competitive environment started to become clearer in the second half of the nineteenth century. In the United States, the building of the railroads after 1850 led to the development of mass markets for the first time. Along with improved access to capital and credit, mass markets encouraged large-scale investment to exploit economies of scale in production and economies of scope in distribution. In some industries, Adam Smith’s “invisible hand” was gradually tamed by what the historian Alfred D. Chandler Jr. has termed the “visible hand” of professional managers. By the late nineteenth century, a new type of firm began to emerge, first in the United States and then in Europe: the vertically integrated, multidivisional (or “M-form”) corporation that made large investments in manufacturing and marketing and in management hierarchies to coordinate those functions. Over time, the largest M-form companies managed to alter the competitive environment within their industries and even across industry lines.¹

The need for a formal approach to corporate strategy was first articulated by top executives of M-form corporations. Alfred Sloan (chief executive of General Motors from 1923 to 1946) devised a strategy that was explicitly based on the perceived strengths and weaknesses of its competitor, Ford.² In the 1930s, Chester Barnard, a top executive with AT&T, argued that managers should pay especially close attention to “strategic factors,” which depend on “personal or organizational action.”³

¹ Alfred D. Chandler Jr., *Strategy and Structure* (Cambridge, Mass., 1963) and *Scale and Scope* (Cambridge, Mass., 1990).

² See Alfred P. Sloan Jr., *My Years with General Motors* (New York, 1963).

³ Chester I. Barnard, *The Functions of the Executive* (Cambridge, Mass., 1968; first published 1938), 204–5.

The organizational challenges involved in World War II were a vital stimulus to strategic thinking. The problem of allocating scarce resources across the entire economy in wartime led to many innovations in management science. New operations-research techniques (e.g., linear programming) were devised, which paved the way for the use of quantitative analysis in formal strategic planning. In 1944, John von Neumann and Oskar Morgenstern published their classic work, *The Theory of Games and Economic Behavior*. This work essentially solved the problem of zero-sum games (most military ones, from an aggregate perspective) and framed the issues surrounding non-zero-sum games (most business ones). Also, the concept of “learning curves” became an increasingly important tool for planning. The learning curve was first discovered in the military aircraft industry in the 1920s and 1930s, where it was noticed that direct labor costs tended to decrease by a constant percentage as the cumulative quantity of aircraft produced doubled. Learning effects figured prominently in wartime production planning efforts.

World War II also encouraged the mindset of using formal strategic thinking to guide management decisions. Thus, Peter Drucker argued that “management is not just passive, adaptive behavior; it means taking action to make the desired results come to pass.” He noted that economic theory had long treated markets as impersonal forces, beyond the control of individual entrepreneurs and organizations. But, in the age of M-form corporations, managing “implies responsibility for attempting to shape the economic environment, for planning, initiating and carrying through changes in that economic environment, for constantly pushing back the limitations of economic circumstances on the enterprise’s freedom of action.”⁴ This insight became the rationale for business strategy—that, by consciously using formal planning, a company could exert some positive control over market forces.

However, these insights on the nature of strategy largely lay fallow for the decade after World War II because wartime destruction led to excess demand, which limited competition as firms rushed to expand capacity. Given the enormous job of rebuilding Europe and much of Asia, it was not until the late 1950s and 1960s that many large multinational corporations were forced to consider global competition as a factor in planning. In addition, the wartime disruption of foreign multinationals enabled U.S. companies to profit from the postwar boom without effective competitors in many industries.

A more direct bridge to the development of strategic concepts for business applications was provided by interservice competition in the

⁴ Peter Drucker, *The Practice of Management* (New York, 1954), 11.

U.S. military after World War II. In this period, American military leaders found themselves debating the arrangements that would best protect legitimate competition between military services while maintaining the needed integration of strategic and tactical planning. Many argued that the Army, Navy, Marines, and Air Force would be more efficient if they were unified into a single organization. As the debate raged, Philip Selznick, a sociologist, noted that the Navy Department “emerged as the defender of subtle institutional values and tried many times to formulate the distinctive characteristics of the various services.” In essence, the “Navy spokesmen attempted to distinguish between the Army as a ‘manpower’ organization and the Navy as a finely adjusted system of technical, engineering skills—a ‘machine-centered’ organization. Faced with what it perceived as a mortal threat, the Navy became highly self-conscious about its distinctive competence.”⁵ The concept of “distinctive competence” had great resonance for strategic management, as we will see next.

Academic Underpinnings

The Second Industrial Revolution witnessed the founding of many elite business schools in the United States, beginning with the Wharton School in 1881. Harvard Business School, founded in 1908, was one of the first to promote the idea that managers should be trained to think strategically and not just to act as functional administrators. Beginning in 1912, Harvard offered a required second-year course in “business policy,” which was designed to integrate the knowledge gained in functional areas like accounting, operations, and finance, thereby giving students a broader perspective on the strategic problems faced by corporate executives. A course description from 1917 claimed that “an analysis of any business problem shows not only its relation to other problems in the same group, but also the intimate connection of groups. Few problems in business are purely intra-departmental.” It was also stipulated that the policies of each department must maintain a “balance in accord with the underlying policies of the business as a whole.”⁶

In the early 1950s, two professors of business policy at Harvard, George Albert Smith Jr. and C. Roland Christensen, taught students to question whether a firm’s strategy matched its competitive environment. In reading cases, students were instructed to ask: do a company’s

⁵ Philip Selznick, *Leadership in Administration* (Evanston, Ill., 1957), 49–50.

⁶ Official Register of Harvard University, 29 Mar. 1917, 42–3.

policies “fit together into a program that effectively meets the requirements of the competitive situation”?⁷ Students were told to address this problem by asking: “How is the whole industry doing? Is it growing and expanding? Or is it static; or declining?” Then, having “sized up” the competitive environment, the student was to ask: “On what basis must any one company compete with the others in this particular industry? At what kinds of things does it have to be especially competent, in order to compete?”⁸

In the late 1950s, another Harvard business policy professor, Kenneth Andrews, built on this thinking by arguing that “every business organization, every subunit of organization, and even every individual [ought to] have a clearly defined set of purposes or goals which keeps it moving in a *deliberately chosen direction* and prevents its drifting in undesired directions” (emphasis added). As shown in the case of Alfred Sloan at General Motors, “the primary function of the general manager, over time, is supervision of the continuous process of determining the nature of the enterprise and setting, revising and attempting to achieve its goals.”⁹ The motivation for these conclusions was supplied by an industry note and company cases that Andrews prepared on Swiss watchmakers, which uncovered significant differences in performance associated with their respective strategies for competing in that industry.¹⁰ This format of combining industry notes with company cases, which had been initiated at Harvard Business School by a professor of manufacturing, John MacLean, became the norm in Harvard’s business policy course. In practice, an industry note was often followed by multiple cases on one or several companies with the objective, *inter alia*, of economizing on students’ preparation time.¹¹

By the 1960s, classroom discussions in the business policy course focused on matching a company’s “strengths” and “weaknesses”—its distinctive competence—with the “opportunities” and “threats” (or risks) it faced in the marketplace. This framework, which came to be referred to by the acronym SWOT, was a major step forward in bringing explicitly competitive thinking to bear on questions of strategy. Kenneth Andrews put these elements together in a way that became particularly well known. (See Figure 1.) In 1963, a business policy confer-

⁷ George Albert Smith Jr. and C. Roland Christensen, *Suggestions to Instructors on Policy Formulation* (Chicago, 1951), 3–4.

⁸ George Albert Smith Jr., *Policy Formulation and Administration* (Chicago, 1951), 14.

⁹ Kenneth R. Andrews, *The Concept of Corporate Strategy* (Homewood, Ill., 1971), 23.

¹⁰ See Part I of Edmund P. Learned, C. Roland Christensen, and Kenneth Andrews, *Problems of General Management* (Homewood, Ill., 1961).

¹¹ Interview with Kenneth Andrews, 2 Apr. 1997.

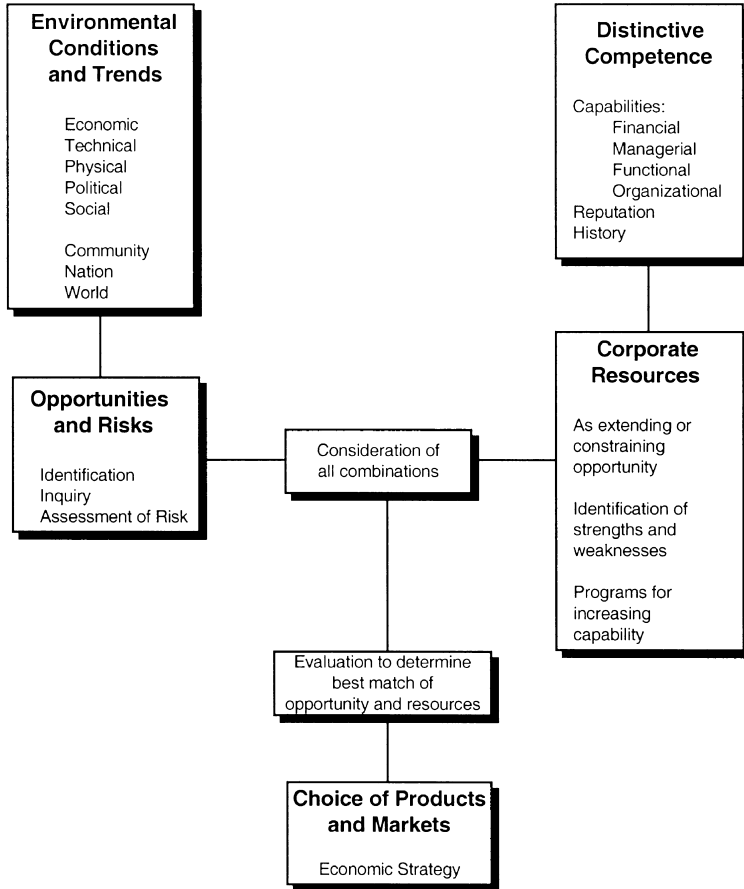


Figure 1. Andrews's Strategy Framework. (Source: Kenneth Andrews, *The Concept of Corporate Strategy*, rev. ed. [Homewood, Ill., 1980], 69.)

ence was held at Harvard that helped diffuse the SWOT concept in academia and in management practice. Attendance was heavy, and yet the popularity of SWOT—which was still used by many firms, including Wal-Mart, in the 1990s—did not bring closure to the problem of actually defining a firm's distinctive competence. To solve this problem, strategists had to decide which aspects of the firm were “enduring and unchanging over relatively long periods of time” and which were “necessarily more responsive to changes in the marketplace and the pressures of other environmental forces.” This distinction was crucial because “the *strategic* decision is concerned with the long-term devel-

opment of the enterprise" (emphasis added).¹² When strategy choices were analyzed from a long-range perspective, the idea of "distinctive competence" took on added importance because of the risks involved in most long-run investments. Thus, if the opportunities a firm was pursuing appeared "to outrun [its] present distinctive competence," then the strategist had to consider a firm's "willingness to gamble that the latter can be built up to the required level."¹³

The debate over a firm's "willingness to gamble" its distinctive competence in pursuit of opportunity continued in the 1960s, fueled by a booming stock market and corporate strategies that were heavily geared toward growth and diversification. In a classic 1960 article, "Marketing Myopia," Theodore Levitt was sharply critical of firms that seemed to focus too much on delivering a product, presumably based on its distinctive competence, rather than consciously serving the customer. Levitt thus argued that when companies fail, "it usually means that the product fails to adapt to the constantly changing patterns of consumer needs and tastes, to new and modified marketing institutions and practices, or to product developments in complementary industries."¹⁴

However, another leading strategist, Igor Ansoff, argued that Levitt was asking companies to take unnecessary risks by investing in new products that might not fit the firm's distinctive competence. Ansoff argued that a company should first ask whether a new product had a "common thread" with its existing products. He defined the common thread as a firm's "mission" or its commitment to exploit an existing need in the market as a whole.¹⁵ Ansoff noted that "sometimes the customer is erroneously identified as the common thread of a firm's business. In reality, a given type of customer will frequently have a range of unrelated product missions or needs."¹⁶ Thus, for a firm to maintain its strategic focus, Ansoff suggested certain categories for defining the common thread in its business/corporate strategy. (See Figure 2.) Ansoff and others also focused on translating the logic of the SWOT framework into a series of concrete questions that needed to be answered in the development of strategies.¹⁷

In the 1960s, diversification and technological changes increased the complexity of the strategic situations that many companies faced, and intensified their need for more sophisticated measures that could

¹² Andrews, *The Concept of Corporate Strategy*, 29.

