“Next Steps for Corporate Strategy”

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by

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Three colleagues at Wharton were willing to share their ideas with me about the current situation in the field of corporate strategy. Because their response is consistent with my inclinations I include their comments here.

The first indicated that research is now a collage. There is a chasm between behavioral and economics. This limits the cumulative impact of our work, and there is no consensus. Our ability to communicate to students, other academics (e.g. organization scholars) and others (e.g. the worldly community) is limited. "How do you explain your field at a party?" What is our core competence? Because "evolutionary" (theory) spans both worlds it may help integrate the economic and behavioral traditions.

The second colleague dealt with the nature of rationality. "Bounded rationality has to be the pillar of strategy." Where the issue is niche or diversification, the question is limits to rationality. Probably corporate level strategy is the domain of

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covariances at the SBU level, and what we can know about their causes.

The third colleague argued that the "big idea" papers are what are paid attention to, with too little concern for the research we do. One reason is that there are too many large database studies with little attention to case studies or field studies. In the first type of studies, people's (authors) names for citations are inserted in lieu of the development of ideas, and exposition is poor. Strategy has done badly at the interface with organization studies.

Though stretching my above conversations a bit, I believe these three colleagues were not really talking about what we usually think of as "topics." They were discussing more the thrust and style and philosophy of the field of corporate strategy. In order to get some purchase on these ideas, I will offer 1) a view of the history of the field organized into categories of arguments in the strategy process, 2) a view of the nature of our orientations organized by perspective, and 3) a view of one possible future of our field organized into strategy decision process gestalts, and building on these decision processes, some suggested next steps.

The stylized design of this chapter will be to use published research articles to develop my ideas. In the appropriate places I will present some ideas, then describe a research study which illustrates the ideas, and then make additional comments to highlight the nature of these ideas and my preferences. It is not my intent to write a scholarly survey article which touches
on and cites all possible related papers. I have used other authors' research work here with the exception of the final two which are mine.

To oversimplify a bit, the three parts of this essay could be characterized as past, present, and future.

**History**

An interesting article in 1980 by Gluck, Kaufman and Walleck, partners at McKinsey layed out the developing history of our field. Their argument presented a stage-wise progression of strategy from both their own consulting practice and the extant literature. First came financial planning or budgeting which largely focused on budgets for several years, and reduced all the important issues to financial terms. I will place this period as pre 1960's because the 60's saw an emergence of the field of corporate strategy. Books like Chandler (1962) and Ansoff (1965) and Learned, Christensen, Andrews, and Guth (1969) set the stage for our field.

The next stage was long range planning which dealt essentially with the inside functions of the firm. The task was to project each of the functions, production, marketing, personnel, finance, and R&D in a coordinated way. The preparations for future growth were to anticipate the need for new facilities, or new products, or new people, or new capital resources.

The next stage was strategic planning, and it can best be captured by a belles lettres *New Yorker* (1987) article that
distinguished between mirror poets (Emily Dickinson) and window poets (Walt Whitman). While long range planning had been essentially a view in the mirror at ourselves, strategic planning was to be a view through the window at the world. Michael Porter's (1980) five forces are as good a way to look at the outside as any. There are customers, competitors, suppliers, potential substitutes, potential entrants that one must address. Industry is the overriding construct here.

Strategic Management was the McKinsey group's last stage in the development, and explored all the necessary implementation steps required to assure that the strategy was successful. This would include executive development and selection, organization structure, the various information processes of coordination and control, programs, measurement, and incentive systems. This stage of strategic management, which deals with both effective and affective considerations of strategy is certainly not yet complete. Our interviews with a dozen strategy consultants for the paper, "Strategy History: Through Different Mirrors" (1994) suggests that this is where the major part of their practice is currently. "Will the strategy work?" "Will the clients really buy it?" And another consultant, "How do we get our costs in line?" "How do we become more competitive?"

But then leading to another set of ideas, and a new and fifth stage of strategy not developed in the 1980 McKinsey article, another consultant asked, "How do I think more creatively about the assets I have?... How can I use these
assets? And how can I find people with complementary assets that we can work together?”, (emphasis added here).

This last question moves us to a new stage of strategy, that of "Strategic Networking." If there is a major leit motif in the literature today, academe or worldly, it is the idea of networking. Quinn's (1992) recent book on The Intelligent Enterprise emphasizes outsourcing, often internationally, the parts of the operation - read value chain - where you are not world class. Jack Welch, the very visible CEO of GE, stresses the boundaryless organization. And though some of the boundaries breached are inside the organization, some are also outside or on the border. Cross country borders are and will be a major form of boundaries to be broken. If one looks for "topics" to be explored further for the academic community, it is the boundaries of the organization, and the other organizations which can be involved. "Markets" are no longer the only other option to "Hierarchies."

While this essay wishes to develop another set of ideas for a possible future for corporate strategy research and development, it is worth exploring the next stage of strategic networking a bit further. The boundaryless organization offers lots of new territory to explore. The evident or obvious boundaries are four: vertical or horizontal within the firm and vertical and horizontal on the borders of the firm. A great deal of recent attention in organization theory and its extentions are being directed to the boundaries within the firm. For instance, employee empowerment is a direct thrust at vertical boundaries.
How can the individual and group, lower level managers and employees be given the information, incentives, and authority to manage their part of the corporation?

Likewise, the various forms of coordination and cooperation within the corporation between different functional departments, especially on projects such as new product development is a case of such boundary spanning. Project Taurus at Ford was a very successful illustration of this development, (Bower, et al. 1991).

Some of the more profound examples, however, are at the borders. The whole idea of corporate governance and of supplier/distributor chains opens up new possibilities for corporate strategy academics to help change the face of our industrial society.

Corporate governance is the key issue of vertical boundaries at the border of the corporation where three potentially powerful groups interact - the top managers, the board of directors, and the institutional investors. Currently, the board is (finally) becoming more empowered and some of the institutional investors are moving toward "relational investing" with a close interaction with the corporations, especially where they are troubled (Useem, et al. 1993, Bowman and Useem, 1994).

