DYNAMIC COMPETITIVE SIMULATION: WARGAMING AS A STRATEGIC TOOL

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In his 1994 book, "The Rise and Fall of Strategic Planning" (Free Press), Henry Mintzberg argues that the current method of creating strategy--strategic planning--does not work. It fails, he maintains, because it incorrectly assumes that discontinuities can be predicted, that strategists can be disconnected from the operations and that strategy-making itself can be formalized. Furthermore, he believes that traditional planning will not lead to strategy because strategy is about synthesis, which brings ideas together, and planning is about analysis, which seeks to decompose the ideas into their constituent parts. Mr. Mintzberg's solution to this problem is to emphasize informal learning and personal vision. In his view, strategic ideas must bubble up from the operations organization. Yet planners will still have a role in Mr. Mintzberg's world, and he offers several models to follow, depending upon the situation.

There is another answer to the problem posed by Mr. Mintzberg, an answer that has proven dozens of times that there is a way to formulate strategy that deals with discontinuities, involves both planners and managers and makes a virtue of an informal approach, yet also has a well-tested framework and methodology. This approach is wargaming, which we call Dynamic Competitive Simulation. SM

Simulation does all of the things that Mr. Mintzberg says strategic formulation should do. It synthesizes learning into a vision of the direction that the business should pursue. It acts as a catalyst, involves intuition and creativity and delivers an integrated perspective of the enterprise. Furthermore, along the way, it builds the enthusiasm of both managers and planners for the journey they will ultimately take together.

HISTORY OF WARGAMING

Commercial simulations grew out of military wargaming, which has been used to prepare military leaders for unforeseen circumstances on the battlefield since ancient Greece and even earlier. A major advance was made in 1811 when the Prussians introduced a three-dimensional "game board" to add reality to the play. The U.S. Naval War College started using wargaming in 1887 and, in the 1930's, Admiral Chester W. Nimitz was able to predict and play out virtually all the World War II battles of the Pacific. After the war, he often said that the only tactic Japan employed that was not foreseen in those games was the use of kamikazes.

 More recently, the fall of the Soviet Union was seen over and over in war games in the early and mid-1980's, the Desert Storm campaign was played out and options for the use of military force in Haiti were assessed. Wargaming was adapted for commercial purposes in the mid-1980's. We believe it is an extremely powerful tool for strategic formulation and assessment.

WHAT IS A WAR GAME?

In a war game, teams of the senior managers of a company play their own company, a select group of their competitors and the marketplace. A control team plays all other entities that affect the industry. The exercise simulates a set of business conditions and offers lessons and guidance for the real thing.

During the game, which lasts for several days, teams lay out objectives and strategies, decide on investments, product lines, etc. The market team assesses market reaction and awards shares. A simple spreadsheet model provides the financial implications of actions the teams take by returning to them an assessment of their profits and losses.

There are no complicated or contrived rules. Anything that can happen in the real world is allowed, including deregulation/regulation, mergers and acquisitions, alliances and natural disasters.

SITUATIONS WHERE WARGAMING CAN BE EFFECTIVE

Simulations are usually most effective when four conditions hold in the real world.

First, the industry in question has a competitive dynamic, namely that the players are affected by each other's actions. For example, if I introduce a product that competes with yours, you may react by cutting your price while another competitor might drop out of the industry. I, in turn, might respond to the price cut with a service increase.

Second, the market reaction is partly or wholly unpredictable because of rapid change, the introduction of new technologies, shifts in market demands, etc., none of which could be forecast with a deterministic model. For example, customers first have to react to my product introduction, then the price cut and finally those two in combination with my service increase. Finally, the customers of the company that quit the field now have to choose among the remaining players.

Third, the validity of the answer will be greatly enhanced if the problem is looked at dynamically over time, e.g., several years. Assumptions about customer behavior in today's world are irrelevant once the new product is introduced, there has been a price cut, a service increase and one player has exited. And my company is concerned not just about the product introduction but also about how to sustain profits later on.

Fourth, simulations are the only viable way of gaining insights when there are too many unknowns to be amenable to a straightforward, quantitative solution, there are too many dimensions of the problem to consider or

it is impossible to capture the interactions among all of these. For example, I cannot model or predict all of the reactions of my competitors, the marketplace, regulators and other participants.