¹³ *Ibid.*, 100.

¹⁴ Theodore Levitt, "Marketing Myopia," *Harvard Business Review* (July/Aug. 1960): 52.

¹⁵ Igor Ansoff, *Corporate Strategy* (New York, 1965), 106–9.

¹⁶ *Ibid.*, 105–8.

¹⁷ Michael E. Porter, "Industrial Organization and the Evolution of Concepts for Strategic Planning," in T. H. Naylor, ed., *Corporate Strategy* (New York, 1982), 184.

| | Present Product | New Product |
|-----------------|--------------------|---------------------|
| Present Mission | Market Penetration | Product Development |
| New Mission | Market Development | Diversification |

Figure 2. Ansoff's Product/Mission Matrix as adapted by Henry Mintzberg. (Source: Henry Mintzberg, "Generic Strategies," in *Advances in Strategic Management*, vol. 5 [Greenwich, Conn., 1988], 2. For the original, see Igor Ansoff, *Corporate Strategy* [New York, 1965], 128.)

be used to evaluate and compare many different types of businesses. Since business policy groups at Harvard and elsewhere remained strongly wedded to the idea that strategies could only be analyzed on a case-by-case basis in order to account for the unique characteristics of every business, corporations turned elsewhere to satisfy their craving for standardized approaches to strategy making.¹⁸ A study by the Stanford Research Institute indicated that a majority of large U.S. companies had set up formal planning departments by 1963.¹⁹ Some of these internal efforts were quite elaborate. General Electric (GE) is a bellwether example: it used Harvard faculty extensively in its executive education programs, but it also independently developed an elaborate, computer-based "Profitability Optimization Model" (PROM) in the first half of the 1960s that appeared to explain a significant fraction of the variation in the return on investment afforded by its various businesses.²⁰ Over time, like many other companies, GE also sought the help of private consulting firms. While consultants made important contributions in many areas, such as planning, forecasting, logistics, and long-range research and development (R&D), the following section traces their early impact on mainstream strategic thinking.

The Rise of Strategy Consultants

The 1960s and early 1970s witnessed the rise of a number of strategy consulting practices. In particular, the Boston Consulting Group

¹⁸ Adam M. Brandenburger, Michael E. Porter, and Nicolaj Siggelkow, "Competition and Strategy: The Emergence of a Field," paper presented at McArthur Symposium, Harvard Business School, 9 Oct. 1996, 3–4.

¹⁹ Stanford Research Institute, *Planning in Business* (Menlo Park, 1963).

²⁰ Sidney E. Schoeffler, Robert D. Buzzell, and Donald F. Heany, "Impact of Strategic Planning on Profit Performance," *Harvard Business Review* (Mar./Apr. 1974): 139.

(BCG), founded in 1963, had a major impact on the field by applying quantitative research to problems of business and corporate strategy. BCG's founder, Bruce Henderson, believed that a consultant's job was to find "meaningful quantitative relationships" between a company and its chosen markets.²¹ In his words, "good strategy must be based primarily on logic, not . . . on experience derived from intuition."²² Indeed, Henderson was utterly convinced that economic theory would someday lead to a set of universal rules for strategy. As he explained, "[I]n most firms strategy tends to be intuitive and based upon traditional patterns of behavior which have been successful in the past. . . . [However,] in growth industries or in a changing environment, this kind of strategy is rarely adequate. The accelerating rate of change is producing a business world in which customary managerial habits and organization are increasingly inadequate."²³

In order to help executives make effective strategic decisions, BCG drew on the existing knowledge base in academia: one of its first employees, Seymour Tilles, was formerly a lecturer in Harvard's business policy course. However, it also struck off in a new direction that Bruce Henderson is said to have described as "the business of selling powerful oversimplifications."²⁴ In fact, BCG came to be known as a "strategy boutique" because its business was largely based, directly or indirectly, on a single concept: the experience curve (discussed below). The value of using a single concept came from the fact that "in nearly all problem solving there is a universe of alternative choices, most of which must be discarded without more than cursory attention." Hence, some "frame of reference is needed to screen the . . . relevance of data, methodology, and implicit value judgments" involved in any strategy decision. Given that decision making is necessarily a complex process, the most useful "frame of reference is the concept. Conceptual thinking is the skeleton or the framework on which all other choices are sorted out."²⁵

BCG and the Experience Curve. BCG first developed its version of the learning curve—what it labeled the "experience curve"—in 1965–66. According to Bruce Henderson, "it was developed to try to explain price and competitive behavior in the extremely fast growing segments" of industries for clients like Texas Instruments and Black and

²¹ Interview with Seymour Tilles, 24 Oct. 1996. Tilles credits Henderson for recognizing the competitiveness of Japanese industry at a time, in the late 1960s, when few Americans believed that Japan or any other country could compete successfully against American industry.

²² Bruce Henderson, *The Logic of Business Strategy* (Cambridge, Mass., 1984), 10.

²³ Bruce D. Henderson, *Henderson on Corporate Strategy* (Cambridge, Mass., 1979), 6–7.

²⁴ Interview with Seymour Tilles, 24 Oct. 1996.

²⁵ Henderson, *Henderson on Corporate Strategy*, 41.

Decker.²⁶ As BCG consultants studied these industries, they naturally asked why “one competitor outperforms another (assuming comparable management skills and resources)? Are there basic rules for success? There, indeed, appear to be rules for success, and they relate to the impact of accumulated experience on competitors’ costs, industry prices and the interrelation between the two.”²⁷

The firm’s standard claim for the experience curve was that for each cumulative doubling of experience, *total* costs would decline by roughly 20 to 30 percent due to economies of scale, organizational learning, and technological innovation. The strategic implication of the experience curve, according to BCG, was that for a given product segment, “the producer . . . who has made the most units should have the lowest costs and the highest profits.”²⁸ Bruce Henderson claimed that with the experience curve “the stability of competitive relationships should be predictable, the value of market share change should be calculable, [and] the effects of growth rate should [also] be calculable.”²⁹

From the Experience Curve to Portfolio Analysis. By the early 1970s, the experience curve had led to another “powerful oversimplification” by BCG: the “Growth-Share Matrix,” which was the first use of what came to be known as “portfolio analysis.” (See Figure 3.) The idea was that after experience curves were drawn for each of a diversified company’s business units, their relative potential as areas for investment could be compared by plotting them on the grid.

BCG’s basic strategy recommendation was to maintain a balance between “cash cows” (i.e., mature businesses) and “stars,” while allocating some resources to feed “question marks,” which were potential stars. “Dogs” were to be sold off. In more sophisticated language, a BCG vice president explained that “since the producer with the largest stable market share eventually has the lowest costs and greatest profits, it becomes vital to have a dominant market share in as many products as possible. However, market share in slowly growing products can be gained only by reducing the share of competitors who are likely to fight back.” If a product market is growing rapidly, “a company can gain share by securing most of the *growth*. Thus, while competitors grow,

²⁶ Bruce Henderson explained that, unlike earlier versions of the “learning curve,” BCG’s experience curve “encompasses all costs (including capital, administrative, research and marketing) and traces them through technological displacement and product evolution. It is also based on cash flow rates, not accounting allocation.” Bruce D. Henderson, preface to Boston Consulting Group, *Perspectives on Experience* (Boston, 1972; first published 1968).

²⁷ Boston Consulting Group, *Perspectives on Experience*, 7.

²⁸ Patrick Conley, “Experience Curves as a Planning Tool,” in Boston Consulting Group pamphlet (1970): 15.

²⁹ Bruce Henderson, preface, Boston Consulting Group, *Perspectives on Experience*.

Figure 3. BCG's Growth-Share Matrix. (Source: Adapted from George Stalk Jr. and Thomas M. Hout, *Competing Against Time* [New York, 1990], 12.)

| | High Share | Low Share |
|-------------|------------|-----------------|
| High Growth | "Star" | "Question Mark" |
| Slow Growth | "Cash Cow" | "Dog" |

the company can grow even faster and emerge with a dominant share when growth eventually slows."³⁰

Strategic Business Units and Portfolio Analysis. Numerous other consulting firms came up with their own matrices for portfolio analysis at roughly the same time as BCG. McKinsey & Company's effort, for instance, began in 1968 when Fred Borch, the CEO of GE, asked McKinsey to examine his company's corporate structure, which consisted of two hundred profit centers and one hundred and forty-five departments arranged around ten groups. The boundaries for these units had been defined according to theories of financial control, which the McKinsey consultants judged to be inadequate. They argued that the firm should be organized on more strategic lines, with greater concern for external conditions than internal controls and a more future-oriented approach than was possible using measures of past financial performance. The study recommended a formal strategic planning system that would divide the company into "natural business units," which Borch later renamed "strategic business units," or SBUs. GE's executives followed this advice, which took two years to put into effect.

However, in 1971, a GE corporate executive asked McKinsey for help in evaluating the strategic plans that were being written by the company's many SBUs. GE had already examined the possibility of using the BCG growth-share matrix to decide the fate of its SBUs, but its top management had decided then that they could not set priorities on the basis of just two performance measures. And so, after studying the problem for three months, a McKinsey team produced what came to be known as the GE/McKinsey nine-block matrix. The nine-block matrix used about a dozen measures to screen for industry attractive-

³⁰ Conley, "Experience Curves as a Planning Tool," 10–11.