Most academic work, however, is probably being done at the horizontal borders of the corporation. Woody Powell (1990) has argued in his paper, "Neither Market Nor Hierarchy: Network Forms of Organization," that a new prevalent form is found in industry. It is consistent with the resource-based view of the
firm which implies not only that the key resources be cultivated and protected, but that the other side of this argument is that other firms be found to supplement the resources which may be lacking. Especially in fast moving markets, or with limited financial resources, or in unfamiliar countries, it may be vital to find partners or alliances which supply these skills or know-how. Powell builds his argument around reciprocity and trust and collaboration, which will be supported by ideas of reputation coming closer to some constructs of economists in this regard. These reputation ideas in economics are not yet well integrated with their sister ideas of agency theory nor transaction costs.

Moving the corporation toward the idea of networks, both internal and especially external, may require substantial redesign and restructuring. These are major activities today and are often reflected in the media, in academic research (Bowman, et al., 1993, 1994), and in consulting practice. A network mentality for a corporation will require change. The idea that the corporation itself is an artifact may require some getting used to.

One example of a study of such networks is the paper by Cusamano and Takeishi (1991) on "Supplier Relations and Management: A Survey of Japanese, Japanese-Transplant, and U.S. Auto Plants." The networking along the value added chain has historically been developed earlier in Japan than in America.

The study done here focused on the major U.S. and Japanese auto manufacturers. Only one American and one Japanese company declined to participate. Also included were six Japanese
transplants in the United States. The unit of analysis was components. The seventeen questions asked pertained to four different components - shock absorbers, front seat assemblies, gauge (meter) assemblies, and instrument panels.

The comparison done in this paper shows how Japanese firms, compared to American, work with substantially fewer suppliers, have substantially longer term contracts, become more involved in product development, work toward lower prices over the contract period, have substantially fewer defects, and have much more information exchange, contacts, and suggestions with their suppliers.

What is especially interesting, and more unusual in this study, is the demonstration that the Japanese companies were able to bring these characteristics to America and that even with American suppliers they were able to approach many of the same characteristics which they experienced in Japan and/or with Japanese suppliers.

In addition, because the Cusamano and Takeishi study also included several time periods, i.e. auto models introduced both before and after the mid-1980's, they were able to show "the survey indicates that U.S. firms have adopted at least some of the practices traditionally associated with Japanese firms, apparently reflecting some convergence toward Japanese practices and higher performance levels in supplier management." (I will leave for another's essay the important task of converting all or most of strategy ideas from an essentially American ethnocentric orientation to a more multinational one.)
An added stage of "Strategic Networking" then may be added to the McKinsey previous four. Because it can be considered a new form somewhere between markets and hierarchies, the older constructs of economics for markets and organization theory for hierarchies must be extended by new theories and new empirical research.

As an added view of the progression through the McKinsey stages of corporate strategy reflection it is useful to acknowledge that there has also been a change in the cast of authors who address these issues.

First came the institutionalists in the 1960's at the time of the concern with long range planning. These authors, including historians, brought an orientation which has to some extent been lost. They were interested in the transformation of organizations over a period of time, with rich descriptions of the organizational setting, with actual executives, and with choices made or missed. It is a school admired by both Charles Perrow (1986) and John Kenneth Galbraith (1987) in other contexts.

Next in the seventies (and to some extent the eighties) came the industrial organization economists with their rational analysis of markets and actors. This was the era of strategic planning: and structure, conduct, and performance. This school is probably the most extensively developed currently and needs little explication here.

The most recent group of academics showing an interest in corporate strategy seem to be the behavioral scientists,
sociologists, population ecologists. The levels of analysis of these people range from groups of executives within the organization to groups of organizations in the larger environment. The McKinsey stage of strategic management has usefully employed these professors.

For this essay, the hope to be expressed is that there will be found some common ground for these people - the institutionalists, the economists, and the behavioral scientists. An early exemplar of such work was A Behavioral Theory of the Firm (1963) by Richard Cyert and James March. Another example is Edith Penrose's (1959) work on The Growth of the Firm. Both of these books have been cited often, but not extended enough by others. Perhaps they were before their time. Ideally more such work could be forthcoming, and might address the strategic networking stage of our field now developing. To consider this stage as only another example of "market failure" is probably missing the point.

An interesting aspect of the history of the field of strategy has been the alternating interests in the mirror and the window. I had argued that the first look was more that of the mirror writers who were essentially institutionalists. This was permitted in part because of the favorable business climate post World War II. Following this were the economists who introduced the major interest in markets and especially industries. These were the window writers.

Again, however, we have a new class of mirror writers. These are the group, and it lately seems to include almost
everybody, interested in core competence and distinctive capability – the resource based view of strategy analysis. From these resources, strategy opportunities will flow and they must be developed and protected and exploited. Over time a path dependent and evolutionary projection of the firm will follow. Perhaps this combination of resource based theory and evolutionary theory can be best understood by a combination of institutionalists, economists, and behavioral sciences. Their amalgam of theory could help us.

Reflecting on theory and its uses, brings to mind the progression argued elsewhere. To wit, theory can be used to describe, to explain, to predict, and to control. These are progressively more demanding tasks, and perhaps for the moment we should be glad to settle on the second stage, explanation. But this then brings us to the next stage of our argument. Can we offer "the busy executive" enough good material that he or she can control. Can we move from the stage of "what is" to that of "how to." These are the two major questions, I believe, of corporate strategy: 1) Why are some firms more successful than others? and 2) How can we make this firm more successful? This concern for how to and decision processes for corporate strategy will be further developed in this essay.

**Epistemology**

In order to get a picture of the various ways of seeing or understanding strategy and for perspective I return to a paper of twenty years ago (1974), "Epistemology, Corporate Strategy, and
"The corporate organization chooses its environmental domain(s), which are essentially product/markets, determines the nature of the interactions with these domains, and makes internal adjustments suggested by these choices. Some writers about corporate strategy focus primarily on the first of these (domain choice), some on the first and second (interaction with the domain), and some cover all three."

