

Strategy in an uncertain world



A McKinsey Quarterly Reader



TABLE OF CONTENTS

[Introduction](#)

3



[Strategy under uncertainty](#)

5

Hugh G. Courtney, Jane Kirkland, and S. Patrick Viguerie
The McKinsey Quarterly, 2000 Number 3

The traditional approach to strategy requires precise predictions and thus often leads executives to underestimate uncertainty. This can be downright dangerous. A four-level framework can help.



[Is simulation better than experience?](#)

15

Dory Bertsche, Christopher Crawford, and Stephen E. Macadam
The McKinsey Quarterly, 1996 Number 1

Can companies take a shortcut to strategic change? Software-based simulations provide the key to speedy transformations.



[Games managers should play](#)

23

Hugh G. Courtney
The McKinsey Quarterly, 2000 Number 3

Game theory can help managers make better strategic decisions when facing the uncertainty of competitive conduct. If you don't change your game to gain advantage, one of your competitors will.



[Bringing discipline to strategy](#)

29

Kevin P. Coyne and Somu Subramaniam
The McKinsey Quarterly, 2000 Number 3

Are you making three very big—and often very bad—assumptions? Don't assess uncertainty unless you are willing to abandon your favorite formulas. Bets and options may be more important than positioning choices.

[Further Reading](#)

39

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Introduction

Managing under uncertainty is among the most difficult tasks executives face, even in the best of times. Globalization, digitization, and unfettered capital markets have all helped make traditional strategy tools such as market research, value chain analysis, and discounted-cash-flow analysis less useful. Meanwhile, the events of September 11th and their aftermath have made managing under uncertainty exponentially more daunting: companies must not only prepare for the worst economic year in a decade but also grapple with the uncertain economic consequences of the war in Afghanistan and the possibility of further terrorist attacks in the United States and elsewhere.

No technique or conceptual model could reduce uncertainty to zero. Yet tools and frameworks *can* help managers to assess the level of uncertainty they face and to tailor appropriate strategic responses. Using these tools helps managers reduce the risks they take when making strategic decisions even in the most indeterminate conditions.

We start, in “Strategy under uncertainty,” with an overview that presents a four-level framework for thinking rigorously and systematically about the different levels of uncertainty companies face.

“Is simulation better than experience?” argues that simulations give managers an opportunity to experiment, to test their assumptions, and to learn from their mistakes in a risk-free environment.

“Games managers should play” presents practical tools developed from game theory to help managers make better strategic decisions when facing the uncertainties of competition.

Finally, “Bringing discipline to strategy” suggests that companies can improve their understanding of the sources of competitive advantage by matching their strategies to the level of uncertainty they face. By building on a series of large and small bets and strategic options, a company avoids being locked into one position when conditions change.

Managing under uncertainty has become more difficult than ever. By deploying the tools described in these articles (and in *Further reading*), managers can get a handle on the elements of uncertainty that *are* measurable and addressable, thereby making a challenging environment perhaps a little less daunting.



Strategy under uncertainty

Hugh G. Courtney, Jane Kirkland, and S. Patrick Viguerie

The traditional approach to strategy requires precise predictions and thus often leads executives to underestimate uncertainty. This can be downright dangerous. A four-level framework can help.

At the heart of the traditional approach to strategy lies the assumption that executives, by applying a set of powerful analytic tools, can predict the future of any business accurately enough to choose a clear strategic direction for it. The process often involves underestimating uncertainty in order to lay out a vision of future events sufficiently precise to be captured in a discounted-cash-flow (DCF) analysis. When the future is truly uncertain, this approach is at best marginally helpful and at worst downright dangerous: underestimating uncertainty can lead to strategies that neither defend a company against the threats nor take advantage of the opportunities that higher levels of uncertainty provide. Another danger lies at the other extreme: if managers can't find a strategy that works under traditional analysis, they may abandon the analytical rigor of their planning process altogether and base their decisions on gut instinct.

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Making systematically sound strategic decisions under uncertainty requires an approach that avoids this dangerous binary view. Rarely do managers know absolutely nothing of strategic importance, even in the most uncertain environments. What follows is a framework for determining the level of uncertainty surrounding strategic decisions and for tailoring strategy to that uncertainty.

Four levels of uncertainty

Available strategically relevant information tends to fall into two categories. First, it is often possible to identify clear trends, such as market demographics, that can help define potential demand for a company's future products or services. Second, if the right analyses are performed, many factors that are currently unknown to a company's management are in fact knowable—for instance, performance attributes for current technologies, the elasticity of demand for certain stable categories of products, and competitors' plans to expand capacity.

The uncertainty that remains after the best possible analysis has been undertaken is what we call residual uncertainty—for example, the outcome of an ongoing regulatory debate or the performance attributes of a technology still in development. But quite a bit can often be known despite this. In practice, we have found that the residual uncertainty facing most strategic-decision makers falls into one of four broad levels.

Level one: A clear enough future

The residual uncertainty is irrelevant to making strategic decisions at level one, so managers can develop a single forecast that is a sufficiently precise basis for their strategies. To help generate this usefully precise prediction of the future, managers can use the standard strategy tool kit: market research, analyses of competitors' costs and capacity, value chain analysis, Michael Porter's five-forces framework, and so on. A DCF model that incorporates those predictions can then be used to determine the value of alternative strategies.

Level two: Alternative futures

The future can be described as one of a few discrete scenarios at level two. Analysis can't identify which outcome will actually come to pass, though it may help establish probabilities. Most important, some, if not all, elements of the strategy would change if the outcome were predictable.

Many businesses facing major regulatory or legislative change confront level two uncertainty. Consider US long-distance telephone providers in late 1995,

as they began developing strategies for entering local telephone markets. Legislation that would fundamentally deregulate the industry was pending in Congress, and the broad form that new regulations would take was fairly clear to most industry observers. But whether the legislation was going to pass and how quickly it would be implemented if it did were still uncertain. No amount of analysis would allow the long-distance carriers to predict those outcomes, and the correct course of action—for example, the timing of investments in network infrastructure—depended on which one materialized.

In another common level two situation, the value of a strategy depends mainly on competitors' strategies, which cannot yet be observed or predicted.

For example, in oligopoly markets, such as those for pulp and paper, chemicals, and basic raw materials, the primary uncertainty is often competitors' plans for expanding capacity. Economies of scale often dictate that any plant built would be

In classic level two situations, the possible outcomes are discrete and clear but **hard to predict**

quite large and would be likely to have a significant impact on industry prices and profitability. Therefore, any one company's decision to build a plant is often contingent on competitors' decisions. This is a classic level two situation: the possible outcomes are discrete and clear, and it is difficult to predict which will occur. The best strategy depends on which one does.

Here, managers must develop a set of discrete scenarios based on their understanding of how the key residual uncertainties might play out. Each scenario may require a different valuation model. Getting information that helps establish the relative probabilities of the alternative outcomes should be a high priority. After establishing an appropriate valuation model for—and determining the probability of—each possible outcome, the risks and returns of alternative strategies can be evaluated with a classic decision analysis framework. Particular attention should be paid to the likely paths the industry might take to reach the alternative futures, so that the company can determine which possible trigger points to monitor closely.

Level three: A range of futures

A range of potential futures can be identified at level three. A limited number of key variables define that range, but the actual outcome may lie anywhere within it. There are no natural discrete scenarios. As in level two, some, and possibly all, elements of the strategy would change if the outcome were predictable.

Companies in emerging industries or entering new geographic markets often face level three uncertainty. Consider a European consumer goods company

deciding whether to introduce its products to the Indian market. The best possible market research might identify only a broad range of potential customer penetration rates—say, from 10 percent to 30 percent—and there would be no obvious scenarios within that range, making it very difficult to determine the level of latent demand. Analogous problems exist for companies in technologically driven fields, such as the semiconductor industry. When deciding whether to invest in a new technology, producers can often estimate only a broad range of potential cost and performance attributes for it, and the overall profitability of the investment depends on those attributes.