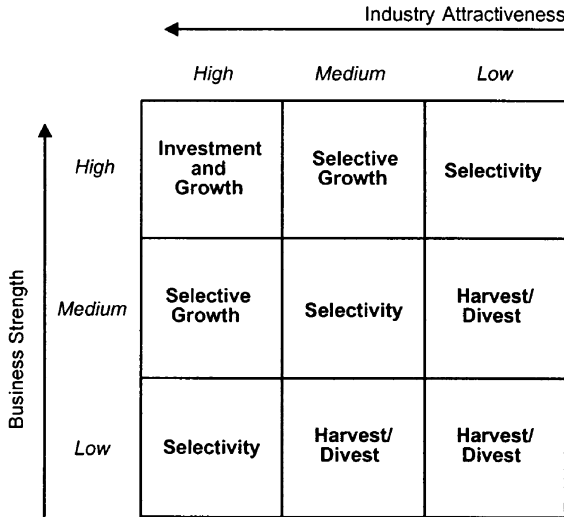


Figure 4. Industry Attractiveness–Business Strength Matrix. (Source: Arnaldo C. Hax and Nicolas S. Majluf, *Strategic Management: An Integrative Perspective* [Englewood Cliffs, N.J., 1984], 156.)

ness, or profitability, and another dozen to screen for competitive position, although the weights to be attached to them were not specified.³¹ (See Figure 4.)

Another, more quantitative, approach to portfolio planning was developed at roughly the same time under the aegis of the “Profit Impact of Market Strategies” (PIMS) program, which was the multicompany successor to the PROM program that GE had started a decade earlier. By the mid-1970s, PIMS contained data on six hundred and twenty SBUs drawn from fifty-seven diversified corporations.³² These data were used, in the first instance, to explore the determinants of returns on investment by regressing historical returns on variables such as market share, product quality, investment intensity, marketing and R&D expenditures, and several dozen others. The regressions established what were supposed to be benchmarks for the *potential* performance of SBUs with particular characteristics against which their *actual* performance might be compared.

³¹ Interview with Mike Allen, 4 Apr. 1997.

³² Sidney E. Schoeffler, Robert D. Buzzell, and Donald F. Heany, “Impact of Strategic Planning on Profit Performance,” *Harvard Business Review* (Mar./Apr. 1974): 139–40, 144–5.

In all these applications, segmenting diversified corporations into SBUs became an important precursor to analyses of economic performance.³³ This forced “de-averaging” of cost and performance numbers that had previously been calculated at more aggregated levels. In addition, it was thought that, with such approaches, “strategic thinking was appropriately pushed ‘down the line’ to managers closer to the particular industry and its competitive conditions.”³⁴

In the 1970s, virtually every major consulting firm used some type of portfolio analysis to generate strategy recommendations. The concept became especially popular after the oil crisis of 1973 forced many large corporations to rethink, if not discard, their existing long-range plans. A McKinsey consultant noted that “the sudden quadrupling of energy costs [due to the OPEC embargo], followed by a recession and rumors of impending capital crisis, [meant that] setting long-term growth and diversification objectives was suddenly an exercise in irrelevance.” Now, strategic planning meant “sorting out winners and losers, setting priorities, and husbanding capital.” In a climate where “product and geographic markets were depressed and capital was presumed to be short,”³⁵ portfolio analysis gave executives a ready excuse to get rid of poorly performing business units while directing most available funds to the “stars.” Thus, a survey of the “Fortune 500” industrial companies concluded that, by 1979, 45 percent of them had introduced portfolio planning techniques to some extent.³⁶

Emerging Problems. Somewhat ironically, the very macroeconomic conditions that (initially) increased the popularity of portfolio analysis also began to raise questions about the experience curve. The high inflation and excess capacity resulting from downturns in demand induced by the “oil shocks” of 1973 and 1979 disrupted historical experience curves in many industries, suggesting that Bruce Henderson had oversold the concept when he circulated a pamphlet in 1974 entitled “Why Costs Go Down Forever.” Another problem with the experience curve was pinpointed in a classic 1974 article by William Abernathy and Kenneth Wayne, which argued that “the consequence of intensively pursuing a cost-minimization strategy [e.g., one based on the experience curve] is a reduced ability to make innovative changes and to re-

³³ See Walter Kiechel III, “Corporate Strategists under Fire,” *Fortune* (27 Dec. 1982).

³⁴ Frederick W. Gluck and Stephen P. Kaufman, “Using the Strategic Planning Framework,” in McKinsey internal document, “Readings in Strategy” (1979), 3–4.

³⁵ J. Quincy Hunsicker, “Strategic Planning: A Chinese Dinner?” McKinsey staff paper (Dec. 1978), 3.

³⁶ Philippe Haspeslagh, “Portfolio Planning: Uses and Limits,” *Harvard Business Review* (Jan. /Feb. 1982): 59.

spond to those introduced by competitors.”³⁷ Abernathy and Wayne pointed to the case of Henry Ford, whose obsession with lowering costs had left him vulnerable to Alfred Sloan’s strategy of product innovation in the car business. The concept of the experience curve was also criticized for treating cost reductions as automatic rather than something to be managed, for assuming that most experience could be kept proprietary instead of spilling over to competitors, for mixing up different sources of cost reduction with very different strategic implications (e.g., learning versus scale versus exogenous technical progress), and for leading to stalemates as more than one competitor pursued the same generic success factor.³⁸

In the late 1970s, portfolio analysis came under attack as well. One problem was that, in many cases, the strategic recommendations for an SBU were very sensitive to the specific portfolio-analytic technique employed. For instance, an academic study applied four different portfolio techniques to a group of fifteen SBUs owned by the same Fortune 500 corporation; it found that only one of the fifteen SBUs fell into the same portion of each of the four matrices, and only five of the fifteen were classified similarly in terms of three of the four matrices.³⁹ This was only a slightly higher level of concordance than would have been expected if the fifteen SBUs had been randomly classified four separate times!

An even more serious problem with portfolio analysis was that even if one could figure out the “right” technique to employ, the mechanical determination of resource allocation patterns on the basis of historical performance data was inherently problematic. Some consultants acknowledged as much. In 1979, Fred Gluck, the head of McKinsey’s strategic management practice, ventured the opinion that “the heavy dependence on ‘packaged’ techniques [has] frequently resulted in nothing more than a tightening up, or fine tuning, of current initiatives within the traditionally configured businesses.” Even worse, technique-based strategies “rarely beat existing competition” and often leave businesses “vulnerable to unexpected thrusts from companies not previously considered competitors.”⁴⁰ Gluck and his colleagues sought to loosen some of the constraints imposed by mechanistic approaches,

³⁷ William J. Abernathy and Kenneth Wayne, “Limits of the Learning Curve,” *Harvard Business Review* (Sept./Oct. 1974): 111.

³⁸ Pankaj Ghemawat, “Building Strategy on the Experience Curve,” *Harvard Business Review* (Mar. /Apr.): 1985.

³⁹ Yoram Wind, Vijay Mahajan, and Donald J. Swire, “An Empirical Comparison of Standardized Portfolio Models,” *Journal of Marketing* 47 (Spring 1983): 89–99. The statistical analysis of their results is based on an unpublished draft by Pankaj Ghemawat.

⁴⁰ Gluck and Kaufman, “Using the Strategic Planning Framework,” 5–6.

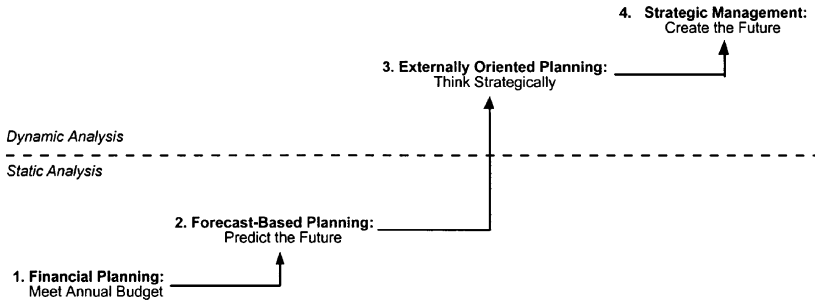


Figure 5. Four Phases of Strategy. (Source: Adapted from Frederick W. Gluck, Stephen P. Kaufman, and A. Steven Walleck, "The Evolution of Strategic Management," McKinsey staff paper [Oct. 1978], 4. Reproduced in modified form in Gluck, Kaufman, and Walleck, "Strategic Management for Competitive Advantage," *Harvard Business Review* [July/Aug. 1980], 157.)

proposing that successful companies devise progressive strategies to take them through four basic stages. Each stage requires these companies to grapple with increasing levels of dynamism, multidimensionality, and uncertainty, and they therefore become less amenable to routine quantitative analysis. (See Figure 5.)

The most stinging attack on the analytical techniques popularized by strategy consultants was offered by two Harvard professors of production, Robert Hayes and William Abernathy, in 1980. They argued that "these new principles [of management], despite their sophistication and widespread usefulness, encourage a preference for (1) analytic detachment rather than the insight that comes from 'hands on experience' and (2) short-term cost reduction rather than long-term development of technological competitiveness."⁴¹ Hayes and Abernathy in particular criticized portfolio analysis as a tool that led managers to focus on minimizing financial risks rather than on investing in new opportunities that require a long-term commitment of resources.⁴² They went on to compare U.S. firms unfavorably with Japanese and, especially, European ones.

These and other criticisms gradually diminished the popularity of portfolio analysis. However, its rise and fall did have a lasting influence on subsequent work on competition and business strategy because it highlighted the need for more careful analysis of the two basic dimensions of portfolio-analytic grids: industry attractiveness and competi-

⁴¹ Robert H. Hayes and William J. Abernathy, "Managing Our Way to Economic Decline," *Harvard Business Review* (July/Aug. 1980): 68.

⁴² *Ibid.*, 71.

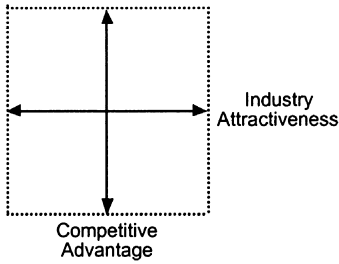


Figure 6. Two Basic Dimensions of Strategy.

tive position. Although these two dimensions had been identified earlier—in the General Survey Outline developed by McKinsey & Company for internal use in 1952, for example—portfolio analysis underscored this particular method of analyzing the effects of competition on business performance. U.S. managers, in particular, proved avid consumers of insights about competition because the exposure of much of U.S. industry to competitive forces increased dramatically during the 1960s and 1970s. One economist roughly calculated that heightened import competition, antitrust actions, and deregulation increased the share of the U.S. economy that was subject to effective competition from 56 percent in 1958 to 77 percent by 1980.⁴³ The next two sections describe attempts to unbundle these two basic dimensions of strategy. (See Figure 6.)

Unbundling Industry Attractiveness

Thus far, we have made little mention of economists' contributions to thinking about competitive strategy. On the one hand, economic theory emphasizes the role of competitive forces in determining market outcomes. However, on the other hand, economists have often overlooked the importance of strategy because, since Adam Smith, they have traditionally focused on the case of perfect competition: an idealized situation in which large numbers of equally able competitors drive an industry's aggregate economic profits (i.e., profits in excess of the opportunity cost of the capital employed) down to zero. Under perfect competition, individual competitors are straitjacketed, in the sense of having a choice between producing efficiently and pricing at cost or shutting down.