In situations like the one described above, typical analysis-intensive strategic planning will not work because analysis will only interpret the past and suggest how the future might evolve if, indeed, there is little change from the past. Generally, this assumption is self-defeating, as the past never really repeats itself. Analysis cannot predict how competitors will behave when faced with changing conditions, as in the case of a product introduction. Scenario planning, which uses historical analysis to plot future outcomes, can be dangerously deceptive when these conditions apply. Scenarios are, in the end, simply a best guess at the future, tempered by informed judgment as to how trends may play out over time. The risk here is that it is very easy to believe the future that plays into our own set of biases. Compounding this is the absence of any way of predicting when discontinuities might logically occur or what their impact might be on the competitive environment.

In almost all situations, a simulation can be designed to deal with a strategic problem. Some managers have expressed initial concerns that simulation is not appropriate for slow-moving or stagnant industries. But to the contrary, as pointed out in "Toward a New Theory of Growth," in Issue 2 of Strategy & Business, it is often in just these industries where strategic innovation is most likely. Therefore, the importance and usefulness of a proven approach to strategy formulation increases.

WHY WARGAMING WORKS WHEN TRADITIONAL PLANNING FAILS

Wargaming is often the best tool to help corporations deal with strategic formulation. It works because it addresses Mr. Mintzberg's concerns about planners planning in isolation, dealing with discontinuities and synthesis. It is also forward thinking, an area in which traditional analysis is weak, and it is dynamic, which both traditional analysis and scenario planning are weak on.

Finally, and most powerfully, gaming is a holistic enterprise. Strategy is indivisible. Remove one part or take away the bridges and the glue that tie the parts together and you don't have strategy, but tactics. Tactics are the elements that relate to the execution of the strategy. Those elements are discrete and divisible and can be examined and evaluated separately. Gaming forces the participants to look at the totality of the plan, not a set of aggregated parts.

Simulation is about bringing diverse ideas together and it is based on fact. Bringing ideas together is the primary function of the competitor and market teams, which take on the roles of the players in the industry. [Exhibit I.] Discussions within the cross-functional teams of senior decision-makers during the moves of the game bring together a wide variety of ideas and perspectives into a set of objectives, a strategy and a plan to be played out in the simulation. And the simulation is rooted in reality. Background books are provided to each team that give

them the facts of the industry--e.g., how much it costs to build a new plant or the size of a competitor's sales force--so that competitor teams are forced to deal with real-world profitability and capital constraints.

Even more than bringing ideas together, simulation challenges conventional wisdom and allows management teams to break with "known truths" and personal assumptions about competitors and their own strengths and weaknesses. It sheds light on explicit and implicit assumptions, forcing managers to think about the unthinkable and to answer the what-ifs. For example, a defense vehicle manufacturer was looking for an alliance partner. In a simulation examining industry rationalization, it found that a small player, previously eliminated from consideration, was actually the best potential partner. The manufacturer subsequently formed a very profitable alliance with this company. Without the simulation, this highly successful alliance would never have been formed.

Another major concern about the current state of strategic planning is that it assumes it can predict discontinuities, which are often unpredictable. While simulation does not purport to predict discontinuities, it does confront them in two ways. First, discontinuities can be added to a simulation. In one simulation for a client in the utility industry, deregulation and later regulation were added to the game, forcing the competitor teams to deal with both changes. Second, discontinuities are often created by the teams in the simulation. For example, when one team vertically integrated during a game, that fundamentally changed the way the other teams thought about their industry.

Unlike traditional planning, simulations are also able to confront discontinuities because they explicitly deal with difficult-to-model, but nonetheless critical variables in an interactive and dynamic, rather than static, fashion. A customized, open-ended simulation design is crafted for each situation, allowing for flexible time frames and constraints. Real people think about real problems, incorporating the learning as it happens and as they experience it during the simulation, from one move to the next. This is not a computerized model with preprogrammed responses to predetermined moves.

A manufacturer of heavy equipment, for example, wanted to better understand its alliance options and how the competitive dynamics of its industry would change as alliances were formed. In a simulation, the client learned that alliances would form much faster than expected and that the company had very little to offer as a partner, necessitating a re-examination of its capability set. These dynamic aspects of simulations are rarely captured in either a traditional planning process or a computer-modeled game.