An interesting set of lectures which Herbert Simon (1969) gave at MIT, The Sciences of the Artificial, casts some light on the orientation of this passage. In his discussion of design - "the proper study of mankind is the science of design," - to which we will return later, he offers the example of one architect who designs a house from inside-out starting with the needed rooms, and aggregating them. Another architect will design the house from outside-in, starting with the desired facade appearance and packaging the rooms as necessary. Though both architects might agree on the same principles of architecture, because of their heuristics of design they might end up with very different outcomes. In a world of perfect rationality and unbounded computation it may not matter where you start the process of solution formulation or design. The process can be complete and exhaustive. But in a world of bounded rationality and satisficing, rather than maximization, the sequence in which you approach the solution formulation may have
a profound impact on the ultimate solution derived. Put in our context, even with an intent to look both through the window and also in the mirror, it may be critical which you do first or where your priorities are. Heuristics matter.

Whether the view is in the mirror or through the window, inside-out or outside-in, there are a number of generic ways of considering corporate strategy, and our earlier article presented them as follows.

<table>
<thead>
<tr>
<th>Less Formal</th>
<th>More Formal</th>
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<tr>
<td>Practice</td>
<td>Cases</td>
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<tr>
<td>Methodology</td>
<td>Analytical Approach</td>
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<td>Theory</td>
<td>Behavioral</td>
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If epistemology is (Webster), "the theory or science of the method and grounds of knowledge, especially with reference to its limits and validity," I argue for a pluralism in such views, both that we do find them, and that we should. By now (as opposed to 1974), it is probably unnecessary to explain the contents of the boxes within the table. It might be useful to describe research work in each of the categories from which I
will arrive at a plea for more work in the middle row, "methodology" for corporate strategy.

Herbert Simon (1969) and Donald Schon (1983) are both critical of professional education in that it slights the methodology of "how to", or what Simon calls design. How do you convert a given situation into a preferred one? This is the task of the professional. What this should lead us to is a better understanding, both positive and normative, of decision processes. Our paper will end with some consideration of these ideas, but first a description of some published work in each of the table's boxes, and what we like about it, will be offered.

The case approach to strategy has a well known provenance, and has been a traditional mode for teaching purposes at most business schools. This well accepted form of capturing practice is useful not only for students but for executives also. As we argued (1974) "Since management as an activity or profession is probably more of a craft than anything else, it is well to point out that managers learn most/much of what they know from practice, both their own and others. Where problems are new and/or puzzling, a common (and worthwhile) question is what are other managers doing about it?"

Alfred Chandler in *Strategy and Structure* (1962) describes how Standard Oil of New Jersey in its long and arduous transformation from a functionally centralized, committee-run organization to a more divisionalized-decentralized, executive-run organization several times sent executives to visit, counsel
with and investigate how other petroleum companies were solving these problems. One could argue this was an early form of benchmarking others’ best practice.

Cases can be rich in description and ordinarily pay little attention to theory. People and their stories surface with a narrative mode of description. Jerome Bruner (1986) makes a strong case for the narrative mode as a complement to the paradigmatic mode. "Levels of analysis" are of little concern nor are concerns with various kinds of construct validity.

Richard Pascale’s case description of Honda’s penetration of the U.S. motorcycle market contained in both a California Management Review (1984) article and two Harvard Business School Cases (1983) offers an enlightening story with commentary as well as a contrast with a Boston Consulting Group (BCG) Report. The BCG report for the British government (circa 1975) layed out the story of the British motorcycle industry losing major market share in America to the Japanese, mainly Honda. This transformation was attributed to the coherent and well thought out strategy of the Japanese. Included were volume plans - cost decrease - sequential market penetration - advertising to fit markets - careful attention to growth and market share - product capacity planned well in advance of need.

Pascale took the occasion in Japan to interview the six executives involved in the American Honda story about 20 years after it happened. He argues that one finds "miscalculation, serendipity, and organization learning." He quotes a Japanese executive, "In truth, we had no strategy other than the idea of
seeing if we could sell something in the United States." ("The Japanese are somewhat distrustful of a single 'strategy' for in their view any idea that focuses attention does so at the expense of peripheral vision. They strongly believe that peripheral vision is essential to discerning changes in the customer, the technology or competition, and is the key to corporate survival over the long haul").

The original idea of Honda, according to the executives involved was to compete with European imports which were big motorcycles. Most of their initial inventory dollars, with very limited investments were there. With minimal budgets and facilities they made some initial sales, and then disaster struck. The machines were leaking oil and encountering clutch failure due to higher speed and longer distance use than the case in Japan.

But while these problems were being addressed, the small Honda 50CC Supercub which they were using for their own purposes making deliveries and attending to errands in Los Angeles attracted the attention of both buyers and retailers. Moving these Supercubs to sporting good stores demand unexpectedly exploded, reinforced by a UCLA student paper with the advertising slogan, "You Meet the Nicest People on a Honda." Honda captured two thirds of the market and Pascale argues that rather than forethought which redefined the market, "In view of American Honda's start-up team, this was an innovation they backed into - and reluctantly." The ideas of trial and error learning, and
systematic experimentation will be further examined at the end of our essay.

Pascale generalizes in part from this story. "... strategy cases of business schools, consultant's reports, strategic planning documents as well as the coverage of the popular press, reveals a widespread tendency to overlook the process through which organizations experiment, adapt, and learn. We tend to impute coherence and purposive rationality to events when the opposite may be closer to the truth. How an organization deals with miscalculation, mistakes, and serendipitous events outside of its field of vision is often crucial to success over time. It is this realm which requires better understanding and further research if we are to enhance our ability to guide an organization's destiny."

Some of this vignet captured by Mintzberg and Quinn in their book, The Strategy Process (1991) is consistent with both of these authors argument for an understanding of the natural and unfolding strategy process. Quinn's work in Logical Incrementalism (1980) and Mintzberg's in Crafting (1987) support this view, ideas that will be further developed in a subsequent section of this essay.