The analysis in level three is similar to that in level two: a set of scenarios describing alternative future outcomes must be identified, and analysis should focus on the trigger events indicating that the market is moving toward one or another scenario. Developing a meaningful set of scenarios, however, is less straightforward in level three. Scenarios that describe the extreme points in the range of possible outcomes are often relatively easy to develop but rarely provide much concrete guidance for current strategic decisions. Since there are no other natural discrete scenarios in level three, deciding which possible outcomes should be fully developed into alternative scenarios is a real art. But there are a few general rules. First, develop only a limited number of alternative scenarios—the complexity of juggling more than four or five tends to hinder decision making. Second, avoid developing redundant scenarios that have no unique implications for strategic decision making. Third, develop a set of scenarios that collectively account for the probable range of future outcomes and not necessarily the entire possible range. Establishing the range of scenarios should allow managers to decide how robust their strategies are, to identify likely winners and losers, and to determine, at least roughly, the risk of following status quo strategies.

Level four: True ambiguity

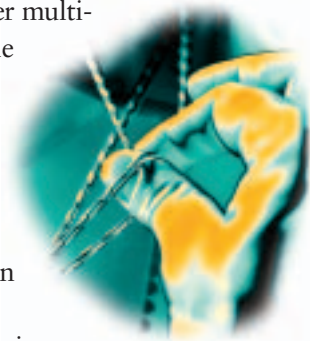
A number of dimensions of uncertainty interact to create an environment that is virtually impossible to predict at level four. In contrast to level three situations, it is impossible to identify a range of potential outcomes, let alone scenarios within a range. It might not even be possible to identify, much less predict, all the relevant variables that will define the future.

Level four situations are quite rare, and they tend to migrate toward one of the others over time. Nevertheless, they do exist. Consider a telecommunications company deciding where and how to compete in the emerging consumer multimedia market. The company will confront a number of uncertainties concerning technology, demand, and relations between hardware and content providers. All of these uncertainties may interact in ways so unpredictable that no plausible range of scenarios can be identified.

Companies considering major investments in postcommunist Russia in 1992 faced level four uncertainty. They could not predict the laws or regulations that would govern property rights and transactions—a central uncertainty compounded by additional uncertainty about the viability of supply chains and about the demand for previously unavailable consumer goods and services. Shocks such as a political assassination or a currency default could have spun the whole system toward completely unforeseen outcomes.

This example illustrates how difficult it can be to make strategic decisions at level four but also underscores the transitory nature of level four situations. Greater political and regulatory stability has turned decisions about whether to enter Russian markets into level three problems for most industries today. Similarly, uncertainty about strategic decisions in the consumer multi-media market will migrate to level three or to level two as the industry begins to take shape over the next several years.

Situation analysis at level four is highly qualitative. Still, it is critical to avoid the urge to throw up your hands and act purely on instinct. Instead, managers need to catalog systematically what they know and what it is possible to know. Even if it is impossible to develop a meaningful set of probable, or even possible, outcomes, managers can gain a valuable strategic perspective. Usually, they can identify at least a subset of the variables determining how the market will evolve over time. They can also identify favorable and unfavorable indicators of these variables—indicators that will let them track the market's evolution over time and adapt their strategy as new information becomes available. By studying how analogous markets developed in other level four situations, by determining the key attributes of the winners and losers, and by identifying the strategies they employed, managers can also identify patterns that show how the market may evolve. Finally, although it will be impossible to quantify the risks and returns of different strategies, managers should be able to identify what information about the future they must believe to justify the investments they are considering. Early market indicators and analogies from similar markets will help sort out whether such beliefs are realistic (*see* sidebar, “Postures and moves,” on the next page).



Strategy in level one's clear enough future

In predictable business environments, most companies are adapters. Analysis is designed to predict an industry's future landscape, and strategy involves making positioning choices about where and how to compete. When the underlying analysis is sound, such strategies by definition consist of a series of no-regrets moves.

Adapter strategies in level one situations are not necessarily incremental or boring. For example, Southwest Airlines' no-frills, point-to-point service is a highly innovative, value-creating adapter strategy, as was Gateway 2000's low-cost assembly and direct-mail distribution strategy when it entered the personal-computer market in the late 1980s. In both cases, managers identified opportunities, in low-uncertainty environments, that could be developed within the existing market structure. The best level one adapters

Postures and moves

A company can assume three strategic postures vis-à-vis uncertainty, and three types of actions can be used to implement that strategy.

Strategic postures: shaping, adapting, and reserving the right to play. Fundamentally, a posture defines the intent of a strategy relative to the current and future state of an industry. Shapers aim to drive their industries toward a new structure of their own devising. Their strategies are about creating new opportunities in a market, either by shaking up relatively stable level one industries or by trying to control the direction of the market in industries with higher levels of uncertainty. By contrast, adapters take the current industry structure and its future evolution as givens and react to the opportunities the market offers. The third strategic posture, reserving the right to play, is a special form of adaptation relevant only in levels two through four. It involves making immediate incremental investments putting a company in a privileged position—through superior information, cost structures, or relations between customers and suppliers—that allows the company to wait until the environment becomes less uncertain before formulating a strategy.

A portfolio of actions: big bets, options, and no-regrets moves. A posture is not a complete

strategy: it clarifies strategic intent but not the actions required to fulfill that intent. Three types of moves are especially relevant to implementing strategy under conditions of uncertainty. The first is big bets—large commitments, such as major capital investments or acquisitions, that will produce large payoffs in some scenarios and large losses in others. Not surprisingly, shaping strategies usually involve big bets; adapting and reserving the right to play do not. Options are designed to secure the big payoffs of the best-case scenarios while minimizing losses in the worst-case ones; classic examples include conducting pilot trials before the full-scale introduction of a new product, entering into limited joint ventures for distribution to minimize the risk of breaking into new markets, and licensing an alternative technology in case it proves to be superior to a current alternative. Companies reserving the right to play rely heavily on options, though shapers use them as well, either to shape an emerging but uncertain market as an early mover or to hedge big bets. Finally, no-regrets moves are just that—moves that will pay off no matter what happens. Managers often focus on obvious no-regrets moves such as reducing costs, gathering competitive intelligence, or building skills. However, even in highly uncertain environments, strategic decisions such as investing in capacity and entering certain markets can be no-regrets moves.

create value through innovations in their products or services or through improvements in their business systems, without fundamentally changing the industry.

It is also possible to be a shaper in level one situations, but that is risky and rare, since level one shapers, hoping fundamentally to alter long-standing industry structures and conduct, increase the amount of residual uncertainty—for themselves and their competitors—in otherwise predictable markets. Consider the overnight delivery strategy of Federal Express. When the company entered the mail-and-package delivery industry, a stable level one business, FedEx's strategy in effect created level three uncertainty for itself. In other words, even though the chief executive officer, Frederick W. Smith, commissioned detailed consulting reports that confirmed the feasibility of his business concept, only a broad range of potential demand for overnight services could be identified at the time. For the industry incumbents, such as United Parcel Service, FedEx created level two uncertainty. FedEx's move raised two questions for UPS: Will the overnight delivery strategy succeed? And will UPS have to offer a similar service to remain a viable competitor in the market?

Over time, the industry returned to level one stability but with a fundamentally new structure. FedEx's bet paid off, forcing the rest of the industry to adapt to the new demand for overnight services.