Simulations are able to accomplish paradigm shifts and foster "out of the box thinking" because they explore the implications of changes in strategy in a "no risk" manner. Participants are able to get a taste of the future without having to make investments and commit their careers to these plans. An energy company wanted to create a strategy for a market that did not yet exist but to do so would require heavy investment. The simulation revealed

that it should not, in fact, enter the industry at all--a conclusion that would have been almost impossible to come to in a traditional planning process.

In addition to being dynamic, simulation is forward thinking in that it plays out the company and industry into the future. Moves can be measured in months or years, depending upon the situation. But in all cases, players are forced to deal with what they have created in each move as the starting point of the next move, and not base decisions on today's situation or preplanned scenarios. And because the starting point of the move is determined by what happened during the last move, not by static assumptions, it is necessarily adaptive and forward thinking. That was the case for the energy company noted above. In its simulation, the company allowed technology and regulatory changes to occur much faster than they would have in reality in order to test a strategy playing far out into the future. The simulation showed that the combination of regulatory and technology changes needed for the strategy to work was so distant and so unlikely that the company would, in fact, need a different approach to be successful.

Simulation also provides a view of the marketplace that cannot be seen through even the best of market research. Because a team of executives is actually playing the marketplace (and is backed up by the black-and-white facts of available customer research), the competitor teams are able to have a dialogue with "the market" about why they did or did not behave in a certain way.

   In almost every game we have run, managers come away with a renewed understanding of the importance of clear communication with the market. For example, many competitors in one simulation believed that the evolving market would result in each company providing a fully integrated solution to customers, rather than different companies providing different parts of the value added. One competitor simply launched a fully integrated service offering, expecting it to dominate the market because it had allied with the highest-quality providers in the industry. But the members of the marketplace team reacted extremely negatively, contending that the integrated service offering seemed to cut down severely on their flexibility. When pressed, they explained that the competitor had not made any attempt to explain why the integrated offering was beneficial. This was a huge surprise to the competitor team that made the move.

Simulation also develops an articulated view of the full range and nature of potential outcomes, including any discontinuities, and participants are forced to create plans to deal with them. A telecommunications player wanted to develop a strategy for entry into the wireless market. The simulation allowed participants to see how the market might evolve and forced them to take action under different market conditions. Because there was a "real" market team responding to the various competitors, these players were forced to develop explicit plans and dynamic strategies for the changing market in order to persuade customers to buy their product or service. In many cases, market teams defer buying decisions because competitor plans are too vague for decision-making--just like in the real world.

Many strategic plans fail because they are developed by a small set of managers and/or planners in isolation and, therefore, are not advisable or actionable. Simulation involves the full set of senior management decision-makers, including planners, thereby enabling team building and bonding as well as ownership of strategic alternatives and a shared vision of the future. Simulation gets nonbelievers to believe. Planners work side by side with operating managers during the simulation to play out the moves, capture learning and articulate potential solutions. Managers who were once unwilling to agree are better able to work together after having lived through the simulation experience and come to conclusions together.

For example, a consumer products company wanted to convince the managers of its various divisions that if they worked together to win in targeted market opportunities they would have a much higher success rate. But the individual managers were concerned about short-term profits and losing control of their businesses. The simulation provided the managers an opportunity to think more strategically about their businesses and, as a result, they came to the same conclusion themselves that there were huge benefits to a focused strategy of cooperation.

Strategic planning in many companies is too formal. Strategic thinking would be more successful if it took place continuously throughout the organization, but managers rarely have the time and often don't have the training to deal with strategy. Although simulation is an event, it is an event that sets aside time for strategic thinking and trains key managers on the dynamic aspects of strategic planning and allows them to live through an "alternative future." Managers who are otherwise unable to find the time to think strategically are put in a situation where they must do so if the companies they are playing are to survive.

Simulation both improves the strategic thinking capabilities of managers and disposes them to devote more time and resources to the task going forward. Virtually all of the managers who have been involved in simulations report that the experience was one of the best strategic thinking exercises they ever had. They emerged from the simulations with a renewed enthusiasm to keep strategic issues in the forefront. Many now keep closer track of competitors and some consider simulation an important part of the ongoing strategic formulation process.

WHAT DO I TAKE AWAY FROM WARGAMING?

Although every simulation is different, there are a few things that a company could expect to take away from the experience.