If our interest is in understanding the decision process(es) for corporate strategy it is necessary that we pay sufficient attention to the actual unfolding of the narrative story without attributing too much to other's ideas of rational and normative behavior. An attempt to capture "practices" in the raw requires an unusually fine Italian hand.
John Van Maanen's book, *Tales of the Field* (1988), is an unusually good exposition of this skill, and at least three styles from the field of ethnography - realist tales, confessional tales, and impressionist tales - a field usually outside the scope of the typical corporate strategy case writer.

The history approach to strategy and its capture of practice has been best illustrated by the books of Alfred Chandler (1962), starting with *Strategy and Structure: Chapters in the History of the Industrial Enterprise* written while he was a professor of history at MIT. It tells the interesting stories of four major American companies in the first part of this century, DuPont, General Motors, Standard Oil, and Sears Roebuck as they formed, grew, extended their strategies, and changed their structures.

Chandler in his discussions with the strategy community has explained that he starts with no theory but lets the facts form the stories from which generalizations can be subsequently made.

While Chandler tells about both specific executives and general forces, a current debate in the academic history community is captured by Gertrude Himmelfarb (1987) in her book, *The New History and the Old*. The distinction is made between history as developed around specific important people, the old history, which she favors, and history developed around major underlying forces of change, the new history. The Analytis led by Fernand Braudel (1986) author of the series *Civilization and Capitalism 15th-18th Century* are the exemplar of this new school.

An example of history used to argue and illustrate several theories and constructs is Langton's (1984) "The Ecological
Theory of Bureaucracy: The Case of Josiah Wedgwood and the British Pottery Industry." While historians would probably argue that it has much too much sociology in it, it does include the interesting story of the successful innovations of Josiah Wedgwood in his Staffordshire factory two centuries ago. The forces at work in England were the enclosure movement, the building of turnpikes and canals, the rising standard of living and consumption of tea and coffee, and the advent of John Wesley and Methodism in Burslem.

Wedgwood captures all these in a systematic redesign of the British factory somewhat anticipating Frederick Taylor's ideas of a century later. He pays major attention to methods, division and specialization of labor, managerial hierarchy, career structure, and labor discipline. His discoveries of new products after much experimentation, Queensware and Jasperware combined with major steps in production efficiencies were an example of Schumpeter's creative destruction. The industry was transformed.

Langton uses this history to argue his ideas to explain the development of bureaucracy. He shows that the ecological factor of selection takes place at three levels - individual, organizational, and environmental. He argues "the environment optimizes through mediation of differential reinforcement and punishment...(and) the rational and natural selection models of organizational change are both valuable and need to be integrated into a coherent whole." This idea of the rational and natural models will be further explored in this chapter in the concluding sections. It is the major task which lies ahead.
An unusual facet of Langton's paper in the Administrative Science Quarterly is that it elicited a very strong and critical response from Charles Perrow in a following issue. Perrow (1985) argues that the role of power, and who has it, and how it is used is ignored in the history article. Beware of "functionalism" and "natural selection" is his caution. Efficiency for whom should be a major question addressed. He lays out an alternative scenario which might have unfolded under somewhat different auspices and which to him had much preferable results, with distributive justice accommodated. The strategy literature and journals have yet to offer us very many such interesting and informative intellectual exchanges.

The analytical approach in the methodology category is much akin to corporate planning, which can be more or less formal. This analysis for strategic decision making which will look at the important issues both inside and outside the firm will allow for either an incremental staging of decisions or a grander, "synoptic" view of the developing future. Some major investments will virtually force some anticipation of probable futures. In addition, the choices can involve not only the major aspects of the strategy but their associated implementation steps as well.

Frederickson and Mitchell's (1984) study of "Strategic Decision Processes: Comprehensiveness and Performance in an Industry with an Unstable Environment" is an example of this approach offering a number of interesting issues.

The basic question they asked was whether there was an association between comprehensiveness in the decision making
process and corporate performance in an unstable volatile industry. While theoretical arguments could be found on both sides of the case, the preponderance seemed to call for a negative association because of the need for flexibility, speed, and learning possibilities. In fact, that is what they discovered.

The industry they chose was a subset of the forest products industry. They worked with twenty seven companies most with multiple executive respondents. One very useful part of this study was the use and illustration of an extensive scenario of a decision and the corporate handling of the situation. Each executive could then take this "standardized treatment" and answer "what their firm would usually do" in such a situation. The CEO's of all the companies were interviewed in order to develop a scenario which seemed realistic.

The decision was divided into the standard three parts: situation diagnosis, alternative generation, alternative evaluation, what Herbert Simon called intelligence, design, choice, to which they added a fourth, integration. In all, the respondents answered 43 questions for this sequence.

Often a research question arises for us as to how we'll get the data. Rather than just a (simple) questionnaire, scenarios permit the executive to project against a fairly realistic backdrop.

The results were unambiguous at all stages for the decision processes in this unstable industry. Higher performance (both return on assets - "efficiency," and increase in sales over five
years — "effectiveness") was strongly correlated with less comprehensive analysis, measured in numerous ways capturing the planning and decision making processes.

Finally, for our interest in the professional question of design, or "how to" in decision processes, we are left with the question what do we tell the executive. The simple answer seems to be less comprehensive in an unstable industry and your performance will increase. It probably does not surprise the reader that Frederickson and Mitchell refrain from so bold a statement. And yet where we wish to be helpful, couldn't we arrange for some trial steps, for systematic experimentation, to see if a change in process has the desired effects?

This is the classic problem of positive science, and not a special criticism of this study. Causality is not demonstrated by correlation. Even if it were, one can not count on future "other things being equal," nor on the cooperation of culture, colleagues, and competitors. However, if we have some interest in a normative view of decision processes, further work, both research and professional experimentation are called for. These issues will be returned to later.

The management science block of approaches to corporate strategy which is our more formal methodology is probably still the least developed form. Where it exists it would typically include mathematical modeling, optimization, and/or simulation. Given the model if it is straight forward enough it might yield to a formal mathematical solution. More likely it would require some form of simulation. Because most important strategy
problems are quite complex, management science has not found its natural application here as frequently as it has in either operational problems, or administrative problems.