Some economists did address the opposite case of perfect competition, namely pure monopoly, with Antoine Cournot providing the first

⁴³ William G. Shepherd, "Causes of Increased Competition in the U.S. Economy, 1939–1980," *Review of Economics and Statistics* (Nov. 1982): 619.

definitive analysis—as well as analysis of oligopoly under specific assumptions—in 1838.⁴⁴ Work on monopoly yielded some useful insights, such as the expectation of an inverse relation between the profitability of a monopolized industry and the price elasticity of the demand it faced—an insight that has remained central in modern marketing. Nevertheless, the assumption of monopoly obviously took things to the other, equally unfortunate, extreme by ruling out all directly competitive forces in the behavior of firms.

This state of affairs began to change at an applied level in the 1930s, as a number of economists, particularly those associated with the “Harvard school,” began to argue that the *structure* of many industries might permit incumbent firms to earn positive economic profits over long periods of time.⁴⁵ Edward S. Mason argued that the structure of an industry would determine the conduct of buyers and sellers—their choices of critical decision variables—and, by implication, its performance along such dimensions as profitability, efficiency, and innovativeness.⁴⁶ Joe Bain, also of the Harvard Economics Department, advanced the research program of uncovering the general relation between industry structure and performance through empirical work focused on a limited number of structural variables—most notably, in two studies published in the 1950s. The first study found that the profitability of manufacturing industries in which the eight largest competitors accounted for more than 70 percent of sales was nearly twice that of industries with eight-firm concentration ratios of less than 70 percent.⁴⁷ The second study explained how, in certain industries, “established sellers can persistently raise their prices above a competitive level without attracting new firms to enter the industry.”⁴⁸ Bain identified three basic barriers to entry: (1) an absolute cost advantage by an established firm (an enforceable patent, for instance); (2) a significant degree of product differentiation; and (3) economies of scale.

Bain’s insights led to the rapid growth of a new subfield of economics, known as industrial organization, or “IO” for short, that explored the structural reasons why some industries were more profitable than others. By the mid-1970s, several hundred empirical studies in IO had

⁴⁴ Antoine A. Cournot, *Recherches sur les Principes Mathématiques de la Théorie des Richesses* (Paris, 1838), sects. 26, 27; and Jurg Niehans, *A History of Economic Theory* (Baltimore, 1990), 180–2.

⁴⁵ Economists associated with the Chicago School generally doubted the empirical importance of this possibility—except as an artifact of regulatory distortions.

⁴⁶ Mason’s seminal work was “Price and Production Policies of Large-Scale Enterprise,” *American Economic Review* (Mar. 1939): 61–4.

⁴⁷ Joe S. Bain, “Relation of Profit Rate to Industry Concentration: American Manufacturing, 1936–1940,” *Quarterly Journal of Economics* (Aug. 1951): 293–324.

⁴⁸ Joe S. Bain, *Barriers to New Competition* (Cambridge, Mass., 1956), 3 n.

| Industry | Return on Equity |
|------------------------------|------------------|
| Drugs | 21.4 |
| Printing and Publishing | 15.5 |
| Petroleum and Coal | 13.1 |
| Motor Vehicles and Equipment | 11.6 |
| Textile Mill Products | 9.3 |
| Iron and Steel | 3.9 |

Figure 7. Differences in the Profitability of Selected Industries, 1971–1990. (Source: Anita M. McGahan, “Selected Profitability Data on U.S. Industries and Companies,” Harvard Business School Publishing, No. 792-066 [1992].)

been carried out. While the relation between structural variables and performance turned out to be more complicated than had been suggested earlier,⁴⁹ these studies reinforced the idea that some industries are inherently much more profitable or “attractive” than others, as indicated below. (See Figure 7.)

Harvard Business School’s Business Policy Group was aware of these insights from across the Charles River: excerpts from Bain’s book on barriers to entry were even assigned as required readings for the business policy course in the early 1960s. But the immediate impact of IO on business strategy was limited. Although many problems can be discerned in retrospect, two seem to have been particularly important. First, IO economists focused on issues of public policy rather than business policy: they concerned themselves with the minimization rather than the maximization of “excess” profits. Second, the emphasis of Bain and his successors on using a limited list of structural variables to explain industry profitability shortchanged the richness of modern industrial competition (“conduct” within the IO paradigm).

Both of these problems with applying classical IO to business-strategic concerns about industry attractiveness were addressed by Michael Porter, a graduate of the Ph.D. program offered jointly by Harvard’s Business School and its Economics Department. In 1974, Porter prepared a “Note on the Structural Analysis of Industries,” which presented his first attempt to turn IO on its head by focusing on the business policy objective of profit maximization, rather than on the public policy objective of minimizing “excess” profits.⁵⁰ In 1980, he released his landmark book, *Competitive Strategy*, which owed much of its suc-

⁴⁹ See, for instance, Harvey J. Goldschmid, H. Michael Mann, and J. Fred Weston, eds., *Industrial Concentration: The New Learning* (Boston, 1974).

⁵⁰ Michael E. Porter, “Note on the Structural Analysis of Industries,” Harvard Business School Teaching Note, no. 376-054 (1983).

cess to Porter's elaborate framework for the structural analysis of industry attractiveness. Figure 8 reproduces Porter's "five forces" approach to understanding the attractiveness of an industry environment for the "average" competitor within it. In developing this approach to strategy, Porter noted the trade-offs involved in using a "framework" rather than a more formal statistical "model." In his words, a framework "encompasses many variables and seeks to capture much of the complexity of actual competition. Frameworks identify the *relevant* variables and the questions that the user must answer in order to develop conclusions tailored to a particular industry and company" (emphasis added).⁵¹ In academic terms, the drawback of frameworks such as the five forces is that they often range beyond the empirical evidence that is available. In practice, managers routinely have to consider much longer lists of variables than are embedded in the relatively simple quantitative models used by economists. In the case of the five forces, a survey of empirical literature in the late 1980s—more than a decade after Porter first developed his framework—revealed that only a few points were strongly supported by the empirical literature generated by the IO field.⁵² (These points appear in bold print in Figure 8.) This does not mean that the other points are in conflict with IO research; rather, they reflect the experience of strategy practitioners, including Porter himself.

In managerial terms, one of the breakthroughs built into Porter's framework was that it emphasized "extended competition" for value rather than just competition between existing rivals. For this reason, and because it was easy to put into effect, the five-forces framework came to be used widely by managers and consultants. Subsequent years witnessed refinements and extensions, such as the rearrangement and incorporation of additional variables (e.g., import competition and multimarket contact) into the determinants of the intensity of five forces. The biggest conceptual advance, however, was one proposed in the mid-1990s by two strategists concerned with game theory, Adam Brandenburger and Barry Nalebuff, who argued that the process of creating value in the marketplace involved "four types of players—customers, suppliers, competitors, and complementors."⁵³ By a firm's "complementors," they meant other firms from which customers buy

⁵¹ Michael E. Porter, "Toward a Dynamic Theory of Strategy," in Richard P. Rumelt, Dan E. Schendel, and David J. Teece, eds., *Fundamental Issues in Strategy* (Boston, 1994), 427–9.

⁵² Richard Schmalensee, "Inter-Industry Studies of Structure and Performance," in Richard Schmalensee and R. D. Willig, eds., *Handbook of Industrial Organization*, vol. 2 (Amsterdam, 1989).

⁵³ Adam M. Brandenburger and Barry J. Nalebuff, *Co-opetition* (New York, 1996).

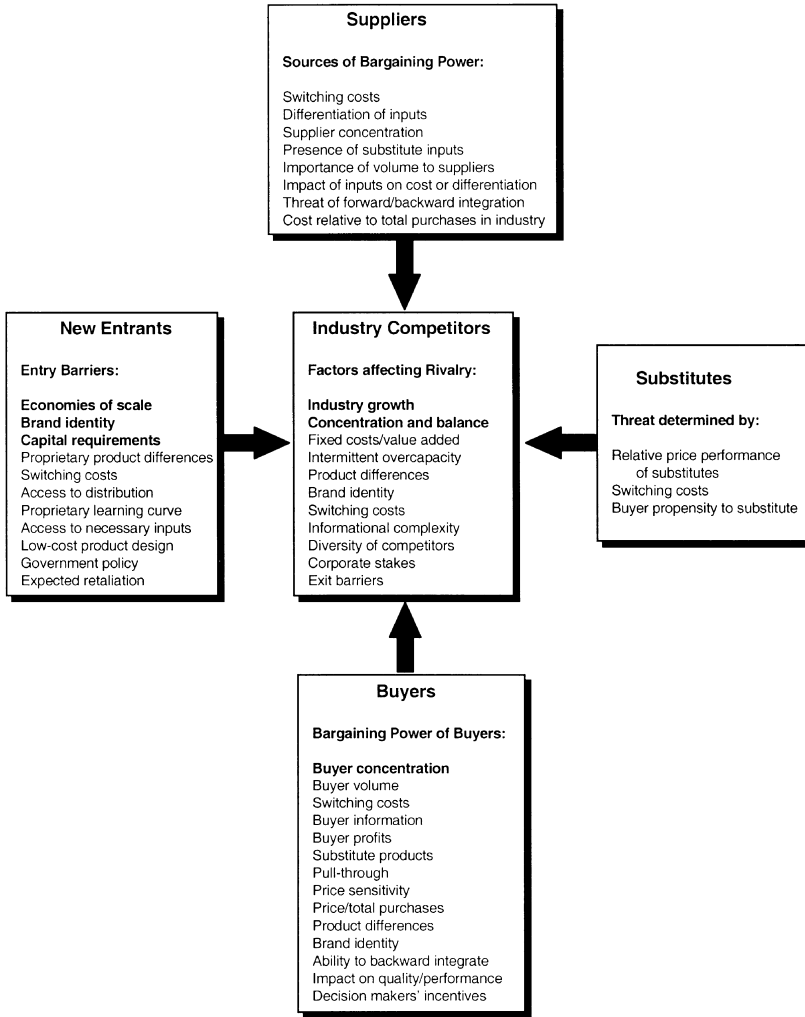


Figure 8. Porter's Five-Forces Framework for Industry Analysis.

complementary products and services, or to which suppliers sell complementary resources. As Brandenburger and Nalebuff pointed out, the practical importance of this group of players was evident in the amount of attention being paid in business to the subject of strategic alliances and partnerships. Their Value Net graphic depicted this more complete description of the business landscape—emphasizing, in particular, the equal roles played by competition and complementarity. (See Figure 9.)

