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Industrial Organization and the Evolution of Concepts for Strategic Planning: The New Learning

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This paper reviews the parallel development of the disciplines of corporate strategy and industrial organisation. Recent developments in industrial economics suggest that the two may be about to merge, or at least be capable of synergy. This potential advance has come about because of the movement of industrial organisation theories towards dynamics and away from static concepts such as the traditional structure: conduct: performance model. Simultaneously, corporate strategists, who have always been dynamically oriented, have long been in search of the more sophisticated theories industrial economists have in their tool kits.

From its birth in the 1950s the strategic planning field has grown into a major and accepted part of the territory of management. Along the way, a wide variety of analytical techniques have been introduced to aid managers in formulating business strategy, many of which have grown out of the practice of strategic consulting firms. Yet as provocative and widely used as some of these planning concepts have been, it is becoming increasingly recognized that they leave many questions unanswered that are at the heart of business strategy formulation.

This paper will trace the historical development of concepts for business strategy formulation through what I will argue have been two major phases. The aim of this will be to make some of the unanswered questions raised by contemporary strategic planning techniques explicit. Having done so, I will argue that research growing out of the field of industry organization economics promises to trigger a new, third phase in the development of the strategy field and provide the beginnings of answers to these questions. Some of the essential concepts from this recent literature on competitive strategy will be briefly reviewed and the frontiers that research is taking identified.

THE EVOLUTION OF CONCEPTS FOR BUSINESS STRATEGY

The first phase of the modern strategic planning field had its beginnings in the work of Andrews, Christensen, Learned and others at the Harvard

Business School that culminated in the development of the concept of corporate strategy in the early 1960s. Prior to the formal articulation of the concept of strategy and the intellectual apparatus it provided, discussions of policy cases at Harvard were exercises in searching for the core issue facing a company. The core issue was one that, if identified, would tie the other symptoms and problems in a company's situation together and provide the insight to needed solutions.

The concept of strategy was an analytical construct that allowed this core issue to be articulated as the so-called 'purpose' of the firm. According to the classic treatment appearing first in 1965 in the policy textbook by Learned, Christensen, Andrews and Guth (LCAG), strategy was defined as the essential concept of how a firm was attempting to compete in its environment, encompassing a choice of goals as well as operating policies in each functional area of the business such as product line, served markets, marketing, manufacturing and so on. The goals of the firm were broadly conceived to encompass both economic and non-economic considerations such as social obligations, treatment of employees, organizational climate and others. Effective strategy formulation from a normative standpoint was the relating of four key elements shown in Fig. 1.

Broadly speaking, the aim of business strategy was to match the internal competences and values of the firm to its external environment, and LCAG offered a series of very general but logically compelling consistency tests which helped the firm probe its strategy to see if it truly related these elements. These consistency tests stressed the need for a firm's operating policies in each functional

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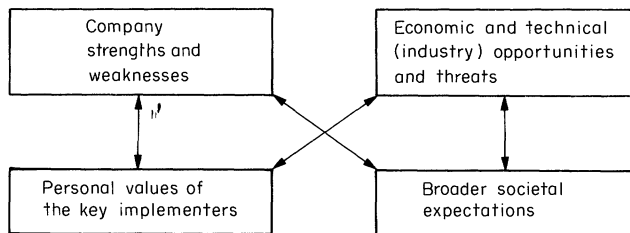


Figure 1. The components of business strategy.

area to be interrelated as well as the need for the entire group of functional policies to make sense given the environment. The high-performing (high return on investment) firm in LCAG's framework was one that had found or created a position in its industry where such consistency was present.

The concept of strategy emerged out of the crying need to help the practitioner (particularly the general manager) translate the chaos of events and decisions he faced every day into an orderly way of sizing up the firm's position in its environment. As a result, the early policy literature on strategy formulation subsequent to LCAG was largely process oriented, translating the basic LCAG paradigm and extensions of it into a sequence of logical (and very general) analytical steps (cf. Ansoff, 1965). This work attempted to convert the elegant prose of LCAG into flowcharts composed of a concrete series of questions the firm had to answer in developing its strategy. Some of the early strategic planning methodologies developed at firms such as Stanford Research Institute and Arthur D. Little took this form, and this sort of literature has continued to appear.