Strategy in level two's alternative futures

If shapers in level one try to raise uncertainty, in levels two through four they try to lower it and create order out of chaos. In level two, a shaping strategy is designed to increase the probability that a favored industry scenario will unfold. A shaper in a capital-intensive industry, such as pulp and paper, for example, wants to prevent competitors from creating excess capacity that would destroy the industry's profitability. Consequently, shapers in such cases might commit their companies to preempting competition by building new capacity far in advance of an upturn in demand, or they might consolidate the industry through mergers and acquisitions. But even the best shapers must be prepared to adapt. Consider the Microsoft Network (MSN). It began as a shaping strategy, but in the battle between proprietary and open networks, certain trigger variables—growth in the number of Internet and MSN subscribers, for example, and the activity profiles of early MSN subscribers—provided valuable insight into how the market was evolving. When it became clear that open networks would prevail, Microsoft refocused the MSN concept on the Internet. Microsoft's shift shows that choices of strategic posture are not carved in stone and underscores the value of maintaining strategic flexibility under uncertainty.

The best companies supplement their shaping bets with options that allow them to change course quickly if necessary. Because trigger variables are often fairly simple to monitor in level two, it can be easy to adapt or reserve the right to play.

Strategy in level three's range of futures

Shaping takes a different form in level three. If at level two shapers are trying to promote a discrete outcome, at level three they are simply trying to move the market in a general direction because they can identify only a range of possible outcomes. Consider the battle over standards for electronic-cash transactions. Mondex International, a consortium of financial-services providers and technology companies, is attempting to shape the future by establishing what it hopes will become universal e-cash standards. Its shaping posture is backed by big-bet investments in product development, infrastructure, and pilot experiments to speed customer acceptance. In contrast, regional banks, which don't yet have the deep pockets and skills necessary to set standards for the e-payment market but want to be able to offer their customers the latest electronic services, are mainly choosing adapter strategies. An adapter posture at uncertainty levels three or four is often achieved primarily through investments in organizational capabilities designed to keep options open (exhibit).

EXHIBIT

A regional bank confronts the uncertainties in electronic commerce

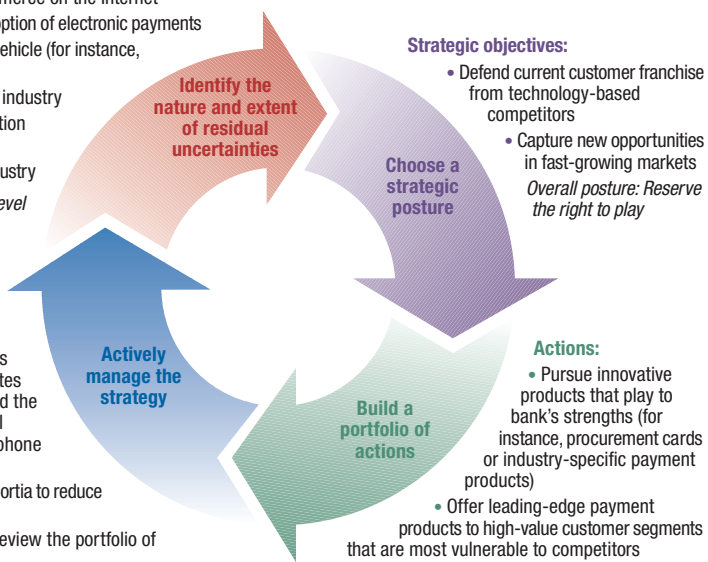
Key areas of uncertainty:

- Volume of electronic commerce on the Internet
- Time line for consumer adoption of electronic payments
- Type of primary payment vehicle (for instance, smart cards, e-cash)
- Emerging structure of the industry
- Degree of vertical integration among players
- Role of banks, others in industry

Determination: Bank faces level 3 and level 4 uncertainties

Strategy management:

- Monitor key trigger events (for instance, adoption rates for emerging products) and the behavior of nontraditional competitors such as telephone companies
- Participate in industry consortia to reduce uncertainty
- Routinely and frequently review the portfolio of actions available



Possible action: Form a small new-business unit to conduct R&D and monitor industry developments

Reserving the right to play is a common posture in level three. Consider a telecommunications company trying to decide whether to make a \$1 billion investment in broadband cable networks in the early 1990s. The decision hinged on level three uncertainties, such as the demand for interactive TV service. No amount of solid market research could precisely forecast consumer demand for services that didn't even exist yet. However, incremental investments in broadband network trials could provide useful information and would put the company in a privileged position to expand the business in the future should that prove attractive.

Reserving the **right to play** is a common posture for companies that face level three uncertainty


Strategy in level four's true ambiguity

Paradoxically, though level four situations involve the greatest uncertainty, they may offer higher returns and lower risks for companies seeking to shape the market than situations in levels two or three. Recall that level four situations are transitional by nature, often emerging after major technological, macroeconomic, or legislative shocks. Since no player necessarily knows the best strategy in these environments, the shaper's role is to provide a vision of an industry structure and standards that will coordinate the strategies of other players and drive the market toward a more stable and favorable outcome.

Mahathir Mohamad, Malaysia's prime minister, is trying to shape the future of the multimedia industry in Asia's Pacific Rim. This is truly a level four strategy problem: potential products are undefined, as are such factors as the players, the level of customer demand, and the technology standards. The Malaysian government is trying to create order out of this chaos by investing at least \$15 billion to create a Multimedia Super Corridor, a 750-square-kilometer zone, south of Kuala Lumpur, that will include state-of-the-art "smart" buildings for software companies, regional headquarters for multinational corporations, a "multimedia university," a paperless government center called Putrajaya, and a new city called Cyberjaya. By leveraging incentives such as a ten-year exemption from the tax on profits, the corridor has so far received commitments from more than 40 Malaysian and foreign companies, including such powerhouses as Intel, Microsoft, Nippon Telegraph and Telephone, Oracle, and Sun Microsystems. Mahathir's shaping strategy is predicated on the notions that the corridor will create a web of relationships between content and hardware providers and that this web will generate clear industry standards and a set of complementary multimedia products and services.

Shapers need not make bets as enormous as the Malaysian government's to be successful in level three or four situations. All that is required is the credibility to coordinate the strategies of different players in line with the preferred outcome. Netscape Communications, for example, didn't rely on deep pockets to shape Internet browser standards; instead, it leveraged the credibility of its leadership team in the industry so that other players thought, "If these guys think this is the way to go, it must be right for us."

Reserving the right to play is common but potentially dangerous in level four situations. A few general rules apply. First, look for a high degree of leverage. Say, for example, that an oil company is thinking of reserving the right to compete in China by buying an option to establish a beachhead and has a choice of maintaining a small but expensive local operation or developing a limited joint venture with a local distributor. All else being equal, the oil company should go for the low-cost option. Second, don't get locked into one position through neglect. Options should be rigorously reevaluated whenever important uncertainties are clarified and at least every six months. Remember, level four situations are transitional, and most will quickly move toward levels three and two. The difficulty of managing options in level four situations often drives players toward adapter postures. As in level three, such a posture in level four is frequently implemented by making investments in organizational capabilities.

The approach we have outlined offers a discipline for thinking rigorously and systematically about uncertainty. On one plane, this discipline makes it possible for companies to judge which analytic tools can and can't help them make decisions at various levels of uncertainty. On a broader plane, our framework provides a way to tackle the most challenging decisions executives have to make, offering a more complete and sophisticated understanding of the uncertainty they face and its implications for strategy. 



Is simulation better than **experience?**

Dory Bertsche, Christopher Crawford, and Stephen E. Macadam

Can companies take a shortcut to strategic change? Software-based simulations provide the key to speedy transformations.

Many corporations design major change programs in the pursuit of competitive advantage, only to find them frustratingly difficult to implement. That's because a successful program depends not only on a carefully conceived strategy, but also on a culture that accepts change. No matter how well designed a program or how committed a CEO, transformation efforts are likely to founder unless every individual in an organization is prepared to change his or her behavior. Managers in particular need to develop new skills to help other employees alter ingrained working habits.

Unfortunately, change does not come readily to adults. Lectures, training modules, and workshops may lay bare the mechanics of organizational change, but they are unlikely to revolutionize people's work practices. Most of the time, we learn only through experience. But everyday business is seldom conducive to such learning, since delays and the complexity of most

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companies tend to obscure the link between decisions and their consequences. Under normal conditions, managers are rarely able to see the full effect of their actions.