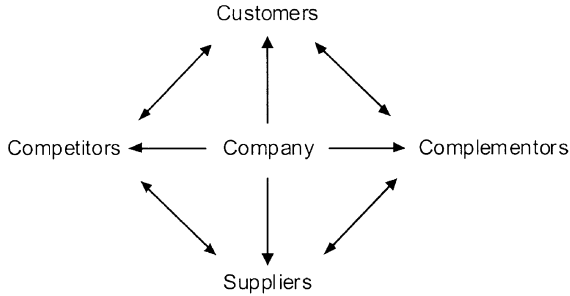


Figure 9. The Value Net. (Source: Adam M. Brandenburger and Barry J. Nalebuff, *Co-opetition* [New York, 1996], 17.)

Other strategists, however, argued that some very limiting assumptions were built into such frameworks. Thus, Kevin Coyne and Somu Subramanyam of McKinsey argued that the Porter framework made three tacit but crucial assumptions: First, that an industry consists of a set of unrelated buyers, sellers, substitutes, and competitors that interact at arm's length. Second, that wealth will accrue to players that are able to erect barriers against competitors and potential entrants, or, in other words, that the source of value is structural advantage. Third, that uncertainty is sufficiently low that you can accurately predict participants' behavior and choose a strategy accordingly.⁵⁴

Unbundling Competitive Position

The second basic dimension of business strategy highlighted by Figure 6 is competitive position. While differences in the average profitability of industries can be large, as indicated in Figure 7, differences in profitability *within* industries can be even larger.⁵⁵ Indeed, in some cases firms in *unattractive* industries can significantly outperform the averages for more profitable industries, as indicated in Figure 10. In addition, one might argue that most businesses in most industry environments are better placed to try to alter their own competitive positions, rather than the overall attractiveness of the industry in which they operate. For both these reasons, competitive position has been of great interest to business strategists. (See Figure 10.)

⁵⁴ Kevin P. Coyne and Somu Subramanyam, "Bringing Discipline to Strategy," *McKinsey Quarterly* 4 (1996): 16.

⁵⁵ See, for instance, Richard P. Rumelt, "How Much Does Industry Matter?" *Strategic Management Journal* (March 1991): 167–85.

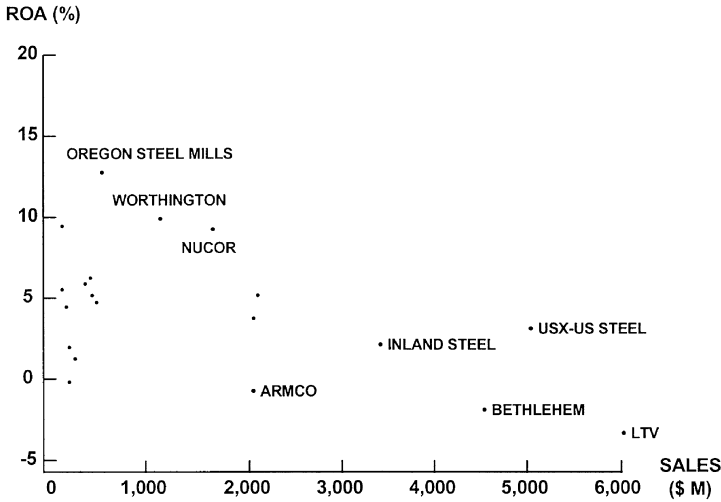


Figure 10. Profitability within the Steel Industry, 1973–1992. (Source: David Collis and Pankaj Ghemawat, “Industry Analysis: Understanding Industry Structure and Dynamics,” in Liam Fahey and Robert M. Randall, *The Portable MBA in Strategy* [New York, 1994], 174.)

Traditional academic research has made a number of contributions to our understanding of positioning within industries, starting in the 1970s. The IO-based literature on strategic groups, initiated at Harvard by Michael Hunt’s work on broad-line versus narrow-line strategies in the major home appliance industry, suggested that competitors within particular industries could be grouped in terms of their competitive strategies in ways that helped explain their interactions and relative profitability.⁵⁶ A stream of work at Purdue explored the heterogeneity of competitive positions, strategies, and performance in brewing and other industries with a combination of statistical analysis and qualitative case studies. More recently, several academic points of view about the sources of performance differences within industries have emerged — views that are explored more fully in the next section. However, it does seem accurate to say that the work that had the most impact on the strategic thinking of business about competitive positions in the late 1970s and the 1980s was more pragmatic than academic in its intent, with consultants once again playing a leading role.

⁵⁶ See Michael S. Hunt, “Competition in the Major Home Appliance Industry,” DBA diss., Harvard University, 1972. A theoretical foundation for strategic groups was provided by Richard E. Caves and Michael E. Porter, “From Entry Barriers to Mobility Barriers,” *Quarterly Journal of Economics* (Nov. 1977): 667–75.

Competitive Cost Analysis. With the rise of the experience curve in the 1960s, most strategists turned to some type of cost analysis as the basis for assessing competitive positions. The interest in competitive cost analysis survived the declining popularity of the experience curve in the 1970s but was reshaped by it in two important ways. First, more attention was paid to disaggregating businesses into their component activities or processes and to thinking about how costs in a particular activity might be shared across businesses. Second, strategists greatly enriched their menu of cost drivers to include more than just experience.

The disaggregation of businesses into their component activities seems to have been motivated, in part, by early attempts to “fix” the experience curve to deal with the rising real prices of many raw materials in the 1970s.⁵⁷ The proposed fix involved splitting costs into the costs of purchased materials and “cost added” (value added minus profit margins) and redefining the experience curve as applying only to the latter. The natural next step was to disaggregate a business’s entire cost structure into activities whose costs might be expected to behave in interestingly different ways. As in the case of portfolio analysis, the idea of splitting businesses into component activities diffused quickly among consultants and their clients in the 1970s. A template for activity analysis that became especially prominent is reproduced in Figure 11.

Activity analysis also suggested a way of getting around the “free-standing” conception of individual businesses built into the concept of SBUs. One persistent problem in splitting diversified corporations into SBUs was that, with the exception of pure conglomerates, SBUs were often related in ways that meant they shared elements of their cost structure with each other. Consulting firms, particularly Bain and Strategic Planning Associates, both of whose founders had worked on a BCG study of Texas Instruments that was supposed to highlight the problem of shared costs, began to emphasize the development of what came to be called “field maps”: matrices that identified shared costs at the level of individual activities that were linked across businesses, as illustrated below.⁵⁸

The second important development in competitive cost analysis over the late 1970s and early 1980s involved enrichment of the menu of cost drivers considered by strategists. Scale effects, while officially lumped into the experience curve, had long been looked at independently in particular cases; even more specific treatment of the effects of scale was now forced by activity analysis that might indicate, for example, that advertising costs were driven by national scale, whereas distri-

⁵⁷ This is based on my experience working at BCG in the late 1970s.

⁵⁸ Walter Kiechel III, “The Decline of the Experience Curve,” *Fortune* (5 Oct. 1981).

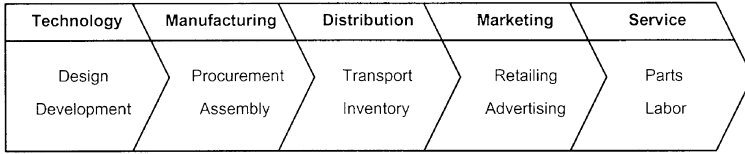


Figure 11. McKinsey's Business System. (Source: Adapted from Carter F. Bales, P. C. Chatterjee, Donald J. Gogel, and Anupam P. Puri, "Competitive Cost Analysis," McKinsey staff paper [Jan. 1980], 6.)

bution costs were driven by local or regional scale. Field maps underscored the potential importance of economies (or diseconomies) of scope across businesses rather than scale within a business. The effects of capacity utilization on costs were dramatized by macroeconomic downturns in the wake of the two oil shocks. The globalization of competition in many industries highlighted the location of activities as a main driver of competitors' cost positions, and so on. Thus, an influential mid-1980s discussion of cost analysis enumerated ten distinct cost drivers.⁵⁹

Customer Analysis. Increased sophistication in analyzing relative costs was accompanied by increased attention to customers in the process of analyzing competitive position. Customers had never been entirely invisible: even in the heyday of experience curve analysis, market segmentation had been an essential strategic tool—although it was sometimes used to gerrymander markets to “demonstrate” a positive link between share and cost advantage rather than for any analytic purpose. But, according to Walker Lewis, the founder of Strategic Planning Associates, “To those who defended in classic experience-curve strategy, about 80% of the businesses in the world were commodities.”⁶⁰ This started to change in the 1970s.

Increased attention to customer analysis involved reconsideration of the idea that attaining low costs and offering customers low prices was always the best way to compete. More attention came to be paid to *differentiated* ways of competing that might let a business command a price premium by improving customers' performance or reducing their (other) costs. While (product) differentiation had always occupied center stage in marketing, the idea of looking at it in a cross-functional, competitive context that also accounted for relative costs apparently started to emerge in business strategy in the 1970s. Thus, a member of Harvard's Business Policy group recalls using the distinction between

⁵⁹ Michael E. Porter, *Competitive Advantage* (New York, 1985), ch. 3.

⁶⁰ Quoted in Kiechel, “The Decline of the Experience Curve.”

cost and differentiation, which was implicit in two of the three sources of entry barriers identified by Joe Bain in the 1950s (see above), to organize classroom discussions in the early 1970s.⁶¹ And McKinsey reportedly started to apply the distinction between cost and “value” to client studies later in that decade.⁶² The first published accounts, in Michael Porter’s book *Competitive Strategy* and in a *Harvard Business Review* article by William Hall, appeared in 1980.⁶³

Both Hall and Porter argued that successful companies usually had to choose to compete either on the basis of low costs or by differentiating products through quality and performance characteristics. Porter also identified a focus option that cut across these two “generic strategies” and linked these strategic options to his work on industry analysis:

In some industries, there are no opportunities for focus or differentiation—it’s solely a cost game—and this is true in a number of bulk commodities. In other industries, cost is relatively unimportant because of buyer and product characteristics.⁶⁴

Many other strategists agreed that, except in such special cases, the analysis of competitive position had to cover both relative cost and differentiation. There was continuing debate, however, about the proposition, explicitly put forth by Porter, that businesses “stuck in the middle” should be expected to perform less well than businesses that had targeted lower cost or more differentiated positions. Others saw optimal positioning as a choice from a continuum of trade-offs between cost and differentiation, rather than as a choice between two mutually exclusive (and extreme) generic strategies.

Porter’s book, published in 1985, suggested analyzing cost and differentiation via the “value chain,” a template that is reproduced in Figure 12. While Porter’s value chain bore an obvious resemblance to McKinsey’s business system, his discussion of it emphasized the importance of regrouping functions into the activities actually performed to produce, market, deliver, and support products, thinking about links between activities, and connecting the value chain to the determinants of competitive position in a specific way:

Competitive advantage cannot be understood by looking at a firm as a whole. It stems from the many discrete activities a firm performs in designing, producing, marketing, delivering, and supporting its

⁶¹ Interview with Hugo Uytendaele, 25 Apr. 1997.

⁶² Interview with Fred Gluck, 18 Feb. 1997.