The example we will offer here is the study by Porter and Spence (1982) of capacity expansion problems in the corn wet milling industry. While some, including the authors themselves, might feel this falls within the realm of economics, for my taxonomy it's heavy on methodology and therefore useful here. The economics aspects are indeed also here including, optimization, equilibrium arguments, and a game theoretic consideration of competitors' probable behavior.

The case in point was the revolutionary development of the commercialization of high fructose corn syrup (HFCS) of very high sweetness as a potential substitute in the large sugar market. About a dozen firms existed in the corn refining market and could and did consider entering this new market, some by plant conversion and some by new plant addition. Many uncertainties existed here, not only the endogenous issues of capacity expansion but the exogenous issues of sugar prices and industry demand. Porter and Spence argue "...we found that the case study which forces one to attend to what the decision maker would find important and does not allow one to ignore relevant features of the problem is a useful way of locating the central conceptual issues and of shedding some light on the determinants of the evolution of industries in...a disequilibrium situation."

Their analysis was essentially done using scenarios which allowed for consideration of a number of the important variables
through the eyes of each participant. These included the evolution of demand and sugar prices, and the predicted capacity expansion of competitors based on their assumed preferences, attitudes toward risk, and their financial resources.

The authors describe their analysis as follows: "First, a range of possible scenarios for demand and sugar prices is set out, with some assessment of their likelihoods. Next a range of possible capacity expansion paths for the industry is constructed. Third, we assess the implications for the profitability of a variety of capacity addition strategies for individual firms, conditional on demand and industry capacity expansion. Fourth, taking into account uncertainty about demand and individual firm characteristics, we determine the decisions the firms are likely to take, conditional on each of the industry capacity expansion scenarios. Finally, we ask which of the capacity expansion scenarios is most consistent with the sum of the capacity decisions of the firms. That becomes the predicted evolution of the industry and a prediction of the associated decisions for each firm."

As I indicated earlier, the Porter and Spence study can really be considered a combination of classical management science methodology along with important elements of economic theory. One would think that more work of this nature will surface, especially where there is some interest of evaluating game theoretic constructs with substantial empirical studies. All of our examples have included empirical bases, and the Porter and Spence article follows this theme comparing their predictions
with the actual developments which unfolded. Their ideas of using scenarios, probability distributions, and simulation will be included in our final section.

Behavioral Science as it is addressed to corporate strategy draws on psychology, social psychology and sociology. As in most parts of our taxonomy table, the appropriateness of various constructs is determined in part by the level of analysis.

An interesting study by Jeffrey Pfeffer (1972) of "Size and Composition of Corporate Boards of Directors: The Organization and Its Environment" is used here as an example of behavioral science for an understanding of important issues. Pfeffer draws on Thompson (1967) and Selznick (1949) to argue that organizations seek to manage their dependence on the environment. The Board of Directors can be used as a mechanism for coopting important elements in a resource-dependency view of the environment. This is a form of establishing a negotiated environment to reduce uncertainty as described by Cyert and March (1963) in A Behavioral Theory of the Firm.

In Pfeffer's argument, Boards perform at least two functions. They help manage the internal activities of the firm and they help manage the interdependencies with external institutions of some importance and power.

Using a random sample of 80 large companies drawn from Dun and Bradstreet, Pfeffer tests his arguments essentially against two considerations, the extent to which the firm has need for external capital, and whether the firm is regulated. His argument is that there will be more bankers on the board in the
first case, and more lawyers on the board in the second. In addition and related to these hypotheses, the boards will be both larger, and have fewer insiders. He performs a series of Spearman Rank Order Correlation tests and all his important hypotheses are supported at significant levels.

He argues he has demonstrated "...that board size and composition are not random or independent factors, but are rather rational organizational responses to the conditions of the external environment."

He then goes on to make one more very interesting test. He argues that if this is important, then the companies which deviate from this behavior will not be as effective as otherwise on standard measures of profitability. He notes, "Bowman (1963) in an industrial scheduling context has noted that while individual manager estimates may be far from optional, these estimates (behavior) pooled over time, or over managers, frequently give optimal, or nearly optimal results."

Pfeffer uses the 80 companies to estimate the average response (behavior) of the firms to these needs for size, percentage of insiders/outsiders, bankers and lawyers. Then he demonstrates (to an .005 level of significance) that "Firms that deviated from the inside-outside orientation they were predicted to have (from his multiple regression equation) performed poorly, and the greater the deviation, in general, the more poorly they performed, relative to standards for their industry."

This use of what is now called "Bootstrapping," or average behavior and pooled estimates is related to the positive theory
of isomorphism and the normative theory of benchmarking. All of these ideas are useful in understanding the professional question of "how to," and will be included in our final section.

Economic analysis for corporate strategy currently offers a broad menu of topics. The industrial organization sector of economics has probably offered the most to corporate strategy. Other areas of importance however are finance theory, oligopoly and game theory, international trade, and the evolutionary growth of the firm.

While economics can be divided into its axiomatic assumptions, the theoretical derivations based on these assumptions, and the associated empirical work following this theory, it would be some of the empirical work which is most useful for strategy consideration. When one examines most work in this field, the conclusion must be drawn that "all the world's an oligopoly," and when one talks to practicing executives, this conclusion is reinforced.

For a combination of the industrial organization ideas of strategic groups and mobility deterrence, and the game theory ideas of signalling and countering of adversaries, the economics study by Marvin Lieberman (1987) will be useful. His paper on "Post Entry Investment and Market Structure in the Chemical Processing Industries" includes 39 chemical product industries which are growing, and the issues of capacity expansion associated with this growth. In addition, some of these industries are relatively concentrated, using as a measure the Herfindal index, and some are not. An added factor is that
capacity expansion can be either green field's expansion of new entrants or current incumbents, or plant expansion of the latter.