The impact of, say, hiring an extra sales representative may not become apparent for several months—by which time other managerial decisions will have muddied the picture. To make things worse, most managers possess only a limited perspective of their organization as a whole. And since their performance is usually judged on near-term results, they have little incentive to contemplate the long-term outcome of their decisions.

In recent years, simulations have gained popularity as a means of overcoming these barriers to learning. A deep body of theoretical literature asserts the power of simulations to change behavior by giving managers the opportunity to experiment, test their assumptions, and learn from their mistakes in a risk-free environment. But the literature has little to say about how the theory can be applied in real corporate situations.

In fact, over 60 percent of US corporations have used some sort of simulation. The bad news is that many of these efforts have failed to deliver genuine and lasting change. As a result, simulations are sometimes dismissed as having more entertainment than educational value. All the same, if they are properly designed, they can play a critical role in successful transformations.

Designing a simulation

A simulation may be run on a computer or played out on a board; in either case, its aim is to show participants how effective their decisions really are. In a good simulation, managers will be able both to see the results of their usual behavior and to experiment with the impact of new working practices. Many of the simulations available on the market are generic and thus of questionable value, since managers will find it hard to learn from games that do not relate to their own business. If the designer of a simulation is not able to forge a clear link with the dynamics of a real company, the players are unlikely to do so either.

A successful simulation will be tailor-made for a specific organization. Devising a customized simulation is a costly and time-consuming endeavor. The designer will need an intimate understanding of both the company and its industry in order to assess the fundamental drivers involved. To gain such an understanding, he or she might conduct interviews with senior and middle managers, perform industry analyses such as benchmarking, use economic models like cost curves, and research best practices.

Whatever the methods used, a thorough grasp of the industry's past causal relationships is vital. To fine-tune the simulation, the designer must rigorously test its parameters by inputting real-world decisions and checking the accuracy of the simulated outcomes. Although it must be comprehensive enough to capture the complexity of a real business, the simulation should not be so intricate that it cannot clearly show the results of a set of actions. Designers may be tempted to continue adding variables in the effort to mimic reality, but every extra variable obscures the lesson. The trick is to find the right balance, simplifying the decision-making process yet keeping it detailed enough to represent the range of each manager's responsibilities.

A properly designed simulation exhibits only the principal features of a business system: in other words, the variables that drive the core business dynamics. A simulated hiring process might, for example, reflect the time it takes to recruit a new employee and the way an individual's contribution improves with experience, yet exclude differences in performance among employees of equal tenure.

Participants will not want to stop: they will continue testing the system, **pushing the limits**, and improving their performance

The simulation must also establish a direct link between actions and performance to prevent participants questioning the validity of its results. There should be a logical connection between, say, the pricing and delivery terms of a bid and the prospect of its winning a customer order.

The more visible the logic, the better. If participants can understand not only their own area of expertise but also the dynamics of the entire business, they will realize how their decisions affect the rest of the organization. Simple devices like handwritten notes or poker chips representing employees, sales calls, or capacity can be passed between the players to help ensure transparency and reinforce learning.

The advantage of simulations based on board games is that they foster a team spirit that will help participants apply their learning in the real world. Though useful in their place, computer simulations can sometimes obscure the logic of causal relationships and isolate participants, depriving them of shared experiences.

Above all, simulations must be a challenge. At the end of a successful simulation, participants will not want to stop: they will be keen to continue testing the system, pushing the limits, and improving their performance. When their full attention has been captured in this way, learning will be automatic.

1. Crossfunctional communication

A converting division of a major pulp and paper company had been underperforming in a way typical of the industry, with a 2.5 percent return on capital, 50 percent capacity utilization, and mediocre productivity. To increase utilization and raise productivity, the company decided to transform itself by reorganizing, pursuing a new strategy, and replacing some managers. It set tough financial targets and resolved to improve the skills of nearly 40 general managers, each of whom ran a standalone profit center.

The situation

These managers needed a better understanding of the manufacturing costs and effects on productivity of different kinds of customer orders. Since the plant was now expected to run at full capacity, the whole plant team had to appreciate the interrelated dynamics of productivity, order flow, and capital and noncapital debottlenecking. The new strategy required that managers price orders to maximize the plant's cash-generating potential. This meant that its general manager had to balance the demands of his sales, production, and customer service managers.

Previously, managers had believed that the higher the price of an order, the higher its profitability. It was hard for them to grasp that price is not the sole driver of profitability, and that a complex set of factors like cost and capacity also play an important role. But these were things they had to assimilate if they were to make the plant more profitable. Crossfunctional information sharing and decision making were a crucial part of the learning process.

Though the change plan was well designed, executing it proved a tough challenge. Accustomed to a fair degree of autonomy, the general managers were hardly likely to respond positively to a mandate from division headquarters. Something was needed to help them understand the dynamics of the new strategy and build confidence in their ability to implement it.

The simulation

The company had a simulation designed with a board that gave a transparent view of the plant's business system from sales to production. The four members of the plant's management team—sales, customer service, production, and general managers—controlled sections of the board corre-

The case studies in the sidebars, above and on the following pages, illustrate how simulations have changed managers' behavior and improved business performance in three real companies.

sponding to their functional areas. Each round of the simulation represented one month's operations.

Participants were asked to make decisions that would have major repercussions for the plant's performance. An interactive computer stood in for the marketplace and assessed bids for new orders, indicating which accounts had been lost and which won.

Lessons learned

By collapsing time and space and discounting the influence of unexpected external events, the simulation was able to show participants the impact of their actions immediately and directly. It allowed them to work out solutions to their problems and consider delays in the system when making decisions. Players' results in terms of contribution, volume, and productivity were plotted on large charts for all to see at the end of each round.

The design of the board game highlighted inefficiencies in the system, demonstrated the need for change, and pinpointed improvement opportunities. Players gradually realized that some customer orders were more profitable than others despite being priced below average—and that in order to identify and capture these orders, they had to share information.

The simulation also gave participants an insight into the outlook and decision-making processes of other managers at the plant. Before, they had focused exclusively on their own functions, paying little attention to how their actions influenced the plant's overall performance. The simulation forced them to consider the plant as a whole in both the short and the long term. They learned the importance of a coordinated strategy and a shared understanding of current performance and ultimate goals.

This new knowledge led to a breakthrough in the way the plant management teams worked together. They began to hold regular planning meetings to decide which business to target, how to bid for (and retain) it, and what kind of plant improvement projects to undertake.

Since the simulation, the division has made impressive progress. Throughput increased by over 7 percent per year for four consecutive years. Capacity utilization grew by 25 percent over the same period, and profitability more than tripled. Best of all, managers are now confident that their decisions have a much greater effect on performance than external factors ever could.

When to play

Simulations do not work in every situation. Since creating a tailored simulation is costly and time-consuming, and there are limits to the number of real-world complications that any simulation can incorporate, it is crucial to identify the kind of business that will derive most benefit.

2. Maintenance

Simulations can help managers understand the complex, sometimes counterintuitive lessons that business dynamics modeling reveals.

The situation

A major electric utility developed a sophisticated business dynamics model to identify the primary levers for upgrading performance at its plants. Senior management decided that the numerous improvement opportunities identified by the model could best be explained to plant managers via a simulation.

The simulation

Using a game board, participants had to operate an imaginary generation plant. Careful maintenance of its machinery was vital to maximizing throughput—and, ultimately, revenue. Players took the roles of planner, operations manager, and engineering manager, deciding how resources should be allocated between machines and what kind and quality of maintenance activities should be performed.

Lessons learned

Though each operated autonomously, partici-

pants learned that open communication and a clear strategy helped the team achieve the best results. Their strategy was to focus maintenance efforts on the machines that had the greatest impact on overall throughput or were most in need of repair.

The simulation taught participants three things in particular. First, the only way to improve the performance of the whole system was to identify bottlenecks and then eliminate them by invoking a well-organized process. No single action would suffice.