⁶³ Michael E. Porter, *Competitive Strategy* (New York, 1980), ch. 2; and William K. Hall, “Survival Strategies in a Hostile Environment,” *Harvard Business Review* (Sept./Oct. 1980): 78–81.

⁶⁴ Porter, *Competitive Strategy*, 41–4.

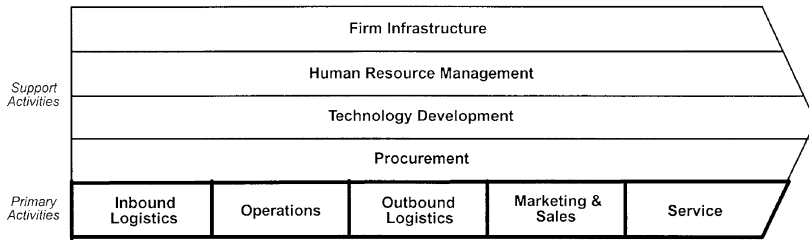


Figure 12. Porter's Value Chain. (Source: Michael E. Porter, *Competitive Advantage* [New York, 1985], 37.)

product. Each of these activities can contribute to a firm's relative cost position and create a basis for differentiation. . . . The value chain disaggregates a firm into its strategically relevant activities in order to understand the behavior of costs and the existing and potential sources of differentiation.⁶⁵

Putting customer analysis and cost analysis together was promoted not only by disaggregating businesses into activities (or processes) but also by splitting customers into segments based on cost-to-serve as well as customer needs. Such "de-averaging" of customers was often said to expose situations in which 20 percent of a business's customers accounted for more than 80 percent, or even 100 percent, of its profits.⁶⁶ It also suggested new customer segmentation criteria. Thus, Bain & Company built a thriving "customer retention" practice, starting in the late 1980s, on the basis of the higher costs of capturing new customers as opposed to retaining existing ones.

Competitive Dynamics and History

The development of business systems, value chains, and similar templates naturally refocused attention on the problem of coordinating across a large number of choices linked in cross section that was highlighted, in a cross-functional context, in the original description of Harvard Business School's course on business policy. However, such attention tended to crowd out consideration of longitudinal links between choices, which was emphasized by Selznick's work on organizational commitments and distinctive competences and evident in Andrews's focus on the aspects of firm behavior that were "enduring and unchanging over relatively long periods of time."

⁶⁵ Porter, *Competitive Advantage*, 33, 37.

⁶⁶ Talk by Arnaldo Hax at MIT on 29 April 1997.

The need to return the time dimension to predominantly static ideas about competitive position was neatly illustrated by the techniques for “value-based strategic management” that began to be promoted by consulting firms like SPA and Marakon, among others, in the 1980s. The development and diffusion of value-based techniques, which connected positioning measures to shareholder value using spreadsheet models of discounted cash flows, was driven by increases in capital market pressures in the 1980s, particularly in the United States: merger and acquisition activity soared; hostile takeovers of even very large companies became far more common; many companies restructured to avoid them; levels of leverage generally increased; and there was creeping institutionalization of equity holdings.⁶⁷ Early value-based work focused on the spread between a company or division’s rate of return and its cost of capital as the basis for “solving” the old corporate strategy problem of resource allocation across businesses. It quickly became clear, however, that estimated valuations were very sensitive to two other, more dynamic, drivers of value: the length of the time horizon over which positive spreads (competitive advantage) could be sustained on the assets in place, and the (profitable) reinvestment opportunities or growth options afforded by a strategy.⁶⁸ At the same time, analyses of business performance started to underscore the treacherousness of assuming that current profitability and growth could automatically be sustained. Thus, my analysis of 700 business units revealed that nine-tenths of the profitability differential between businesses that were initially above average and those that were initially below average vanished over a ten-year period.⁶⁹ (See Figure 13.)

The unsustainability of most competitive advantages was generally thought to reflect the “Red Queen” effect: the idea that as organizations struggled to adapt to competitive pressures, they would become stronger competitors, sending the overall level of competition spiraling upward and eliminating most, if not all, competitive advantages.⁷⁰ In the

⁶⁷ F. M. Scherer and David Ross, *Industrial Market Structure and Economic Performance* (Boston, 1990), ch. 5.

⁶⁸ Benjamin C. Esty, “Note on Value Drivers,” Harvard Business School Teaching Note, no. 297-082 (1997).

⁶⁹ Pankaj Ghemawat, “Sustainable Advantage,” *Harvard Business Review* (Sept./Oct. 1986): 53–8, and *Commitment* (New York, 1991), ch. 5.

⁷⁰ The first economic citation of the “Red Queen” effect is generally attributed to L. Van Valen. See L. Van Valen, “A New Evolutionary Law,” *Evolutionary Theory* 1 (1973): 1–30. The literary reference is to Lewis Carroll’s *Alice’s Adventures in Wonderland and Through the Looking Glass* (New York, 1981; first published 1865–71), in which the Red Queen tells Alice: “here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast . . .” (p. 127).

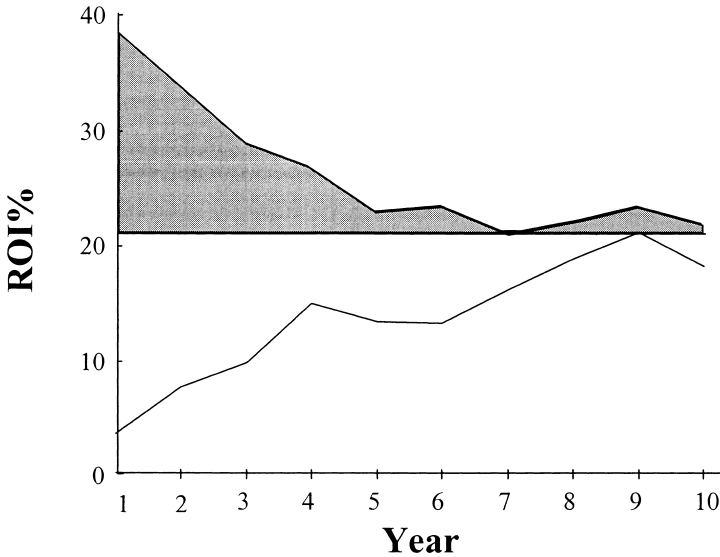


Figure 13. The Limits to Sustainability.

late 1980s and early 1990s, both academics and consultants started to wrestle with the dynamic question of how businesses might create *and* sustain competitive advantage in the presence of competitors who could not all be counted on to remain inert all the time.

From an academic perspective, many of the consultants' recommendations regarding dynamics amounted to no more, and no less, than the injunction to try to be smarter than the competition (for example, by focusing on customers' future needs while competitors remained focused on their current needs). The most thoughtful exception that had a truly dynamic orientation was work by George Stalk and others at BCG on time-based competition. In an article published in the *Harvard Business Review* in 1988, Stalk argued: "Today the leading edge of competition is the combination of fast response and increasing variety. Companies without these advantages are slipping into commodity-like competition, where customers buy mainly on price."⁷¹ Stalk expanded on this argument in a book coauthored with Thomas Hout in 1990, according to which time-based competitors "[c]reate more information and share it more spontaneously. For the information technolo-

⁷¹ George Stalk Jr., "Time—The Next Source of Competitive Advantage," *Harvard Business Review* (July/Aug. 1988).

gist, information is a fluid asset, a data stream. But to the manager of a business . . . information is fuzzy and takes many forms—knowing a customer's special needs, seeing where the market is heading . . .”⁷²

Time-based competition quickly came to account for a substantial fraction of BCG's business. Eventually, however, its limitations also became apparent. In 1993, George Stalk and Alan Webber wrote that some Japanese companies had become so dedicated to shortening their product-development cycles that they had created a “strategic treadmill on which companies were caught, condemned to run faster and faster but always staying in the same place competitively.”⁷³ In particular, Japanese electronics manufacturers had reached a remarkable level of efficiency, but it was an “efficiency that [did] not meet or create needs for any customer.”⁷⁴

For some, like Stalk himself, the lesson from this and similar episodes was that there were no sustainable advantages: “Strategy can never be a constant. . . . Strategy is and always has been a moving target.”⁷⁵ However, others, primarily academics, continued to work in the 1990s on explanations of differences in performance that would continue to be useful even *after* they were widely grasped.⁷⁶ This academic work exploits, in different ways, the idea that history matters, that history affects both the opportunities available to competitors and the effectiveness with which competitors can exploit them. Such work can be seen as an attempt to add a historical or time dimension, involving stickiness and rigidities, to the two basic dimensions of early portfolio analytic grids: industry attractiveness and competitive position. The rest of this section briefly reviews four strands of academic inquiry that embodied new approaches to thinking about the time dimension.

Game Theory. Game theory is the mathematical study of interactions between players whose payoffs depend on each other's choices. A general theory of zero-sum games, in which one player's gain is exactly equal to other players' losses, was supplied by John von Neumann and Oskar Morgenstern in their pathbreaking book *The Theory of Games and Economic Behavior*.⁷⁷ There is no general theory of non-zero-sum games, which afford opportunities for cooperation as well as competi-

⁷² Stalk and Hout, *Competing Against Time*, 179.

⁷³ George Stalk Jr. and Alan M. Webber, “Japan's Dark Side of Time,” *Harvard Business Review* (July/Aug. 1993): 94.

⁷⁴ *Ibid.*, 98–9.

⁷⁵ *Ibid.*, 101–2.

⁷⁶ This test of stability is in the spirit of the game theorists, John von Neumann and Oskar Morgenstern. See their *Theory of Games and Economic Behavior* (Princeton, 1944).

⁷⁷ *Ibid.*

tion, but research in this area does supply a language and a set of logical tools for analyzing the outcome that is likely—the equilibrium point—given specific rules, payoff structures, and beliefs if players all behave “rationally.”⁷⁸

Economists trained in IO started to turn to game theory in the late 1970s as a way of studying competitor dynamics. Since the early 1980s, well over half of all the IO articles published in the leading economics journals have been concerned with some aspect of non-zero-sum game theory.⁷⁹ By the end of the 1980s alone, competition to invest in tangible and intangible assets, strategic control of information, horizontal mergers, network competition and product standardization, contracting, and numerous other settings in which interactive effects were apt to be important had all been modeled using game theory.⁸⁰ The effort continues.

Game-theory IO models tend, despite their diversity, to share an emphasis “on the *dynamics of strategic actions* and in particular on the role of *commitment*.”⁸¹ The emphasis on commitment or irreversibility grows out of game theory’s focus on interactive effects. From this perspective, a strategic move is one that “purposefully limits your freedom of action. . . . It changes other players’ expectations about your future responses, and you can turn this to your advantage. Others know that when you have the freedom to act, you also have the freedom to capitulate.”⁸²

The formalism of game theory is accompanied by several significant limitations: the sensitivity of the predictions of game-theory models to details, the limited number of variables considered in any one model, and assumptions of rationality that are often heroic, to name just a few.⁸³ Game theory’s empirical base is also limited. The existing evidence suggests, nonetheless, that it merits attention in analyses of interactions between small numbers of firms. While game theory often formalizes preexisting intuitions, it can sometimes yield unanticipated, and even counterintuitive, predictions. Thus, game-theory modeling of

⁷⁸ There is also a branch of game theory that provides upper bounds on players’ payoffs if freewheeling interactions between them are allowed. See Brandenburger and Nalebuff’s *Co-opetition* for applications of this idea to business.