Lieberman's findings fall into several categories, some questioning some ideas from game theory, and some more consistent with the expectations. (It can be added that much work if empirical for game theory seems to be laboratory experiments and little is field or actual data base empirical). Lieberman summarizes his study as follows: "In concentrated industries incumbents increased their rate of investment following entry, but reduced investment to accommodate capacity expansions made by other incumbents. This asymmetric response did not arise in less concentrated industries. Significant excess capacity existed in concentrated industries following entry, but there is little evidence that incumbents built such capacity as a deterrent before entry. Thus, the results support 'mobility-deterrence' theories rather than the conventional excess-capacity deterrence argument."

It is noteworthy that in an oligopoly, you "accommodate" your current competitors but not your new ones. This is another (interactive) example of evolutionary path dependencies or co-evolution. History matters.

Another interesting aspect of this work is that behavior which departs from straight forward profit maximizing behavior is called "strategic investment" (as in Lieberman's study) or "strategic pricing." The idea is that longer range and more subtle factors are at work to explain these departures, which
then joins economics with Child's (1972) arguments of "strategic choice" from sociology.

All six of these research papers used to illustrate parts of our taxonomy offer a better understanding of the forces at work in the determination of corporate strategy. They offer different approaches, different methodologies, different type data bases (they are all empirical which shows my preference). But they still don't go far enough in exploring the "how to" issues of strategy design. Or to put it differently, they are only a first step, and they are not explicit enough about the questions.

I believe that all six of these ways of looking at corporate strategy are useful, separately and in combination. As I argued twenty years ago, "At this stage in the development of managerial education and investigation, the mixed strategy of using all approaches is probably better than reliance on only one or two, especially when students and managers may differ markedly in their ability to learn from the different approaches. A mixed strategy not only allows the possibility for reinforcement and/or a productive dialectic, but given the explicitly different perspective, offers the chance for a future response to issues of corporate strategy which is robust."

As we look at the original table or taxonomy, my argument here is that of the three the methodology row is the one that needs most further work. It is the one which should explicitly help the manager with how-to. To be clear to academics, I am not talking essentially about research methodology, but professional methodology. How can people in organizations or consultants or
sometimes academics understand and/or prescribe decision processes?

As mentioned earlier, Herbert Simon (1969), a strong influence on our search for decision processes for corporate strategy, has given much thought to the issues explored here. Where we argue a much better understanding of the question of "how-to," beyond the question of "what is," Simon layed out a number of interesting ideas in his book The Sciences of the Artificial. I take the liberty with both Professor Simon and the reader by quoting a number of his ideas distributed throughout his whole book:

Quoting himself (p. 13) from Administrative Behavior (1947), "... administrative theory must be concerned with the limits of rationality, and the manner in which organization affects these limits for the person making a decision."

(P. 57) "The peculiar properties of the artifact lie on the thin interface between the natural laws within it and the natural laws without... The artificial world is centered precisely on this interface between the inner and outer environment; it is concerned with attaining goals by adapting the former to the latter."

(P. 64) "Now, no one in his right mind will satsisfice if he can equally well optimize; no one will settle for good or better if he can have best. But that is not the way the problem usually poses itself in
actual design situations."

(P. 66) "...the condition of any goal-seeking system is that it is connected to the outside environment through two kinds of channels... through which it receives information about the environment... (and) through which it acts on the environment. The system must have some means of storing in memory information about state of the world... and information about actions... Ability to attain goals depends on building up associations, which may be simple or very complex, between particular changes in states of the world and particular actions that will (reliably or not) bring these changes about."

(P. 55) "Everyone designs who devises courses of action aimed at changing existing situations into preferred ones... Design so construed, is the core of all professional training; it is the principal mark that distinguishes the professions from the sciences."

(P. 58) "The professional schools will reassume their professional responsibilities just to the degree that they can discover a science of design, a body of intellectually tough, analytic, partly formalizable, partly empirical, teachable doctrine about the design process."

Professor Simon offers many specific ideas for this design process in The Sciences of the Artificial. I believe it is this
better understanding of the design issues in corporate strategy which will open up for us one possible future. The great amount of accumulated work in positive science has not brought along the desirable amount of respectable work in normative science. We now turn to some of our own recent work as possible illustrations of ways to think about decision processes for corporate strategy.

Futures

Taking Simon's argument that design for the professional should be more thoroughly explored, a set of ideas are offered here which may help answer the question "how to" in strategy. I believe we have to address both the positive and normative view of these questions.

One could argue that there is a fundamental distinction between strategy formulation and strategy implementation, and therefore that the question how-to must be addressed to one or the other of these issues. Or even alternatively that implementation actually means how-to do it. I believe this is a straw man distinction and that what we really have is a nested set of decisions, i.e. how to determine the strategy, how to implement the strategy, how to facilitate the implementation, etc., etc. What we see is a series of what to do and how to do it.

The classical division of decision processes is the distinction between rational and natural, and we will start with that here. "Rational" lays out all issues in advance, goals, alternatives, consequences, evaluations, and makes a calculated
choice which maximizes some chosen metric. The situation can involve complexity, uncertainty, ambiguity, and adversaries. No matter - the calculation is explicit and understandable. P. Chawat's papers and book, Commitment (1991), is an extension of a line of industrial organization (IO) economists that advocate this school. Commitment implies that the moves are essentially irreversible. This school is derived from the positive discipline of economics where optimization and equilibrium are used to explain and predict behavior in the market place. Markets in fact are often central to these arguments.

The decisions in the corn wet milling study of Porter and Spence (1982) could be used as an example of commitment. After the substantial calculation of the firms (and/or of the academics) the major investments required for the plant capacity expansion are committed and are essentially irreversible (although reality may often allow some conversions). Capacity expansion in many process industries, e.g. steel, paper, chemical, aluminum are major choices with major consequences. One would expect a fair amount of ex ante calculation to take place which could of course ex post be judged to be flawed.

The "Natural" follows the habitual, unfolding, trial-and-error, learned, isomorphic pattern of decision processes. Bounded rationality is a key component of this school, as often are the behavior of associates and affective elements. H. Mintzberg's (1987) papers and books about Crafting describe and advocate this view of corporate strategy. This school is more akin to organization behavior and organization theory. Crafting
connotes a series of incremental steps. Explanation of behavior may be a more powerful element in these ideas than is prediction.