Second, high-quality maintenance was vital. Managers had previously been tempted to do substandard maintenance work so as to get broken machines back online as soon as possible. The simulation showed them that better maintenance actually reduces machine failures.

Third, although high-quality maintenance consumed more money and time, it would cut overall maintenance costs by reducing the frequency of machine failures, and raise revenues by preventing interruptions in power generation.

The maintenance game can be applied in any operations-intensive company in which maintenance is a critical issue.

Simulations are especially valuable when the decisions of many people have to be coordinated before an organization can be effective. Another criterion is a degree of dynamic business complexity, whereby gaps in time and distance have the potential to create misunderstandings between managers. In addition, delays between decisions and their effects should be inherent in the real business system so that they can be collapsed in its simulated representation.

Done well, simulations can bring enormous benefits. Indeed, corporations using traditional management training programs may be wasting time and money by comparison. A well-designed simulation will yield much better

3. Industry restructuring

The senior management team of another electric utility had to face up to the restructuring of power generation, which was about to be transformed from a regulated monopoly into a fiercely competitive commodity industry.

The situation

Competition meant the company would have to sell its output on the open market, so it would have to reconsider its pricing policy. To gain a deeper understanding of the new environment, senior managers took part in a simulation.

The simulation

Each of the thirteen participants represented one generating unit with fixed capacity. Combined, this capacity exceeded market demand. On each “day” of the simulation, the generating units submitted pricing bids to PoolCo, a body acting as an intermediary between buyers and sellers. Played by a computer, PoolCo ranked the bids by price and set the market price at the marginal bid that would meet market demand. All the units whose bids fell at or below the market price received that price for their energy; the rest stood idle, losing money because of their fixed costs.

The simulation consisted of 10 “days” of bidding, during which no conferring was allowed. At the end of each day, players were shown their cash balances, which summed up their fixed costs and margins, if any. By the end of the simulation, several players had gone bankrupt.

Lessons learned

Taking part in the simulation helped managers understand what competition entailed and how the commodity nature of electric energy would affect market price. They learned that competitors were likely to price close to their marginal production cost to ensure they would not stand idle. They also discovered that marginal cost was the main factor determining how competitive they could be.

The simulation demonstrated that fixed costs absorb cash supplies even when a generating unit is not running. Above all, it convinced players that they needed to be low-cost producers to compete in a commodity market.

results and prove more cost-effective, despite the initial expense of design and facilitation.

Simulations are also an ideal way of leveraging the experience of senior managers. When best practices developed over years are built into a simulation, multiple participants gain.

Until recently, few companies would have considered running a simulation designed specifically to meet their needs. Today, however, the software needed to create and support simulations is readily available, user-friendly, and continuously

improving; moreover, top-level executives are growing more receptive to new approaches to implementing strategy. For their part, senior and middle managers are seeing their responsibilities expand in scope, and they are becoming more aware that doing the job properly means understanding and managing business dynamics issues. Once senior managers recognize their true power, simulations may come to play a crucial role in every successful corporate transformation. *MQ*

A close-up photograph of a hand holding a string of pearls. The hand is positioned palm-up, with the fingers slightly curled around the string. The pearls are white and round, and the string is a thin, dark cord. The background is a soft, out-of-focus teal color.

Games

managers should play

Hugh G. Courtney

Game theory can help managers make better strategic decisions when facing the uncertainty of competitive conduct. If you don't change your game to gain advantage, one of your competitors will.

Call it **revenge of the nerds if you like**, but many high-school chess club presidents are landing the most coveted strategic-planning positions at major corporations. Chess players realize that good strategic decisions require you to take into account the likely moves and countermoves of other players. They study their competitors' approaches to the game and identify the likely sequence of moves that will follow any particular move they make. By looking forward and reasoning backward, they drive the game toward a checkmate victory.

This ability to look forward and reason backward is enormously valuable to strategic-decision makers. When a company builds a new chemical plant or paper mill, its profitability will often turn on whether or not competitors add capacity as well. Similarly, the success of new marketing or pricing strategies depends on whether competitors replicate them. In oligopoly markets, it is hard to identify a strategic decision that isn't influenced by

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the retaliatory countermoves it sets off. The best business strategists must be skilled at predicting future rounds of competitive conduct.

Yet this is easier said than done. Uncertainty often surrounds competitive conduct, and many managers either expect the companies they compete against to engage in the kind of competitive behavior they see as normal or make some other educated guess. But such assumptions can be dangerous. Managers unwittingly set off value-destroying price wars, get buried when incumbents retaliate in markets those managers have attempted to enter, and cannibalize their own core markets because they have either ignored or made the wrong guesses about the reactions of competitors.

The good news is that game theory provides a structured process that can help managers make better strategic decisions when faced with the uncertainty of competitive conduct. Game theory isn't new; economists, mathematicians, and political scientists have been developing it for more than 50 years. What is new is an increased emphasis on game theory as a practical tool that real-world managers can use for making strategic decisions. For example, most participants in the recent US personal communications services (PCS) spectrum auctions hired game theorists to develop their bidding strategies. What follows is a systematic game theory process that has been applied successfully in more than 100 company situations in the past five years.

The rules of the game

A good game theorist gets inside the heads of other players to understand their economic incentives and likely behavior. To do this, you should focus on five key elements of competitive intelligence.

Define the strategic issue

What decision are you trying to make: pricing, capacity, market entry? How is it related to other strategic decisions being made in the market? If you are trying to make a decision on capacity investment, for example, it is vital that you know whether others in the market are also considering entering or leaving it.

Determine the relevant players

Which players' actions will have the greatest impact on the success of your strategy? A common mistake is to assume that all your strategic games are played against competitors and that there is always a winner and a loser. Many of your strategic decisions turn on the actions of other players in the market—suppliers, distributors, providers of complementary goods—and

“win-win” outcomes are attainable. For example, a computer hardware manufacturer attempting to stimulate demand for its product must focus on the economic incentives of software producers to provide products consistent with its operating system. A thorough understanding of these incentives allows the hardware producer to structure contracts, joint ventures, or alliances that make both parties better off.

Identify each player’s strategic objectives

Textbook game theory commonly assumes that the players seek rational, profit-maximizing objectives. However, in real business games players often base decisions, at least in the short run, on criteria such as market share or growth. It is extremely important to get such criteria right. If you make the decision to enter a new market in the belief that the incumbent players are profit maximizers when they are really driven primarily by short-run market share objectives, you might suffer unexpected losses when the incumbents slash prices to maintain share.

In real business games, players often base decisions, at least in the short run, on criteria such as **market share or growth**

Identify the potential actions for each player

For each player in the game, including yourself, develop a list of potential actions on the strategic issue. Generate this list from the perspective of the other players, not just your own. What options might they be considering? How will they evaluate these options? Don’t assume that you and your competitors have the same set of strategic options. Competitive role-playing exercises involving external experts and your management team can help generate these lists.

Determine the likely structure of the game

Will decisions be made simultaneously, in isolation, or sequentially, over time? If sequentially, who is likely to lead and to follow? Will this be a one-shot decision, or will it be repeated? Most business games are repeated, sequential games; pricing decisions, for example, are made over and over in sequence in most markets.