⁷⁹ Pankaj Ghemawat, *Games Businesses Play* (Cambridge, Mass., 1997), 3.

⁸⁰ For a late 1980s survey of game-theory IO, consult Carl Shapiro, “The Theory of Business Strategy,” *RAND Journal of Economics* (Spring 1989): 125–37.

⁸¹ *Ibid.*, 127.

⁸² Avinash K. Dixit and Barry J. Nalebuff, *Thinking Strategically* (New York, 1991), 120. Their logic is based on Thomas C. Schelling’s pioneering book, *The Strategy of Conflict* (Cambridge, Mass., 1979; first published in 1960).

⁸³ For a detailed critique, see Richard P. Rumelt, Dan Schendel, and David J. Teece, “Strategic Management and Economics,” *Strategic Management Journal* (Winter 1991): 5–29. For further discussion, see Ghemawat, *Games Businesses Play*, chap. 1.

shrinkage in, and exit from, declining industries yielded the prediction that, other things being equal, initial size should hurt survivability. This surprising prediction turns out to enjoy some empirical support!⁸⁴

The Resource-Based View of the Firm. The idea of looking at companies in terms of their resource endowments is an old one, but it was revived in the 1980s in an article by Birger Wernerfelt.⁸⁵ Wernerfelt noted: "The traditional concept of strategy [put forth by Kenneth Andrews in 1971] is phrased in terms of the resource position (strengths and weaknesses) of the firm, whereas most of our formal economic tools operate on the product market side."⁸⁶ While Wernerfelt also described resources and products as "two sides of the same coin," other adherents to what has come to be called the resource-based view (RBV) of the firm argue that superior product market positions rest on the ownership of scarce, firm-specific resources.

Resource-based theorists also seek to distinguish their perspective on sustained superior performance from that of IO economics by stressing the *intrinsic* inimitability of scarce, valuable resources for a variety of reasons: the ability to obtain a particular resource may be dependent on *unique, historical circumstances* that competitors cannot recreate; the link between the resources possessed by a firm and its sustained competitive advantage may be *causally ambiguous* or poorly understood; or the resource responsible for the advantage may be *socially complex* and therefore "beyond the ability of firms to systematically manage and influence" (e.g., corporate culture).⁸⁷ Game-theory IO, in contrast, has tended to focus on less extreme situations in which imitation of superior resources may be feasible but uneconomical (e.g., because of preemption).

Resource-based theorists therefore have traditionally tended to see firms as stuck with a few key resources, which they must deploy across product markets in ways that maximize total profits rather than profits in individual markets. This insight animated C. K. Prahalad and Gary Hamel's influential article, "The Core Competence of the Corporation,"

⁸⁴ For a discussion of the original models (by Ghemawat and Nalebuff) and the supporting empirical evidence, consult Ghemawat, *Games Businesses Play*, ch. 5.

⁸⁵ In the same year, Richard Rumelt also noted that the strategic firm "is characterized by a bundle of linked and idiosyncratic resources and resource conversion activities." See his chapter, "Towards a Strategic Theory of the Firm," in R. B. Lamb, ed., *Competitive Strategic Management* (Englewood Cliffs, N.J., 1984), 561.

⁸⁶ Birger Wernerfelt, "A Resource-based View of the Firm," *Strategic Management Journal* 5 (1984): 171. In addition to citing Andrews's 1971 book, *The Concept of Corporate Strategy*, Wernerfelt referred to the pioneering work of Edith Penrose, *The Theory of the Growth of the Firm* (Oxford, 1959).

⁸⁷ Jay B. Barney, "Firm Resources and Sustained Competitive Advantage," *Journal of Management* (March 1991): 107–11.

which attacked the SBU system of management for focusing on products rather than on underlying core competencies in a way that arguably bounded innovation, imprisoned resources, and led to a decline in investment: "In the short run, a company's competitiveness derives from the price/performance attributes of current products. . . . In the long run, competitiveness derives from the . . . core competencies that spawn unanticipated new products."⁸⁸

To many resource-based theorists, the core competencies that Prahalad and Hamel celebrate are simply a neologism for the resources that the RBV has emphasized all along. Whether the same can be said about another, more distinct, line of research on dynamic capabilities that emerged in the 1990s is an open question.

Dynamic Capabilities. In the 1990s, a number of strategists have tried to extend the resource-based view by explaining how firm-specific capabilities to perform activities better than competitors can be built and redeployed over long periods of time. The dynamic-capabilities view of the firm differs from the RBV because capabilities are to be developed rather than taken as given, as described more fully in a pioneering article by David Teece, Gary Pisano, and Amy Shuen:

If control over scarce resources is the source of economic profits, then it follows that issues such as skill acquisition and learning become fundamental strategic issues. It is this second dimension, encompassing skill acquisition, learning, and capability accumulation that . . . [we] refer to as "the dynamic capabilities approach." . . . Rents are viewed as not only resulting from uncertainty . . . but also from directed activities by firms which create differentiated capabilities, and from managerial efforts to strategically deploy these assets in coordinated ways.⁸⁹

Taking dynamic capabilities also implies that one of the most strategic aspects of the firm is "the way things are done in the firm, or what might be referred to as its 'routines,' or patterns of current practice and learning."⁹⁰ As a result, "research in such areas as management of R&D, product and process development, manufacturing, and human resources tend to be quite relevant [to strategy]."⁹¹ Research in these areas supplies some specific content to the idea that strategy execution is important.

⁸⁸ C. K. Prahalad and Gary Hamel, "The Core Competence of the Corporation," *Harvard Business Review* (May/June 1990): 81.

⁸⁹ David J. Teece, Gary Pisano, and Amy Shuen, "Dynamic Capabilities and Strategic Management," mimeo (June 1992): 12–13.

⁹⁰ David Teece and Gary Pisano, "The Dynamic Capabilities of Firms: An Introduction," *Industrial and Corporate Change* 3 (1994): 540–1. The idea of "routines" as a unit of analysis was pioneered by Richard R. Nelson and Sidney G. Winter, *An Evolutionary Theory of Economic Change* (Cambridge, Mass., 1982).

⁹¹ Teece, Pisano, and Shuen, "Dynamic Capabilities and Strategic Management," 2.

The process of capability development is thought to have several interesting attributes. First, it is generally “path dependent.” In other words, “a firm’s previous investments and its repertoire of routines (its ‘history’) constrains its future behavior . . . because learning tends to be local.” Second, capability development also tends to be subject to long time lags. And third, the “embeddedness” of capabilities in organizations can convert them into rigidities or sources of inertia—particularly when attempts are being made to create new, nontraditional capabilities.⁹²

Commitment. A final, historically based approach to thinking about the dynamics of competition that is intimately related to the three discussed above focuses on commitment or irreversibility: the constraints imposed by past choices on present ones.⁹³ The managerial logic of focusing on decisions that involve significant levels of commitment has been articulated particularly well by a practicing manager:

A decision to build the Edsel or Mustang (or locate your new factory in Orlando or Yakima) shouldn’t be made hastily; nor without plenty of inputs. . . . [But there is] no point in taking three weeks to make a decision that can be made in three seconds—and corrected inexpensively later if wrong. The whole organization may be out of business while you oscillate between baby-blue or buffalo-brown coffee cups.⁹⁴

Commitments to durable, firm-specific resources and capabilities that cannot easily be bought or sold account for the persistence observed in most strategies over time. Modern IO theory also flags such commitments as being responsible for the sustained profit differences among product market competitors: thought experiments as well as formal models indicate that, in the absence of the frictions implied by commitment, hit-and-run entry would lead to perfectly competitive (zero-profit) outcomes even without large numbers of competitors.⁹⁵ A final attraction of commitment as a way of organizing thinking about competitor dynamics is that it can be integrated with other modes of strategic analysis described earlier in this note, as indicated in Figure

⁹² Dorothy Leonard-Barton, “Core Capabilities and Core Rigidities: A Paradox in Managing New Product Development,” *Strategic Management Journal* (1992): 111–25.

⁹³ For a book-length discussion of commitments, see Pankaj Ghemawat, *Commitment* (New York, 1991). For connections to the other modes of dynamic analysis discussed in this section, see chs. 4 and 5 of Pankaj Ghemawat, *Strategy and the Business Landscape* (Reading, Mass., 1999).

⁹⁴ Robert Townsend, *Up the Organization* (New York, 1970).

⁹⁵ See, for instance, William J. Baumol, John C. Panzar, and Robert D. Willig, *Contestable Markets and the Theory of Industry Structure* (New York, 1982) for an analysis of the economic implications of zero commitment; and Richard E. Caves, “Economic Analysis and the Quest for Competitive Advantage,” *American Economic Review* (May 1984): 127–32, for comments on the implications for business strategy.

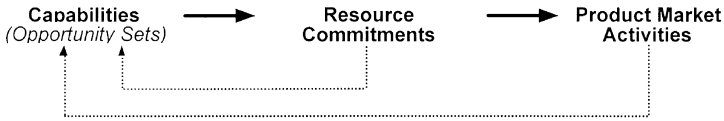


Figure 14. Commitment and Strategy (Source: Adapted from Pankaj Ghemawat, "Resources and Strategy: An IO Perspective," Harvard Business School working paper [1991], 20, Fig. 3).

14. The ideas behind the figure are very simple. Traditional positioning concepts focus on optimizing the fit between product market activities on the right-hand side of the figure. The bold arrows running from left to right indicate that choices about which activities to perform, and how to perform them, are constrained by capabilities and resources that can be varied only in the long run and that are responsible for sustained profit differences between competitors. The two fainter arrows that feed back from right to left capture the ways in which the activities the organization performs and the resource commitments it makes affect its future opportunity set or capabilities. Finally, the bold arrow that runs from capabilities to resource commitments serves as a reminder that the terms on which an organization can commit resources depend, in part, on the capabilities it has built up.

Markets for Ideas at the Millennium⁹⁶

A teleology was implicit in the discussion in the last three sections: starting in the 1970s, strategists first sought to probe the two basic dimensions of early portfolio-analytic grids, industry attractiveness and competitive position, and then to add a time or historical dimension to the analysis. Dynamic thinking along the lines discussed in the previous section and others (e.g., options thinking, systems dynamics, disruptive technologies and change management, to cite just four other areas of enquiry) has absorbed the bulk of academic strategists' attention in the last fifteen-plus years. But when one looks at the *practice* of strategy in the late 1990s, this simple narrative is complicated by an apparent profusion of tools and ideas about strategy in particular and management in general, many of which are quite ahistorical. Both points are illustrated by indexes of the influence of business ideas such as, for example, importance-weighted citation counts calculated by

⁹⁶ For a more extended discussion of the ideas in this postscript, see Pankaj Ghemawat, "Competition among Management Paradigms: An Economic Analysis," Harvard Business School Working Paper (2000).