The pioneering research on the concept of strategy had a powerful impact on business practice, and was responsible for stimulating the development of formal processes for strategic planning in many companies. The need to develop strategy was perceived by sophisticated managements as compelling. The powerful questions raised by the LCAG framework were obviously relevant: What are the opportunities and threats in my industry? What are my company's strengths and weaknesses? Is my strategy consistent internally and with the environment?

As relevant as the questions were, however, the LCAG framework and its followers provided few answers, or provided answers of only the most general sort. The firm was left to its own devices to develop answers suitable to its industry and competitive situation. Thus a vacuum was created, one that caused many managers to look for ways to fill it given the high stakes involved.

STRATEGIC PLANNING CONCEPTS

This vacuum was soon filled by a large body of analytical tools I will term 'strategic planning

concepts', which represented the second phase in the development of the strategy field. The grandfather of the new planning concepts was the experience curve, popularized by the Boston Consulting Group beginning in the late 1960s. Soon after and in the subsequent years came such concepts as the growth/share portfolio matrix, the McKinsey/General Electric/Shell attractiveness screen, the product life cycle-based framework identified with Arthur D. Little, Inc., the statistically derived findings and models of the PIMS Program,¹ and a plethora of planning and forecasting models.² Except for the planning and forecasting models, the initiative in developing and using these concepts lay with practicing consulting firms. Scholars in business schools largely took the role of bystanders, disseminators or critics of the new planning concepts with a few notable exceptions.

Any observer of the strategic planning field is well aware of the great impact that these concepts have had and continue to have on practice in the field, and the degree to which discussion of them occupies the pages of academic journals. We see explicit mention of the use of these concepts in the annual reports of major corporations such as Norton, Becton-Dickinson, Texas Instruments, and a thriving consulting industry providing services in their application.

Unanswered Questions

As companies experimented with using these strategic planning concepts in practice and scholars have examined them it has become apparent that the new concepts left many questions unanswered just as the LCAG framework had. The LCAG was completely situational and offered no generalizations about strategy, but the new planning concepts went to the other extreme. By and large, the new planning concepts abstracted from competition to identify a small number of key strategic variables deemed to be important, and constructed entire theories of strategy around them. Yet the process of abstraction from the complexity of industry competition carries with it its own set of dangers, because implicit in all of the planning concepts are subtle questions that have to be answered before the prescriptions of the concepts can be confidently followed.

Experience Curve. Experience curve theory contains many unanswered questions about the relationship of the experience curve to other competitive phenomena, and the particular shape, defensibility and properties of the experience curve itself:

- (1) *How important is the experience curve compared with other entry barriers?* Experience curve theory admits no other entry barriers or competitive advantages as significant. Yet we

know that other barriers exist and must be considered in strategy development.

- (2) *In what kinds of industries will the experience curve be steep and why? How long will the experience curve continue at a given slope? There is much evidence that the slope and duration of the experience curve vary greatly among industries, and that the particular value added elements driving the curve differ significantly from business to business. The operational significance of the experience curve for business strategy depends critically on understanding these differences among businesses, as well as the way in which the rate of cost decline may change with industry evolution.*
- (3) *What is the strategic significance of the mix between cost declines due to economies of scale and those due to learning effects? Economies of scale and learning have fundamentally different strategic implications, and their presence can yield contradictory prescriptions. Yet the experience curve formulation mixes the two.*
- (4) *Under what circumstances can experience be kept proprietary, and under what circumstances does imitation or copying provide advantages to followers over leaders? The crucial and usually unstated assumption in learning curve theory is that the learning can be kept proprietary. Yet no research has identified when or how this can be done, or the mechanisms by which followers can imitate experience.*
- (5) *Under what circumstances can followers leapfrog the technology of leaders and jump onto a new experience curve? Technological change provides a discontinuity which can destroy the entry barrier due to the experience curve. No propositions for either exploiting or guarding against this eventuality are articulated in the theory.*
- (6) *Under what circumstances is experience transferable among related businesses? While it is widely recognized that experience can be transferable, the concept does not allow an identification of the boundaries of transferability or the strategic implications.*