The case of Honda's expansion into the United States as described by Pascale (1984) could be used as an example of crafting. From a whole series of problems and trials, the executives on the spot were able to fashion an amazingly successful penetration of a major market. Little was anticipated correctly, (although reality may allow for some anticipation), but as the situation unfolded the step-by-step trial and error choices could be made and the favorable avenues exploited.

I believe that both of these schools, rational and natural, are fairly well understood in the business school community and need little further explanation. I also believe that there has historically been little interaction between these positions - somewhat polar positions the way they are presented here.

James Schlesinger (1966), cabinet officer to several American presidents wrote an early paper while at the RAND Corporation about planning (and decision processes). On the one hand, he described "Cooks Tour" planning where all is calculated in advance. One specifies times, destinations, routes, modes. On the other hand, he described "Lewis & Clark" planning (the search for the Northwest Passage) where rough estimates are made about the various kinds of terrains and problems which might be encountered and various and generic kinds of gear is packed into the travel bags, and with hope for successful coping when the unexpected arises.
Another interesting treatment of this split is made by Aaron Wildavsky (1988) in his book *Searching for Safety*. He distinguishes between anticipatory, which requires great foresight and detailed preparation, (his chapter example is nuclear power plants) from trial-and-error learning which allows for both risks of failure (for learning purposes) and quite a bit of ambiguity in the process (his chapter example is the human body). Perhaps it is evident to the reader that these descriptions signal that Schlesinger prefers Lewis and Clark planning, and Wildavsky prefers trial-and-error learning.

A pungent commentary on the idea of "natural" is that of William James (1892) quoted in Steven Pinker's interesting book on cognitive science, *The Language Instinct* (1994), "It takes... a mind debauched by learning to carry the process of making the natural seem strange, so far as to ask for the *why* of any instinctive human act."

Our purpose here, however, is to use two recent pieces of our research which open up this distinction between rational and natural. We add a dimension which we have variously called figure versus ground, or centralized versus decentralized, or salient versus masked, or transparent versus opaque.
As one can see, Commitment for Rational, and Crafting for Natural only occupy two quadrants. We have added Garbage Cans for Natural, and Options for Rational, occupying the other two quadrants. We have also added academic names which are originators or early advocates of these ideas.

For the "natural-figure" quadrant, the Garbage Can Model of organizational decision making argues for streams of components which carry through time and come together haphazardly resulting in decisions taken, or even sometimes not taken. The four streams are problems, solutions, actors, and decision occasions which arrive randomly. They join together in the garbage cans, which then are periodically removed.

Such a process explains a series of decisions which Howard Kunreuther and I investigated at a major chemical company. We had been interviewing the company, Chemco, about toxic waste and environmental risk at the time of the Bhopal tragedy in India.
when over 2000 people were killed. We continued to interview executives at Chemco for the following year and wrote a paper (1988) which described the effect Bhopal had on the decisions and decision processes of the company. We explained a number of propositions we believed we were able to draw, e.g.

1) Following a catastrophic accident there is a tendency for decision-makers to ignore objective data for specifying probabilities and rather focus on ways of dealing with the direct impact of the event, such as preventing another Bhopal.

2) There is a linkage of activities undertaken prior to Bhopal (i.e. ex ante activities) with solutions following Bhopal (i.e. ex post solutions).

3) Crises enable the organization to exert tighter hierarchical control to take rapid action.

4) There is a confounding between chronic and catastrophic risks following a low-probability-high-consequence accident.

5) There is a tendency to ignore costs when crisis situations appear.

6) With salient events there is a form of organization learning which turns tacit knowledge into organization policy.

We had described a number of activities and decisions about information, processes, inventory, policies, facilities, etc. which led us to these propositions.

More currently, however, we (1993) returned to Chemco six years later for a series of interviews to determine what subsequent activities and/or decisions had been taken in the intervening period. We interviewed about a dozen executives over
a summer to get some fix on these decisions. The majority of these dozen we had interviewed six years earlier.

They and we identified three decisions which we believe were not foreseen at the time of our previous study. For our purposes, we were willing to call them surprises because neither the executives nor we had anticipated them.

A plant was closed in Japan which had been encircled by apartments since it was built much earlier (similar to the Bhopal experience). The material processed in the plant and trucked in to it carried some risk that was judged unacceptable. It took much of the six years to negotiate with the Japanese partners the abandoning of this plant site. Ultimately they had to be bought out.

A second decision was made to sell a going business, mainly because of the raw material transport to the plant was judged to be too risky. At the earlier study, the company executives repeatedly said no businesses were being withdrawn from. But now it was judged that the industry (i.e. mimetic isomorphism) was no longer transporting this raw material and both stages of the production process were taking place at one location. As well, there had recently been an incident of freight car derailment in the yards used (with no catastrophe which might have happened). The same type business had recently been sold by a competitor bringing a surprisingly good price.

A third decision taken was not to build a toxic waste incinerator into which much study and preliminary money had already been placed. Toxic waste generation had been reduced in
the intervening six years, not only in Chemco but throughout the industry. Prices had stabilized in the merchant toxic waste handling industry and the large amount of capital required for the incinerator was much needed in the company for other purposes.

Our analysis of these three cases, only briefly described here (with more detail in another paper, 1993), judged that it was necessary to add two more variables, 1) constraints and 2) reference points to the previous four of the garbage can model, problems, solutions, actors, and occasions. We believe this dynamic garbage can model of decision making was our best model for explaining or understanding what happened. Sometimes it was a previous solution which surfaced at a later time (e.g. closed plant). Sometimes the actors changed permitting a less involved executive to take a fresh look (e.g. abandoned incinerator plans). Sometimes the problem changed its face because of a learned experience (e.g. sold business). New constraints of capital shortages influenced all these decisions. An isomorphism (of legitimacy) addressed to the rest of the industry and its behavior was an acknowledged influence.