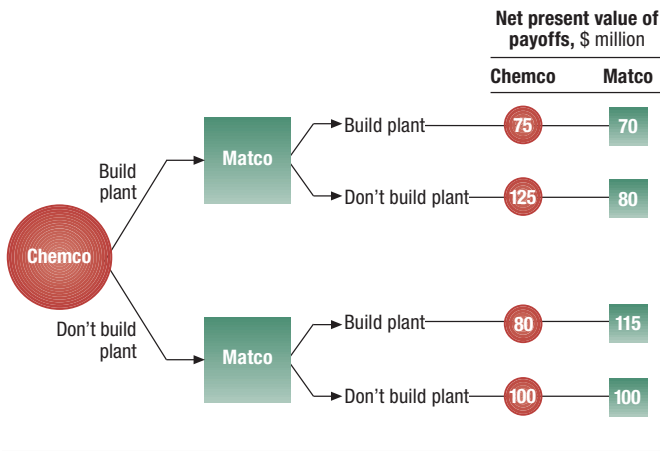
Playing the game: Chemco vs. Matco

These five elements of competitive intelligence define your business game, but more work is generally required before such information can be used to “solve” it. A thorough economic analysis of the industry—including market

research and estimates of your competitors' costs and capacity—is usually needed to estimate the payoffs of different strategies for different players, given their strategic objectives. This information is summarized in a payoff

diagram (exhibit) and can be used to guide strategic decision making.

EXHIBIT

To build or not to build? Chemco vs. Matco

The exhibit is based on a duopoly chemical market case in which two competitors—call them Chemco and Matco—are each deciding whether to build a new plant. It is unclear which will be the first to reach a conclusion, but the decisions will certainly

be made sequentially; for simplicity, this diagram assumes that Chemco moves first. Each company's long-term objective is to maximize profits, so the numbers in the payoff diagram represent calculations of net present value (NPV). For example, if neither builds a new plant, each player should earn an NPV of 100.

Chemco ought to look forward and reason backward to make its decision. If Chemco builds a new plant, the payoffs suggest that Matco will not; these decisions will earn Matco an NPV of 80 and Chemco an NPV of 125. However, if Chemco decides not to build the plant, Matco should choose to build instead; this will earn Matco and Chemco NPVs of 115 and 80, respectively. The diagram also shows that while it is profitable for one new plant to be built in the industry, two new plants will lead to significant excess capacity, deep price discounting, and lower profits for both players.

What strategic insights can be learned from this exercise? First, it illustrates the first-mover advantage in the game; by making a commitment to new plant capacity before Matco does, Chemco can influence Matco's incentives to build and avoid a dismal outcome in which both players bring on new plants. It also demonstrates the symmetry of the first-mover advantage: Matco has its own incentives to move first, suggesting that Chemco must credibly commit itself—perhaps through real bricks and mortar—to new capacity as soon as possible. In addition, the case demonstrates how important

it is for both players to understand the limited prospects for growth in market demand. If Matco believes, erroneously, that the market can profitably support both new plants, its plans to expand capacity won't be influenced by Chemco's commitments to build.

Learning from the game

Many business games are more difficult to define and solve. In fact, this duopoly chemical case was more complicated than shown here, because capacity decisions were repeated over time, and Matco and Chemco competed across a broad range of

product lines. Some economists even argue that real-world business games are so complex, and their solutions so sensitive to model assumptions, that game theory is irrelevant for business decision making. This is not so. First, a

surprising number of oligopoly strategy problems can be modeled as simple, quantifiable games: pricing, capacity management, marketing, new-entry, bidding, and contract design problems are particularly common.


Game theory can help you play your current game better, but often its greatest value is to help players **define new games**

Second, game theory applications need not identify unique, robust equilibrium solutions to be valuable strategic-decision-making tools. Since the process itself forces managers to think explicitly about the incentives and likely moves of other players, it can generate a breakthrough in strategic insight even when the game can't be modeled explicitly. Qualitative role-playing exercises and structured game theory discussions may generate enough insight to lead to a change of direction on new-entry, capacity addition, pricing, and other fundamental strategic decisions.

Third, and perhaps most important, while attempting to model the current industry, game managers invariably develop insights about how to change games to drive more favorable outcomes. Unlike board games such as chess, business games don't have fixed rules, players, and potential moves. Although game theory can help you play your current game better, its greatest value often comes from helping players define new games. In some cases, for example, game theory predicts that current market conditions make price wars highly likely because customers switch easily between competitors. The current game-modeling exercise identifies the need to change the game by implementing customer loyalty programs, such as



frequent-flyer discounts, that create value for customers and companies and decrease incentives for destructive price competition.

Apply game theory the next time you need to make a strategic decision about which competitive interactions matter. Look forward and reason backward to generate insights about how to play your current business game more successfully. At the same time, make sure you leverage these insights to define better games to play. If you don't change your game to gain advantage, one of your competitors will, and there is not much value in being the best chess player when everyone else is playing checkers. 



Bringing discipline to strategy

Kevin P. Coyne and Somu Subramaniam

Are you making three very big—and often very bad—assumptions? Don’t assess uncertainty unless you are willing to abandon your favorite formulas. Bets and options may be more important than positioning choices.

Although strategy today is a demanding, complex, and subtle discipline, you would never know that from reading the management journals and business best-sellers of the past five years. Each season brings a new crop of experts proclaiming that their frameworks—core competencies, customer retention, management ecosystems, strategic intent, time-based competition, total quality management, “white spaces,” managing chaos, value migration—are definitive. These solutions sometimes prove an exquisite fit, but just as often they offer only a mediocre approximation.

Nonetheless, managers reach out to these new theories because the classical microeconomics-based model of strategy is inadequate in a growing number of situations. Consider some recent examples:

- A telco executive must make a \$1 billion “yes or no” decision on whether to invest in a new network technology to provide new services to customers.

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One best-practice market research survey predicts a return on investment of 25 percent; a second, equally valid, forecasts minus 25 percent. What should that executive do?

- How should executives at a software firm deal with a large customer that is also the firm's chief competitor—and one of its biggest suppliers?
- How should the chief executive officer of a credit card company think strategically about positioning when segments and value propositions come and go every six months?
- A large regional bank recognizes that to succeed on the retail level, the bank must take the lead by discovering huge but as yet unrecognized customer needs. How can it embark on such a strategy?

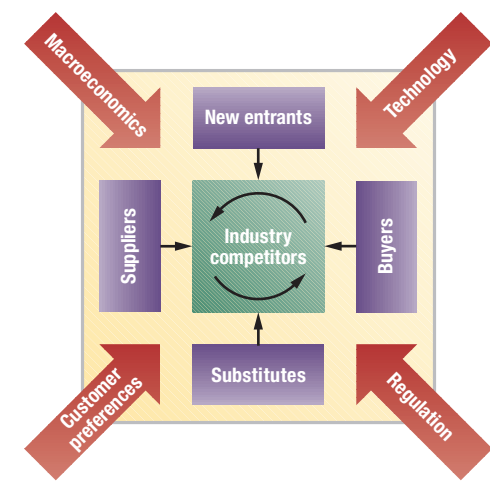
All of these cases lie outside the conditions for which the traditional model of strategy was designed. In fact, our work suggests that up to 50 percent of the strategic problems faced by large companies lie outside those conditions. Equally, no single new framework can address them all.

Therefore, it is time for a new approach to strategy. The past 20 years have seen a wider range of business environments emerge than ever before. No

single strategy prescription can be appropriate in each of them. What is needed is a more robust business model that can handle a much broader set of circumstances and suggest when and how specific theories should be used.

EXHIBIT 1

The Porter model of industry



The shortcomings of the traditional approach

At the heart of the traditional strategy framework lies a microeconomic model of industry. Exhibit 1 illustrates the model's popularized form: the Porter model, which combines exogenous forces (such as technology and regulation) that act on an industry

with endogenous ones. More important, it makes three tacit but crucial assumptions. First, an industry consists of a set of unrelated buyers, sellers, substitutes, and competitors that interact at arm's length. Second, wealth will accrue to companies that can erect barriers against competitors and potential

entrants; in other words, structural advantage is the source of value. Third, uncertainty is low enough to permit you to make accurate predictions about the participants' behavior and to choose a strategy accordingly. Even if any one of these assumptions were correct, the likelihood of all three being so would be low. Let us examine their validity.

Industry structure

The traditional microeconomic model is based on a “rational” industrial structure in which each player competes at arm's length not only with its rivals but also with its customers and suppliers for control of economic rents. However, at least two other industry structures are commonly found: codependent systems and privileged relationships. In both of these structures, conduct differs from the sort prescribed by the traditional model—and anyone blindly applying the standard microeconomic rules will get into trouble.