Growth/Share Matrix. The growth/share matrix contains many unanswered questions about the sufficiency of the axes to capture the strategic situation of business units, and the way in which businesses are plotted in practice:

- (1) *How do we define market boundaries in order to meaningfully calculate relative market share? The strategic prescription of the growth/share matrix depends critically on how the market is defined and market share calculated. Yet the model provides no guidance for assessing market boundaries or which competitors to exclude or include.*
- (2) *What other firm and industry characteristics can*

influence the competitive position of a business unit besides share? Few believe that share is the only determinant of competitive position. Yet nothing but share is included in the model.

- (3) *How can we factor in the behavior of competitors? The model ignores competitors altogether, except in the most indirect way through relative share. Yet competitors can nullify the effectiveness of any of the alternative strategies the model suggests.*
- (4) *How can we assess the fundamental attractiveness of the industry, because market leaders in some industries have low levels of return on investment? The model implicitly assumes that all industries are equally attractive if the firm has a leading share. Empirical data raises serious questions about this view.*
- (5) *How can we deal with interrelationships among the business units, whose presence nullifies the logic of the model? The model assumes independence among business units, yet independence among units is pervasive and often a major source of strategic leverage.*
- (6) *How do we select among question marks to invest in? Since all but one competitor in each industry is not a question mark or a dog (depending on market growth), this will be a pervasive problem.*

McKinsey/General Electric/Shell Screens. The McKinsey/GE/Shell Screen raises many unanswered questions about the analysis required to plot a business, the sufficiency of the axes to determine strategic choices and the logical relationship between where the business is plotted and the indicated strategy:

- (1) *What determines industry attractiveness? Lists of factors are sometimes given, but they lack comprehensiveness and mix cause and effect.*
- (2) *What determines the strength of a competitive position? Lists of factors are sometimes given, but they lack comprehensiveness and mix cause and effect.*
- (3) *How can we forecast future industry attractiveness? Future attractiveness should be as or more important than current industry conditions, yet is outside the model.*
- (4) *How can we factor in the behavior of competitors? Competitor behavior, though essential to the success or failure of any of the strategies in the model, is ignored.*
- (5) *How can we avoid the 'marginal versus average' fallacy? Just because the position of a business unit is strong and it may be earning high average returns does not imply that a firm should make additional investments in the business. Average return on investment may be high, but return on marginal investment may be low or even negative!*

Product Life Cycle. The product life cycle model raises serious unanswered questions about its generality and the specific strategic implications identified:

- (1) *When does the product cycle pattern of industry evolution occur, and what causes other patterns to occur?* Extensive literature illustrates that the product life cycle pattern of industry evolution is not generalizable. Thus the model can trap a firm into taking the wrong action or making the life cycle occur as a self-fulfilling prophecy.
- (2) *How can the firm choose among strategic alternatives for competing in the various life cycle phases?* The model posits alternatives for appropriate behavior during the various life cycle phases. Yet the choice among these alternatives defines the success or failure of the firm. Further, the alternatives presented presume the life cycle will occur, rather than help the company find creative ways to overcome it.
- (3) *How can we factor in the behavior of competitors?* As with the other planning concepts, no explicit framework for integrating competitors into the analysis is part of the model.

PIMS. PIMS raises many unanswered questions about the underlying model of competition, the generality of the findings and the appropriateness of the data and statistical procedures:

- (1) *What general theory of competition explains the large collection of findings proposed by PIMS?* The numerous PIMS findings are empirical regularities which are then rationalized with *ad hoc*, though often persuasive, explanations. Even discounting the methodological difficulties inherent in PIMS statistical procedures, there is no theory tying the findings together and forming an integrated whole. Without such a theory it is difficult to feel secure about particular strategic implications asserted by PIMS.
- (2) *Does PIMS include the right measures of market attractiveness and a business unit's competitive position?* While the PIMS data include many measures of strategic position, without an underlying theory there is little comfort that all the right variables are included or that they are interacted properly.
- (3) *Is the PIMS concept of served market meaningful for capturing the firm's competitive arena?* PIMS concept of served market implies very narrow market definitions. Such things as potential entrants, substitution and competitor-shared costs are left out of such a procedure, yet bode very large as strategic issues in practice.
- (4) *Do the findings of the PIMS analysis apply with equal force in every industry?* PIMS is built on

the premise of general laws of the marketplace. Yet a cross-sectional regression finding on advertising, for example, is unlikely to apply equally to a consumer and an industrial business.