The first is that your view of the world will change--it will be like turning a map on its side to see what was on the other side of the mountain. Implicit and explicit assumptions about your company, your competitors and your industry will have been challenged. Some of the assumptions will have survived, others will have been

rejected and the result will be a fresh outlook. And because of this new outlook, things that never would have hit the radar screen before will now look like opportunities, some old bright ideas will have been put to rest and you will be far more aware of the pitfalls that lurk all around.

A simulation will also give you a view of how markets and competitors might evolve and, more important, an understanding of the drivers of that evolution. Simulation is not meant to be predictive, although it has often been. Instead, it gives companies an opportunity to see "what would happen if we did X..." This allows both for testing of our own ideas and seeing how competitors might react to particular situations. Moreover, walking in the competitors' shoes gives a company a better understanding of why they react the way they do and what drives their decision-making. It is this understanding of the dynamic drivers of competition that is a key lesson to take back to the real world.

As noted above, managers who have participated in a simulation agree that it was one of the most challenging and stimulating strategic-thinking exercises of their careers. Particularly in companies where the culture is to fire before aiming, managers walk away with a new capacity for and appreciation of strategic thinking.

Finally, simulation is a way to experience the future together as a company. This becomes a shared experience for the 60 to 80 managers who participate for a typically intense three days. Having lived through the simulation together, they will now have the same assumptions about their competitors, customers and industry dynamics.

SUMMARY

Mr. Mintzberg may be correct in concluding that traditional strategic planning needs to be invigorated, modified or even drastically changed. Simulation offers such an alternative.

Case Study:
DIESEL ENGINE MANUFACTURER

The C.E.O. of one of the major diesel engine builders in the United States confronted his management team: "What if our key customer decides to link up with one of our competitors and perhaps a transmission builder to develop and offer an integrated driveline class 8 truck that freezes out our engines? What if two or more of our customers merge and use their combined buying power to play us off against our competitors? What if the excess capacity that already exists in our industry is exacerbated by a major new entrant from Japan or Europe? What if...?"

These questions were in reaction to a review of the first draft of the engine builder's new strategic plan. As in prior years, it was a static plan that assumed business as usual in the heavy-duty truck industry in the United States. As in past plans, it forecast a recovery in the shape of a hockey stick: this year would remain flat to a tad negative, but next year...

The responses to the C.E.O.'s "what ifs" were as vague as the strategic plan was certain in its assumptions about the industry's structural stability. "We could maybe link up with another truck builder...We could offer a better product in a few years but might have to cut prices in the meantime...It'll never happen..." And each response provoked a string of "Yes, buts" from others on the management team--with the result that two hours of discussion produced nothing but new questions, general confusion and gridlock on the issue of what kinds of potential structural scenarios to build into the strategic plan.

Simulation offered a way out: not definitive answers, but an opportunity to explore the questions more rigorously. A strategic simulation was developed in which some 80 executives were organized into teams representing the company, three of its competitors, four classes of customers at the truck-builder level and three groups of end customers. The simulation was designed to deal with structural change in the industry and its consequences:

"Environmental scenarios" continued a condition of excess capacity at both the engine builder and truck manufacturer levels.

Negotiations about potential alliances--vertically and horizontally--were encouraged and facilitated by the game's "control" team.

New entrants were introduced--a dynamic, deep-pocket new owner for one of the more troubled engine

builders--as well as a European takeover of one of the simulated truck builders.

In the game, major structural change did occur: one of the company's competitors formed a grand alliance, bringing together a pair of truck builders (one of which had European parentage with substantial "integrated driveline" experience) and a transmission builder to offer a new line of class 8 trucks that featured the competitor's engines exclusively.

The company's only response, as decided by the team of executives playing themselves, was to counter this move with price cuts in the short run and an expensive technology development program longer term. As successive two-year game "moves" unfolded, it became clear that this reactive response was not working: margins eroded, the company slid from profits to losses and a billion dollars of investment money failed to stem the tide of market-share erosion. It finally became clear that the company needed a realistic plan for dealing with change in its industry.

After five grueling days, participants were brought back to the real world where they started. But there were several critical differences. All 80 participants agreed that they had new respect for the importance of dealing with the potential for structural change in their industry and that they had a new appreciation for the role of strategic thinking in dealing with change. They also had a much better understanding of what drives change and how they and their competitors were likely to react to it and why.

Finally, they also had the beginnings of some answers for at least a few of the situations they might actually run into in the real world.