Richard Pascale, admittedly with a significant subjective component, that are reproduced in Figure 15.⁹⁷ A complete enumeration, let alone discussion, of contemporary tools and ideas is beyond the scope of this essay, but a few broad points seem worth making about their recent profusion and turnover. Given the forward-looking nature of this discussion, it is inevitably more conjectural than the retrospectives in the previous sections.

Some of the profusion of ideas about strategy and management is probably to be celebrated. Thus, there are advantages to being able to choose from a large menu of ideas rather than from a small one, especially in complex environments where “one size doesn’t fit all” (and especially when the fixed costs of idea development are low). Similarly, the rapid turnover of many ideas, which appears to have increased in recent years, can be explained in benign terms as well.⁹⁸ Thus, some argue that the world is changing rapidly, maybe faster than ever before; others, that the rapid peaking followed by a decline in attention to ideas may indicate that they have been successfully internalized rather than discredited; yet others, that at least some of the apparent turnover represents a rhetorical spur to action, rather than real change in the underlying ideas themselves.⁹⁹

It seems difficult to maintain, however, that all the patterns evident in Figure 15 conform to monotonic ideals of progress. Consider, for example, what happened with business-process reengineering, the single most prominent entry as of 1995. Reengineering was popularized in the early 1990s by Michael Hammer and James Champy of the consulting firm CSC Index.¹⁰⁰ Hammer originally explained the idea in a 1990 article in the *Harvard Business Review*: “Rather than embedding outdated processes in silicon and software, we should obliterate them and start over. We should . . . use the power of modern information technol-

⁹⁷ For additional discussion of the methodology employed, consult Richard T. Pascale, *Managing on the Edge* (New York, 1990), 18–20.

⁹⁸ For some evidence that management ideas have become shorter-lived, see Paula P. Carson, Patricia A. Lanier, Kerry D. Carson, and Brandi N. Guidry, “Clearing a Path through the Management Fashion Jungle: Some Preliminary Trailblazing,” *Academy of Management Journal* (December 2000).

⁹⁹ Richard D’Aveni, among many others, asserts unprecedented levels of environmental change in *Hypercompetition: Managing the Dynamics of Strategic Maneuvering* (New York, 1994). William Lee and Gary Skarke discuss apparently transient ideas that are permanently valuable in “Value-Added Fads: From Passing Fancy to Eternal Truths,” *Journal of Management Consulting* (1996): 10–15. Robert G. Eccles and Nitin Nohria emphasize the rhetorical uses of changing the wrappers on a limited number of timeless truths about management in *Beyond the Hype: Rediscovering the Essence of Management* (Boston, 1992).

¹⁰⁰ See Michael Hammer and James Champy, *Reengineering the Corporation* (New York, 1993). See also John Micklethwait and Adrian Wooldridge, *The Witch Doctors* (New York, 1996). Micklethwait and Wooldridge devote a chapter to CSC Index.

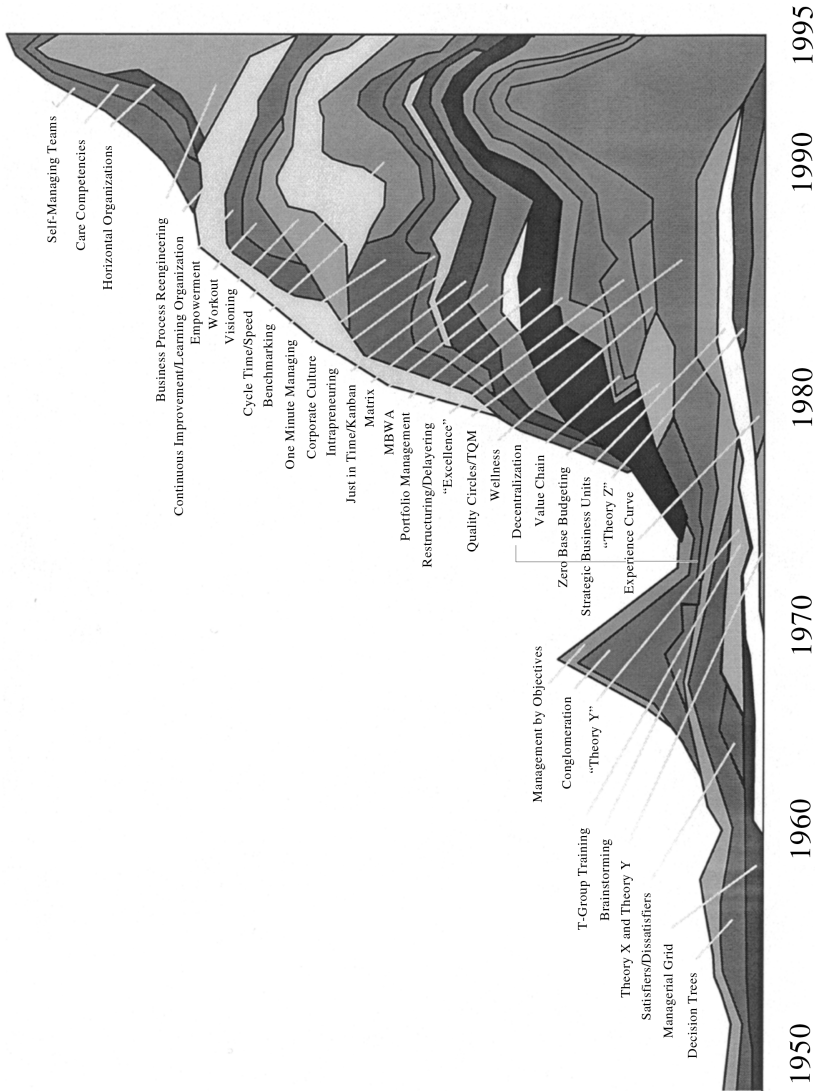


Figure 15. Ebbs, Flows, and Residual Impact of Business Fads, 1950–1995. (Source: Adapted from Richard T. Pascale, *Managing on the Edge* [New York, 1990], 18–20.)

ogy to radically redesign our business processes in order to achieve dramatic improvements in their performance.”¹⁰¹ Hammer and Champy’s book, *Reengineering the Corporation*, which came out in 1993, sold nearly two million copies. Surveys in 1994 found that 78 percent of the Fortune 500 companies and 60 percent of a broader sample of 2,200 U.S. companies were engaged in some form of reengineering, on average with several projects apiece.¹⁰² Consulting revenues from reengineering exploded to an estimated \$2.5 billion by 1995.¹⁰³ After 1995, however, there was a bust: consulting revenues plummeted, by perhaps two-thirds over the next three years, as reengineering came to be seen as a euphemism for downsizing and as companies apparently shifted to placing more emphasis on growth (implying, incidentally, that there had been some excesses in their previous efforts to reengineer).

Much of the worry that the extent of profusion or turnover of ideas about management may be excessive from a social standpoint is linked to the observation that this is one of the few areas of intellectual enquiry in which it actually makes sense to talk about markets for ideas. Unlike, say, twenty-five or thirty years ago, truly large amounts of money are at stake, and are actively competed for, in the development of “blockbuster” ideas like reengineering—a process that increasingly seems to fit with the end state described by Schumpeter as the “routinization of innovation.” Market-based theoretical models indicate that, on the supply side, private incentives to invest in developing new products are likely, in winner-take-all settings, to exceed social gains.¹⁰⁴ To the extent that market-based, commercial considerations increasingly influence the development of new ideas about management, they are a source of growing concern.

Concerns about supply-side salesmanship are exacerbated by the demand-side informational imperfections of markets for ideas, as opposed to more conventional products. Most fundamentally, the buyer of an idea is unable to judge how much information is worth until it is disclosed to him, but the seller has a difficult time repossessioning the information in case the buyer decides, following disclosure, not to pay very much for it. Partial disclosure may avoid the total breakdown of market-based exchange in such situations but still leaves a residual in-

¹⁰¹ Michael Hammer, “Reengineering Work: Don’t Automate, Obliterate,” *Harvard Business Review* (July/Aug. 1990): 104.

¹⁰² Micklethwait and Wooldridge, *The Witch Doctors*, 29.

¹⁰³ See James O’Shea and Charles Madigan, *Dangerous Company: The Consulting Powerhouses and the Businesses They Save and Ruin* (New York, 1997).

¹⁰⁴ For a general discussion, see Robert H. Frank and Philip J. Cook, *The Winner-Take-All Society* (New York, 1995); for formal modeling and a discussion specific to the management idea business, see Ghemawat, “Competition among Management Paradigms.”

formation asymmetry.¹⁰⁵ Performance contracting is sometimes proposed as an antidote to otherwise ineradicable informational problems of this sort, but its efficacy and use in the context of management ideas seem to be limited by noisy performance measurement. Instead, the market-based transfer of ideas to companies appears to be sustained by mechanisms such as reputation and observational learning. Based on microtheoretical analysis, these mechanisms may lead to “cascades” of ideas, in which companies that choose late optimally decide to ignore their own information and emulate the choices made earlier by other companies.¹⁰⁶ Such fadlike dynamics can also enhance the sales of products with broad, as opposed to niche, appeal.¹⁰⁷ And then there are contracting problems within, rather than between, firms that point in the same direction. In particular, models of principal-agent problems show that managers, in order to preserve or gain reputation when markets are imperfectly informed, may prefer either to “hide in the herd” so as not to be accountable or to “ride the herd” in order to prove quality.¹⁰⁸ The possible link to situations in which managers must decide which, if any, new ideas to adopt should be obvious. More broadly, demand-side considerations suggest some reasons to worry about patterns in the diffusion of new ideas as well as the incentives to develop them in the first place.

Whether such worries about the performance of markets for ideas actually make their effects felt in the real world of management is, ultimately, an empirical matter. Unfortunately, the informational imperfections noted above—and others, such as the difficulty of counting ideas—complicate systematic empirical analysis of product variety and turnover in management ideas. A shared basis for understanding the historical evolution of ideas, which I have attempted to provide in the specific context of competitive thinking about business strategy, is but a first step in unraveling such complications.

¹⁰⁵ See, for example, James J. Anton and Dennis A. Yao, “The Sale of Ideas: Strategic Disclosure, Property Rights, and Incomplete Contracts,” unpublished working paper, Fuqua School of Business, Duke University (1998).

¹⁰⁶ See Sushil Bikhchandani, David Hirshleifer, and Ivo Welch, “Learning from the Behavior of Others: Conformity, Fads and Informational Cascades,” *Journal of Economic Perspectives* (1998): 15–70.

¹⁰⁷ See Daniel L. McFadden and Kenneth E. Train, “Consumers’ Evaluation of New Products: Learning from Self and Others,” *Journal of Political Economy* (Aug. 1996): 683–703.

¹⁰⁸ These models derive some of their real-world appeal from the use of relative performance measures to evaluate managers. See Robert Gibbons and Kevin J. Murphy, “Relative Performance Evaluation of Chief Executive Officers,” *Industrial and Labor Relations Review* (Feb. 1990): 30S–51S.