Planning and Forecasting Models. The planning and forecasting models raise unanswered questions about their appropriateness as abstractions of reality, and their data inputs:

- (1) *Which of the models is a good abstraction of how competitive processes work?* All planning and forecasting models are abstractions of competitive processes, chosen to expose the phenomena under study. What evidence is there that the particular abstractions employed capture the essential features of competition in a particular setting?
- (2) *What determines the crucial inputs to the models such as future prices, market growth, competitor behavior, etc.?* Most planning and forecasting models require inputs such as future prices, capacities, shares, etc. Yet the determination of these inputs is usually *ad hoc* and not based on a broad theory of competition. Further, many of these inputs taken as exogenous are really endogenously determined.

The Need for a Competitive Analysis Framework

Viewing these unanswered questions as a group, some striking themes emerge. Running through the questions about the strategic planning concepts is the need for a framework to comprehensively understand industry structure and the behavior of competitors and to translate these into operational strategic recommendations. It is clear from the discussion above that the strategic planning concepts that have emerged have been built, by and large, on views of competition stressing one or a few aspects of industry structure. Nowhere is there a comprehensive approach to understanding industry attractiveness. In addition, the planning concepts as a group have been almost totally lacking in in-depth treatments of competitors, focusing rather on external environmental changes, or relative cost, or other variables. Relative competitive position, then, can only be partially assessed. In the case of PIMS, the number of aspects of the environment considered has been large but there has been no model of competition tying them together. Finally, the treatment of strategic alternatives in the strategic planning concepts has largely stopped with broad statements such as 'hold', 'build' and the like. These have lacked operational content and not always been linked explicitly with the source of sustainable competitive advantage the firm was to possess.

INDUSTRIAL ORGANIZATION AS A BUSINESS STRATEGY FRAMEWORK

While the strategic planning concepts have developed through these two phases, economists were working in a field known as industrial organization that considered the problems of applied microeconomics. Long orphans in the economics profession because their research was not mathematical, scholars in industrial organization evolved a paradigm aimed at explaining a firm's economic performance in its industry. This research was almost solely directed towards the concerns of public policy towards business, and in fact it became a key underpinning of antitrust analysis.

The essence of the industrial organization paradigm developed by Edward Mason, Joe Bain and their followers was that a firm's performance in the market-place depended critically on the characteristics of the industry environment in which it competed. This was expressed in the now familiar structure-conduct-performance trilogy shown in Fig. 2.

Industry structure determined the behavior or conduct of firms, whose joint conduct then determined the collective performance of the firms in the industry (Bain, 1968; Mason, 1953). Performance was defined broadly and in the economist's sense of social performance, encompassing dimensions such as allocative efficiency (profitability), technical efficiency (cost minimization), innovativeness and others. Firm conduct was the firm's choice of key decision variables such as price, advertising, capacity and quality. Thus in business administration terms, conduct could be viewed as the economic dimensions of firm strategy. Finally, industry structure was defined as the relatively stable economic and technical dimensions of an industry that provided the context in which competition occurred (Bain, 1972). The primary elements of structure identified as important to performance in IO research were barriers to entry (Bain, 1956), the number and size distribution of firms, product differentiation and the overall elasticity of demand (Bain, 1968). A final crucial aspect of the Bain/Mason paradigm was the view that since structure determined firms' conduct (strategy), which jointly determined performance, we could ignore conduct and look directly at industry structure in trying to explain performance. Conduct (or strategy) merely reflected the environment the firm operated in.