Codependent systems are cross-industry structures such as alliances, networks, and economic webs. The most novel but increasingly widespread of these is the economic web: a set of companies using a common architecture to deliver independent elements of an overall value proposition that grows stronger as more companies join the set (for example, the “Wintel” and Apple webs in the computer industry).¹ The fortunes of any player in a web depend both on the success of the web as a whole and on how well that player uses its own position of influence within the web. The strategic challenge is to strike the right balance between the prosperity of the web and that of individual participants; greedy players can harm themselves as well as wreck the web.

High-tech industries such as computers, telecommunications, software, and multimedia are moving toward web structures, but evidence of webs can also be seen in older sectors such as automobiles, health care, forest products, and financial services.

Privileged relationships are structures within which firms single out other firms in the same market for special treatment because of a financial interest (Korean *chaebols*, Mexican *grupos*, and Japanese *keiretsus*), friendship, trust, or ethnic loyalty. Governments create similar business relationships in the name of national defense or pride.

Consider also the Indians and overseas Chinese, who have networks of family-owned corporations in which relationships among members are

¹For a detailed examination of web industry structures, see John Hagel III, “Spider versus spider,” *The McKinsey Quarterly*, 1996 Number 1, pp. 4–18, and *On Strategy*, a *McKinsey Quarterly* anthology, 2000, pp. 71–80.

clearly privileged. In such situations, the actions of network members must be understood in the light not only of their own strategies but also of the strategy of the whole network and of the individual members' positions in the family hierarchy.

Source of advantage

The traditional microeconomic model assumes that wealth will accrue to businesses that have a structural advantage over competitors and potential industry entrants. In major sectors of the economy—telecommunications, basic materials, transportation—this is still true. But competitive advantage can also be built on two other foundations.

Frontline execution. Companies in some industries win by consistently outperforming competitors in the execution of day-to-day tasks. In commercial lines property-and-casualty insurance, for instance, a few players have demonstrated that superior underwriting and claims handling can over-

whelm any structural advantage a competitor may have.

Insight and foresight. Some firms create wealth by possessing knowledge or having insights that others lack. The knowledge may lie in scientific or technical expertise (Hewlett-Packard's continuing superiority

in printers), pattern recognition (the ability of some banks to make consistent profits by taking short-term positions in foreign exchange), or sheer creativity (Disney's unmatched success in animated films).

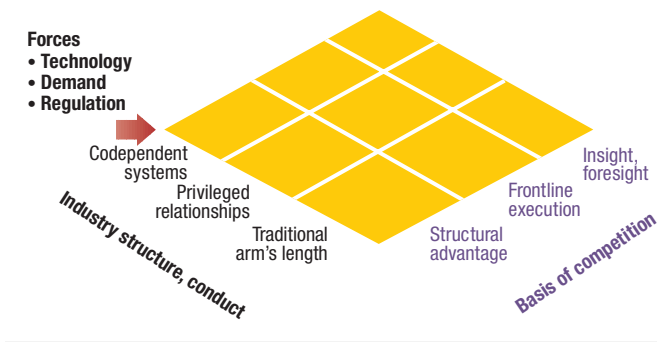
If the three (that is, one old and two new) sources of competitive advantage are brought together with the three (again, one old and two new) industry structures mentioned earlier, the result is a new model that better reflects the rich strategic possibilities of today's industrial landscape (Exhibit 2).

Levels of uncertainty

The traditional model assumes that uncertainty in an industry is low enough for executives to make reasonably accurate predictions on which to base strategy. In reality, the future is usually harder to judge. When faced with

EXHIBIT 2

A new industry model



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The traditional model assumes that uncertainty in an industry is low enough for executives to make reasonably accurate predictions on which to base strategy. In reality, the future is usually harder to judge. When faced with

uncertainty, executives tend to leap to extremes. Some simply pretend that uncertainty does not exist; others see it, but it paralyzes them.

What should strategists do when the result (at least in part) of their situation analysis is “I don’t know, and no amount of good analysis will tell me”? Certainly, they should not just resort to scenario planning and recommend options. The secret of devising successful strategies lies in ascertaining just how uncertain the environment is. Four levels of uncertainty can be identified.

At level one, the traditional microeconomic model still holds, and strategists can develop a single useful prediction of the future. This means, not that there is no uncertainty, but rather that analysis will be sufficiently robust to allow a clear strategic direction to emerge. Appropriate sensitivity analysis can be performed after a course of action has been determined. Consider the fast-food industry, where change over the past decade has been evolutionary, allowing companies to base their strategies on predictions.

At level two, analysis shows that the future will follow one of a few discrete scenarios, though it cannot predict which one. In late 1995, for example, the outline of the pending US telecommunications legislation was clear; what was not clear was whether it would pass Congress. In this case, strategy could be built around two possible scenarios. Generally speaking, since the number of scenarios is usually small at this level of uncertainty, strategy can be determined analytically.

At level three, continuous uncertainty prevails. Though there are only a few dimensions of uncertainty, analysis can’t reduce the future to a limited number of discrete scenarios. Instead, the reality might lie anywhere along a continuum for each dimension. Many new technologies, for instance, face uncertainty over the rate of market acceptance.

At level four, there is true ambiguity: a number of dimensions of continuous uncertainty. Consider the case of a multinational deciding whether to invest in Russia in 1992. In addition to an unusual degree of uncertainty over demand, the company would have faced uncertainty about the laws that would govern contracts, about who would have the power to enter into them, and even about whether current suppliers and distributors would remain in business.

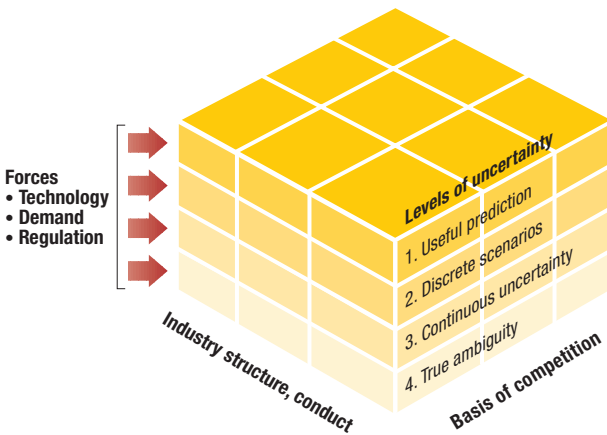
These graduated levels of uncertainty govern the type of situation analysis needed. At level one, traditional frameworks are entirely appropriate. At level two, scenario planning, quantitative game theory, and options-pricing frameworks will be needed to help determine strategy. At levels three and four, qualitative game theory, latent demand analysis, and evolutionary models will be required.

When this concept of uncertainty is combined with the new industry model illustrated in Exhibit 2, the result is a new approach to situation analysis (Exhibit 3). This new approach takes account of the varying levels of uncertainty about the external forces acting on an industry, their effect on it, and its

interactions with itself. It also shows that the level of uncertainty can rise and fall over time.

EXHIBIT 3

Situation analysis



A new definition of strategy

Traditionally, strategy was defined as an integrated set of actions leading to a sustainable competitive advantage. This definition continues to work well in traditional industry structures character-

ized by a low degree of uncertainty. Beyond this limited context, however, we believe that a broader definition is needed. For example, in situations of high uncertainty, strategy is likely to call for more than a single integrated set of actions; it will probably require investment in a variety of options, small bets, and so on. The new definition: strategy is a handful of decisions that drive or shape most of a company's subsequent actions, are not easily changed once made, and have the greatest impact on whether a company meets its strategic objectives.

To be specific, this handful of decisions consists of selecting the company's strategic posture, identifying the source or sources of competitive advantage, developing the business concept, and constructing tailored value delivery systems.

Let us look at each of these decisions in detail.