For the "rational-ground" quadrant, the Options mode of decision making argues for small investments which provide a platform from which future investments may be made. However, this option can be exercised at the decision maker's discretion only if favorable events have transpired. Alternatively, if the situation is not attractive it can be abandoned. These real options are analogous to financial instrument options traded on
the stock exchanges, and have attracted academic interest and modeling akin to the financial options.

Dileep Hurry, Adam Miller, and I (1992) conducted a study of high-technology ventures undertaken by Japanese and U.S. venture capital firms. We wished to explore the different perspectives we could associate with these two industrial cultures.

Our findings were that, on the average, the American firms (20 of them) treated these investments as projects with the hope and expectation that they could be sold and capital gains could be made in a medium period, i.e. 6 to 8 years. In contrast, the Japanese firms (a matching 20) treated their investments as options on developing technology which could be rearranged in a similar period (6 to 8 years) with further investments, exploitation, joint ventures, licensing, and other new arrangements with the projects involved.

We used various surrogate variables to get at this different mentality, and they included a) numbers of ventures in the portfolio, b) size of the individual investments, c) proportions of loss-making ventures, d) objectives described for the ventures, 3) strategic versus financial reasons of explanations, f) technology possibilities stated, g) frequency of monitoring of the ventures, h) performance evaluation measures for the ventures, i) amount of administrative support for the ventures, j) retaining or disposing of stock at culmination of venture. The large majority of these surrogate variables supported our finding that in contrast to the Americans, the Japanese look at these high-technology ventures as options rather than projects.
Next Steps

By looking at history and several specific research papers this essay has attempted to set the stage for three different but related questions, and possible next steps for corporate strategy. If one wants to integrate the natural and the rational (or the artificial) what are the ways? If one wants to integrate the economic and the behavioral (and the institutional) what are the ways? If one wants to integrate positive theory (or what-is) with normative methods (or how-to) what are the ways?

The next steps for corporate strategy can take the form of further exploration of decision processes. From our first chart in this chapter, further work surely can be addressed to the first row of practice, and the third row of theory. But more work needs to be done on methodology. It can be more in the form of heuristics, recipes, and managerial cognitive short steps. It can also be more in the formal sense of management science including decision modeling. It will be some combination of positive and normative orientations with a continuing productive and close interplay between the two.

However, I believe that given the present proclivities of strategy academics, as opposed to consultants, that this may mean a better set of ideas from positive studies. Perhaps this is a first and reasonable step. The two examples from my own work on environmental protection - garbage can models, and high tech venture investments - options theory, are only derivatively normative.
Herbert Simon (1969) in *The Sciences of the Artificial* proposes that some approaches to reputable design or how-to analyses would include a) extended utility theory, and b) various forms of optimization programming. While I agree with these, however following our previous discussion of decision making gestalts, I would advocate at least three or four other generic approaches, all of which I believe can offer a fruitful interaction of economics and behavioral ideas:

1) Simulation
2) Scenarios
3) Systematic experimentation
4) Bootstrapping

Simulations in more positive science work now have some currency. Extended examples are the original piece on garbage can models by Cohen, March, and Olsen (1972) and some chapters in Cyert and March (1963). The influential book by Nelson and Winter (1982) *An Evolutionary Theory of Economic Change*, in its middle section uses simulation to explore their ideas. Many published journal articles recently use this methodology, and all require of course some modelling of the important variables. What we have done much less of is the use of simulation for real situations in real firms. This may now be a good step.

Scenarios could be thought of as a narrative and/or qualitative form of simulation. They touch on Jerome Bruner's (1986) great title of cognitive essays, *Actual Minds, Possible Worlds* (Bowman, 1990). Scenarios require us to systematically lay out a series of possible (future) worlds. They require at
least enough understanding of what seem to be the important variables and how they may interact in the future to present a broad band of possible futures. From these pictures, the management of the company should be able to get a sense of the risks and opportunities, and what kinds of bets might be made. Our interest in options theory fits well with scenarios mentalities. Some corporations are now doing scenario analysis, and for most of the large corporations we know the multinational aspect of this work is fundamental - and almost overwhelming (Bowman, et al. 1994).

Because we really must address the multiple problems of complexity, uncertainty, and ambiguity, and our associated interest in the dual characteristics of flexibility and learning, we should address the informative process of systematic experimentation. The places can be few, the trials time-staged, the situations favorable, the managers cooperative, the view partial. This is really the other side of the simulation coin. While simulation offers the possible outcomes from a set of hypothetical choices and exogenous interactions, experimentation as I am using it here, offers the actual outcomes from a set of real choices. It is a normative approach to Aaron Wildavsky's (1988) trial-and-error learning from Searching for Safety. It must take into account Levitt and March's (1988) comments from "Organization Learning" that for learning to occur the factors varied have to be few enough (so as not to confound) and the steps have to be large enough (so the signal is not overwhelmed
by the noise). This last point may be hard to swallow for native incrementalists.

Finally, more work needs to be done on the advantages and disadvantages of bootstrapping. Do managers as an aggregate really have a better sense of appropriate behavior than the individual? Is a systematic search for the managerial coefficients of a complex model really an efficacious approach as in Pfeffer's (1972) board of directors composition, or my (1963) production and employment scheduling, or my and Mason Haire's (1975) approach to corporate social responsibility? These were not only isolated studies as others have supported them. But where are the limits? I believe we may find that there is a confluence of mimetic isomorphism, benchmarking, and management coefficients theory, i.e. bootstrapping.

All of these schemes, and there will be others, offer the chance to combine and integrate economics and behavioral theory. They could all be placed in the methodology sections of our epistemology taxonomy, and purposively fall across my four-fold schema of rational/natural and figure/ground of our strategy decision process gestalts. It's time to take these next steps, so that sophisticated knowledge of how-to is included in tomorrow's professional education.

To return to our initial colleague conversations at Wharton, we can work to bring together the economic and behavioral, attend more directly to all the implications of bounded rationality, and supply richer and more useful descriptions of these decisions and
the contexts within which they are embedded in our careful research studies.
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