An important branch of industrial organization research was so-called oligopoly theory, or the study of competitive interactions in markets where

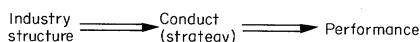


Figure 2

one firm's actions affect its rivals (for a survey see Scherer, 1970). Oligopoly theory sought to flush out the link between industry structure and firm-to-firm rivalry, providing a rich set of determinants of the difficulty firms faced in co-ordinating their actions in the market-place (for the classic analysis, see Fellner, 1949). It filled a gaping hole for the analysis of real-life markets that had been left by economists' traditional exclusive focus on the polar cases of pure competition and pure monopoly. Game theory, born at nearly the same time as the Bain/Mason paradigm itself, introduced a potentially rich framework for examining competitive interaction, embodying concepts like commitment and deterrence which offered intriguing insights into making moves and countermoves (Van Neumann and Morganstern, 1953; Schelling, 1960). Game theory took its place in industrial organization as a part of the general topic of oligopoly theory.

The Bain/Mason paradigm was a promising beginning at what was missing in the strategic planning concepts of the 1970s—a broad theory of competition. Nevertheless, there was little integration of industrial organization concepts into the strategy field. No small barrier to this integration was the fact that researchers in the two areas were working in separate fields with very different traditions and different types of accepted training. Yet a variety of more substantive issues also stood in the way of integration of industrial organization and business strategy, which I have discussed in some detail elsewhere (Porter, 1981).

First, industrial organization research was framed in public policy terms and had never been plumbed to consider the implications for business strategy. In addition, industrial organization was concerned with industries and assumed the firms in them to be essentially identical, while strategic planning was vitally concerned with how to create unique strategies in an industry. As in the strategic planning concepts, the analysis of competitors was missing from industrial organization. Industrial organization was largely static while it was clear that changes in strategic position most often took place in periods of industry change. The industrial organization framework was stark and built on a few key elements of industry structure such as seller concentration and broad categories of entry barriers, while the manifold richness of factors affecting competition in actual industries was readily apparent to strategic planners. Game theory offered tantalizing analogies for competition, but did not address the practical realities of real markets, including the feasibly available data about the payoffs of alternative strategies and the constraints of imperfectly known competitors. And, most importantly, industrial organization assumed away conduct (strategy) as relevant to affecting performance while great strategists had long found ways to *change* industry structure in their favor.

THE NEW BRIDGE

Faced with the promise of a bridge between industrial organization and strategic planning, but a substantial gap to overcome, research has been progressing in recent years to forge a framework for strategic planning growing out of the roots of industrial organization. The beginnings of such a framework, which I will term the competitive strategy framework, are beginning to emerge, the most comprehensive statement articulated in Porter (1980a).

The core of the framework, drawing from the industrial organization tradition, is that in any competitive industry there are five basic competitive forces at work, as shown in Fig. 3. The collective strength of these five forces determines the fundamental potential for firms in the industry to earn returns on investment in excess of the opportunity cost of capital. Thus the collective strength of the five forces is the essential determinant of industry attractiveness, one of the important building blocks in strategic planning.

Underlying each of the five competitive forces is a number of economic and technical determinants of its strength in a particular industry. These economic and technical industry characteristics are the industry structure. The competitive strategy framework identifies the economic and technical determinants of each force in some detail. For example, the threat of entry is a function of seven types of structural entry barriers and the expected retaliation of incumbents, itself a function of some predictable industry characteristics.⁴ The underlying economic and technical determinants of the competitive forces define the 'rules of competition' in the industry, with which the firm must cope strategically.