Strategic posture

Depending on the extent of its ambition, a company can adopt one of three strategic postures: adapting, shaping, or reserving the right to play.

Adapting is the most common choice. A company analyzes its environment and then commits itself to a set of actions that conform to that environment. Although different levels of uncertainty might require different actions, the

mind-set is always one of seizing known opportunities and responding to known threats.

Shaping means attempting to change the environment to benefit the firm. Shapers invent entirely new products for which demand is only latent, alter the basic structure of their industry, or develop entirely new ways to compete. They believe they can influence the commercial world so profoundly that a detailed analysis of their current environment is scarcely relevant. This belief may rest on the power of an idea or on consistently superior capabilities. Either way, shapers depend on their own ability to change their external circumstances.

Shaping turns out to be attractive in some pretty counterintuitive cases. In highly uncertain environments, for instance, one would normally be tempted to hedge and avoid commitment. Yet for some strong players, this might be the best time for a bold move. Imagine a group of frightened children lost in a forest. The best strategy might be for the biggest kid to shout, “I know the way. Follow me!” Even if that kid didn’t really know the way and it took hours to get out of the forest, the group would stay together. Similarly, if there is uncertainty about the direction of an industry, a bold shaping posture may be the best option.

That said, shaping isn’t always advisable. Of the three postures, it offers the highest reward but also the highest risk. It is difficult to create massive wealth without being a shaper; think of the steel and railroad barons of the 19th century, Thomas Edison, Microsoft, and Netscape. But think too of Zap Mail, Microsoft Network, Betamax, and the English Channel Tunnel.

Reserving the right to play, the final posture, is a noncommittal one that consists of doing the minimum required to keep open the possibility of becoming a strong player later. It is not the same thing as taking no action at all; rather, it is an investment in learning.²

Underlying these three postures are fundamental differences in mindset. However, it would be wrong to oversimplify; companies like Microsoft seem able to blend elements of all three, and a company’s choice of posture may change as conditions do. In general, though, most companies should aim to develop a single dominant posture.

Competitive advantage

Earlier, we noted three different bases of competitive advantage: structural advantage, frontline execution, and insight coupled with foresight. Each, of course, has many subvariants, such as core competencies, time-based

²See Mehrdad Baghai, Stephen C. Coley, and David White with Charles Conn and Robert J. McLean, “Staircases to growth,” *The McKinsey Quarterly*, 1996 Number 4, pp. 38–61.

competition, and hustle. And new sources of competitive advantage may well emerge in the future. Although companies have many tools for selecting a source of advantage, they seldom realize how this choice can “lock them in” in unexpected ways.

A structural advantage comes about when, for structural reasons, competitors cannot copy a company’s value proposition. The company is then necessarily locked into a particular set of customers or needs. If these change, the strategy may become obsolete.

Frontline execution strategies are usually even more locked in, committing an entire organization to adhere to a set pattern of performance. One company’s program to build execution skills incorporated 65 separate subprograms to change its organization structure and its hiring and pay practices and to introduce new information systems, policies, and procedures. Not surprisingly, the company had little flexibility to adjust its strategy if conditions changed.

Insight and foresight might appear to be a more flexible basis for competitive advantage, since they do not entail locking a company into a single value proposition in terms of its products or markets. However, there is often lock-in at the input level: a company that is dependent on one source of insight can be vulnerable if it becomes less valuable. Moreover, companies can create wealth only if enough customers buy their goods or services, so insight and foresight must usually be combined with structural advantage or frontline execution if they are to create value.

Business concept

Translating postures and sources of advantage into specific strategic decisions involves more than simply choosing your positioning. Any complex business concept will probably be constructed from four types of building blocks: big bets, real and financial options, no-regrets moves, and safety nets.

Big bets are major commitments to a course of action that may pay off handsomely in some situations but produce dismal results in others. Real and financial options give a company flexibility, either financially or operationally. Financial options are well understood. Real options are investments, in tangible capital goods or operating expenses, that are made to learn more or to create flexibility (for instance, installing machinery that can work on a variety of raw materials). No-regrets moves make sense no matter what eventually happens. And safety nets are options specifically designed to protect a company against a big bet going bad.

Consider the case of a large specialty chemical company that faced uncertainty over which of two new technologies its industry would accept. If

the company had decided to make a major investment in one of the two, it might have been able to convince other players that its choice was superior and so shape the industry's technology base. This constituted a big bet: if the company failed to convince the others, its plant would be stranded. It could have complemented the bet with no-regrets initiatives, such as reduced costs and programs to improve sales, and added a safety net provision by planning to retrofit the second technology if the bet proved wrong.

The management at this company actually chose a strategy consisting of several real options: it formed an alliance with a new entrant using one of the new technologies while retrofitting several of its own small plants with the other. It took several no-regrets measures but didn't need a safety net.

Tailored value delivery systems

Big bets, real options, and so on are the building blocks from which new strategies are assembled. For each of these building blocks, companies need to construct separate value delivery systems. Imagine that a company facing a choice between two technologies elects to buy real options to cover both of them. Real options, unlike financial options, are investments in organizations and people. When these options turn out to be poor, a significant human and organizational cost is attached to unwinding them. Thus, strategies capable of dealing with the complexities of today's business environment are likely to call for the ability to create, grow, and manage multiple value delivery systems simultaneously.

Evolving strategy

Besides making the four strategic decisions outlined above, managers must learn to recognize the dynamics inherent in every situation and manage the building blocks of strategy effectively over time.

Traditionally, strategic management has meant little more than staying the course. Today, however, it means actively managing the way strategy unfolds month after month, year after year. That might entail drawing up contingent road maps in which the attainment of specific milestones clarifies the right strategy; it might equally mean recognizing that strategy will have to evolve as industry conditions do.

Just as the new framework changes what is required of strategy, it changes the strategy development process—especially who actually develops strategy and when they do it. Where there is little uncertainty, and structural advantage is critical (for instance, capacity decisions in the chemical industry), a traditional strategy development process, led by senior line management and conducted annually, can work well. In industries with low levels of uncertainty

where frontline execution is the source of differentiation, bottom-up processes could be the right choice.

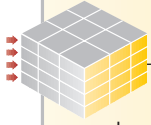
By contrast, where uncertainty is high, weblike structures are in the ascendant, or a company aspires to be a shaper, the strategy development process will probably need to be totally revamped. In fact, strategy development might not be a separate process at all. Instead, direction setting by the CEO or business leader would be combined with extremely short communication lines to the workers in the marketplace and with real-time rather than periodic adjustment of the strategy.

How does this new approach to strategy relate to concepts that have been proposed by others? We believe that, like the traditional model, most of these concepts are appropriate only in specific situations within the broader picture (Exhibit 4). The customer retention framework, for example, is really valid only in frontline execution industries with limited uncertainty. Other companies that base their strategy on customer retention will be focusing on minute improvements to a value proposition that competitors could

blow away if the environment changed.

EXHIBIT 4


Comparison with other strategy concepts



Structural advantage	Frontline execution	Insight, foresight	Levels of uncertainty
Traditional microeconomics	Customer retention	Stretch and leverage	1. Useful prediction
Increasing returns	Core competency execution	Hustle	2. Discrete scenarios
		Opportunity recognition	
		Learning organization	3. Continuous uncertainty
			4. True ambiguity

Basis of competition

We have examined more than 25 separate strategy concepts proposed over the past few years. Close examination of any of these strategies reveals how their underlying assumptions limit the circumstances in which they can be used. Consequently, strategists should be familiar with all of these concepts but

not biased toward any of them. The focus should be narrowed to a specific submodel only after it has been determined which strategy is most appropriate to the situation. In today's diverse business world, strategists must take into account a wider range of industry structures and bases of competitive advantage, as well as a higher degree of uncertainty. Admittedly, this is more complex than looking for keys under a guru's lamppost. But if any area of business deserves the extra effort, surely it is strategy. 



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