Business strategy, viewed in the context of the framework, is the creation of a defensible position *vis-à-vis* the competitive forces. The firm can find

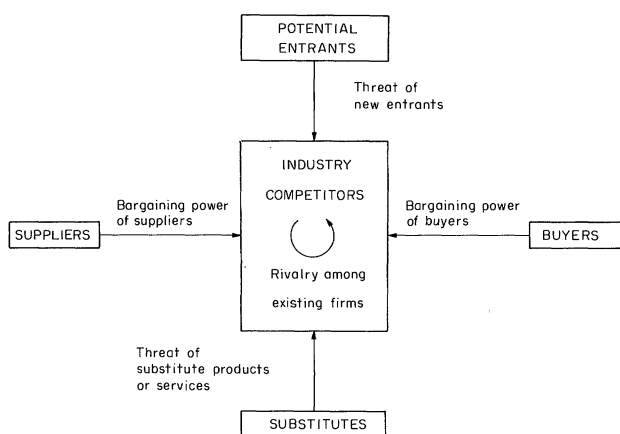


Figure 3. Fundamental determinants of industry competition.

positions in its industry that are more defensible against the forces than others. Moreover, industry structure changes over time in industries and can provide the opportunity for strategic repositioning. Most importantly, though, the firm, through strategy, can *influence* every one of the five competitive forces in its favor. A central axiom of the competitive strategy framework is that, although the industry structure is to some extent defined by exogenous economic and technical factors, strategy can unlock the constraints of industry structure. Hence the promise is present for the firm to change the rules of competition in its industry in its favor, and additional parts of the framework identify approaches to changing each competitive force in some detail. The competitive strategy framework thus provides meat to the previously empty phrase 'rules of competition' by identifying the fundamental factors that determine the rules in a particular industry.

Starting from the core concept of industry structural analysis, the competitive strategy framework adds a number of additional analytical building blocks. Oligopoly and game theory provide the foundation for an approach to profiling competitors to predict their likely behavior. Forms of information flow in markets (or market signals) are identified, and the considerations in making offensive and defensive moves are developed. These parts of the framework thus draw in the analysis of competitors.

Industry structure and competitor analysis are integrated in the theory of strategic groups (Porter, 1980a, Ch. 7; Caves and Porter, 1977). This theory addresses the underlying causes of differences in attractiveness among different strategic positions within an industry, bringing structural analysis down to the level of the individual firm. Part of the strategic group model is a generalization of entry barriers into what are termed 'mobility barriers', or impediments to the shift of firms from one strategic configuration to another within an industry. The group model also facilitates the construction of strategic maps that chart the relative positions of competitors.

The strategic group model allows a systematic identification of firms' strengths and weaknesses, and a way of explaining differences in profitability of firms within the same industry. Thus the strategic group model provides a way of assessing the firm's competitive position in a fundamental way, another essential building block in business strategy development and an unanswered question in many of the strategic planning concepts of the 1970s.

The final element of the core competitive strategy framework is a model of industry evolution. This model starts from the premise that the product life cycle theory lacks generality, and its approach is to identify the economic processes underlying industry evolution, and examine how they interact to change structure over time. This analysis allows predictions

of industry structural change given the circumstances in a particular industry.

From the generalizable analytical techniques described above, the competitive strategy framework goes on to make more specific the analysis of strategic problems in two broad ways. The first is to divide industries into generic 'structural settings' based on key elements of industry structure such as seller concentration, state of development and degree of globalization. The framework then examines a number of particularly industry generic structures in detail to expose their particular competitive characteristics, the types of strategic alternatives available and the pitfalls that firms can encounter from a strategic point of view.

The final broad part of the framework is an examination of each of the major forms of strategic decision that occur in an industry, including entry, divestment, vertical integration and major capacity expansion. The generalized analytical techniques described above have implications for each decision that is developed, and thus are combined with a drawing together of research on the particular economic and administrative considerations involved in each decision.

Philosophically, then, the competitive strategy framework begins with a very broad core model of competition that is generalizable to any industry. By applying the framework, the particular economic and competitive issues crucial in the particular industry under study and the particular competitors of significance can be identified. The framework then provides analytical tools to delve deeper into these and develop strategic implications. Based on type of generic industry structure the firm is in and any strategic decisions it may face, additional elements on the framework can be brought to bear as well to make the analysis richer. Thus the model begins at the very fundamental, broad level and gets increasingly specific and deep as the analysis proceeds.

Application of the competitive strategy framework thus leads to a comprehensive assessment of industry attractiveness and the competitive position of the firm, prominently unanswered questions in the strategic planning concepts discussed above. The competitive strategy framework also places central importance on in-depth competitor analysis and forecasting of behavior, another missing link in previous models. The framework provides the analytical tools to select concrete strategic moves that will improve the position of the firm, that go beyond broad statement such as 'hold' or 'build'. The breadth of market boundaries, another unanswered question in the models reviewed above, is treated centrally through the examination of potential entry, shared costs and substitution.

Thus the competitive strategy framework offers at least beginnings of the answers to many of the unanswered questions posed above. While far from

complete or exhaustive, then, the bridge between industrial organization and business strategy may be ushering in a third phase in the development of strategic planning concepts, based on more complex models of competition and a broader conception of the role of strategy than the models described above.

THE PROMISE OF CONTEMPORARY INDUSTRIAL ORGANIZATION RESEARCH

The competitive strategy framework as developed thus far is only a beginning. Much room remains for further elucidation, more rigorous modeling and empirical testing to place quantitative dimensions on what is still a subtle and judgmental analytical process. Fortunately there are ample signs that research is underway to extend the framework, involving both industrial organization economists, economic theorists and business strategy researchers.

Important elements of industry structure that have received little attention in the economics literature are being examined with increasing frequency. Rigorous research is probing the strategic implications of the learning curve, including recent papers by Spence (1981) and Dolan and Jeuland (1981). Willig (1979), Willig and Panzar (1977) and Teece (1980) have begun analytical modeling of the implications of multiproduct economies of scale, a careful theoretical formulation of the issue of shared costs.

Recent work is ongoing to further specify and test the strategic group model. Oster (1981) has worked with strategic groups defined by differences in marketing strategy, and found substantial support for the premises of the model. Hayes *et al.* (1981) have used an intriguing statistical technique to define strategic groups in the investment banking industry. Caves and Pugel (1980) have shown how intra-industry differences in firm performance can be linked to the group model.

Increasingly, research is beginning to encompass dynamic models of industry evolution, some framed from the point of view of the strategic decision facing the individual firm. A number of models have explored additional aspects of firm investment and innovation in a dynamic context (for example, see Spence, 1979; Flaherty, 1976; Kamien and Schwartz, 1972). Michael Spence and I have modeled the dynamic capacity expansion problem facing the firm in a growing oligopoly using actual data drawn from a comprehensive case study of the corn milling industry (1982). Marvin Lieberman is examining the process of capacity expansion in a large sample of chemical industries in doctoral thesis research at Harvard.

Research is also proceeding on generic structural settings and strategic decisions. John Stuckey and

Roger Ferguson have recently completed thesis research on vertical integration and joint ventures, respectively. Hall (1980) has studied the problems of mature industries.

CONCLUSIONS

I have only been able to sketch the outlines of the new link between industrial organization and business strategy here, and provide an indication of the research now underway. Nevertheless, the hope is that the promise of this research for ushering in a third phase in the development of the strategic planning field has been indicated. This third phase

will be one where strategy models recognize the complexity of competition rather than abstract from it, where strategy research starts with the premise that competitive patterns differ from industry to industry, and where competitors are recognized as central and are viewed as living organizations with particular personalities, strengths and failings.

This third phase of strategic planning is one that strategic planners with a decade or more of accumulated experience with overly simplified strategic planning concepts should welcome with open arms. While the data requirements of this richer view of competition are formidable and the analytical questions complex, the payoff in more realistic and creative strategies should be well worth the price.

NOTES

1. Originally a research project within General Electric and later a project of the Harvard Business School, PIMS became the basis of a non-profit consulting firm called the Strategic Planning Institute in the mid-1970s.
2. These concepts have been widely described and discussed in the literature, and I will not attempt a summary here. See, for example, Abell and Hammond (1979) and Naylor (1981).
3. Some of these questions have been discussed in the various critiques of the planning concepts. See, for example, Abell and Hammond (1979); Wind and Mahajan (1981).
4. The determinants of each force are described in Porter (1980a), Ch. 1.

REFERENCES

- D. Abell and J. Hammond (1979). *Strategic Market Planning*, Prentice-Hall, NJ.
- I. Ansoff (1965). *Corporate Strategy*, McGraw-Hill, New York.
- J. S. Bain (1956). *Barriers to New Competition*, Harvard University Press, Cambridge, Mass.
- J. S. Bain (1968). *Industrial Organization* (2nd Edn), Wiley, New York.
- J. S. Bain (1972). The comparative stability of market structures. *Essays on Price Theory and Industrial Organization*, Little, Brown, Boston, Mass., pp. 166-74.
- R. E. Caves and M. E. Porter (1977). From entry barriers to mobility barriers: conjectural decisions and contrived deterrence to new competition. *Quarterly Journal of Economics*, May, 241-62.
- R. E. Caves and T. A. Pugel (1980). Intraindustry difference in conduct and performance. Monograph 1980-2, Monographs on Economics and Finance, Graduate School of Business, New York University.
- R. J. Dolan and A. P. Jeuland (1981) Experience curves and dynamic demand models. *Journal of Marketing* 45, 1, Winter, 52-62.
- W. J. Fellner (1965). *Competition Among the Few*, Augustus M. Kelley, New York. Original edition 1949.
- R. Ferguson (1981). The economics of joint ventures. Unpublished PhD dissertation, Harvard University.
- T. Flaherty (1976). Industry structure and cost reducing investment: a dynamic equilibrium analysis. Unpublished PhD dissertation, Graduate School of Industrial Administration, Carnegie-Mellon University.
- W. K. Hall (1980). Survival strategies in a hostile environment. *Harvard Business Review* 58, 5, September-October, 75-85.
- S. Hayes, A. M. Spence and D. Marks (forthcoming, 1981). Competitive structure in investment banking.
- M. Kamien and N. Schwartz (1972). Timing of innovations under rivalry. *Econometrica* January, 43-60.
- E. P. Learned, C. R. Christensen, K. R. Andrews and W. Guth (1969). *Business Policy*, Revised edition, Irwin, Homewood, Ill. Original edition 1965.
- E. S. Mason (1939) Price and production policies of large scale enterprises. *American Economic Review* 9, March, 61-74.
- S. Oster (1981). Intraindustry structure and the ease of strategic change. Working Paper, Department of Economics, Yale University.
- J. Panzer and R. D. Willig. (1977). Economics of scale in multi-output production. *Quarterly Journal of Economics* 91, August, 481-94.
- M. E. Porter (1980a). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. Free Press, New York.
- M. E. Porter (1980b). The contributions of industrial organization to strategy formulation: a promise beginning to be realized. Revised 8/80, Harvard Business School Working Paper 79-60, Division of Research, Graduate School of Business Administration, Harvard University, Boston, Mass.
- M. E. Porter (1981). The contributions of industrial organization to strategic management: a promise beginning to be realized. *Acad. Management Rev.* 6, No. 4.
- M. E. Porter and A. M. Spence. (forthcoming). The capacity expansion process in a growing oligopoly: the case of corn wet milling. *National Bureau of Economic Research*.
- T. C. Schelling (1960). *The Strategy of Conflict*, Harvard University Press, Cambridge, Mass.
- A. M. Spence (1979). Investment strategy and growth in a new market. *Bell Journal of Economics* 10, No. 1, Spring, 1-9.

- A. M. Spence (1981). The learning curve and competition. *Bell Journal of Economics* **12**, No. 1, Spring, 49–70.
- J. Stuckey (1981). Vertical integration in the aluminum industry. Unpublished PhD dissertation, Business Economics Committee, Harvard University.
- D. J. Teece (1980). Economics of scope and the scope of the enterprise. *Journal of Economic Behavior and Organization* **1**, 233–47.
- J. Von Neumann and O. Morgenstern (1953). *Theory of Games and Economic Behavior*, Princeton University Press, Princeton, NJ.
- R. D. Willig (1979). Multiproduct technology and market structure. *American Economic Review* **69**, May, 346–50.
- Y. Wind and V. Mahajan (1981). Designing product and business portfolios. *Harvard Business Review* **59**, No. 1, January–February, 155–65.