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Churning things up

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Abstract (Article Summary)

As a technologist with interest in business strategy, Grove has long been intrigued by what happens to industries when a new technology changes the rules of the game, usually by providing an order of magnitude improvement in cost-effectiveness. Strategic actions with profound consequences are not caused only by technological innovations. A firm's strategic action changes its own environment. And the interaction between the firm's strategic action and the changing environment can yield dramatic outcomes. The formation of AT&T some 100 years ago provides a classic example of a nonlinear strategic action. What is especially interesting about nonlinear strategic actions is that more often than not the companies initiating them are unaware of their potential impact. Nonlinear strategic actions would seem to have immense appeal for the ambitious strategist. Not only can they improve the position of the company within the environment, but they hold the promise of shaping the environment so that it is favorable to the company's new strategy.

Full Text (2209 words)

[Headnote]
Innovations with the power to transform entire industries are the Holy Grail of business strategy. Unfortunately, the innovators don't always survive.

[Headnote]
As a technologist with interest in business strategy, I have long been intrigued by what happens to industries when a new technology changes the rules of the game, usually by providing an ordor of magnitude-"10X"-improvement in cost-effectiveness. The history of technology-based industries-communications, computing, and health sciences-is marked by such tranformations.

For example, the introduction of personal computing transformed the business model of each member of the computing industry; the growth of the Internet transformed the business of every member of the communications industry; and it can be argued that the introduction of medicine based on molecular biology is likely to transform the pharmaceutical industry.
But as I've studied business history, I've found that strategic actions with profound consequences aren't caused only by technological innovations. Southwest Airlines, for example, was created when its executives helped instigate a change in the regulatory environment that would allow them to compete with the established carriers. Their strategy of low-cost, no-frills air transportation-becoming the "Greyhound of the skies"-forever changed the public's attitude about flying. The altered environment and Southwest's ability to take advantage of it by promoting cost before comfort reinforced each other, providing a change of 10X magnitude.
Whether rooted in technology or not, 10X changes wreak havoc, forcing all the players to adapt. Often the only way they can do so is by transforming their own business models in fundamental ways. Most of the firms that dominated the old order usually disappear, replaced by new players operating in new relationships under new rules.
Classical competition theory doesn't address situations like this. In fact, it implicitly assumes that the environment in which a company operates is basically a given and limits itself to suggesting ways in which a company can better its lot in this environment. In contrast, 10X changes are usually initiated by one firm whose strategic action changes the environment for all the others. But at the same time, that firm's strategic action changes its own environment. And the interaction between the firm's strategic action and the changing environment can yield dramatic outcomes.
I'D LIKE TO BORROW A CONCEPT FROM PHYSICS TO DESCRIBE the difference between two types of strategic actions. If the effect of a company's strategic action changes only its own competitive position but not the environment, the action is linear. In contrast, a nonlinear strategic action sets off changes in the environment that the company as well as its competitors then have to cope with.
To see the difference, think of what happens when you stir a bowl of water vs. when you stir a bowl of cream. When you stir water, it starts swirling. The more vigorously you stir it, the faster it swirls-yet it remains water. By contrast, as you stir a bowl of cream, it gets thicker and thicker and eventually turns into butter. It becomes more and more difficult to stir, tiring you and causing you to slow down. The action affects the environment; the changed environment impacts further action.
The formation of AT&T some 100 years ago provides a classic example of a nonlinear strategic action. Picture the world of telephony in the U.S. back then. There were between five million and six million telephone lines in use, half of them operated by the company then called American Telephone & Telegraph, the other half by some 6,000 independents. It was a chaotic mix of often incompatible systems in which companies sometimes were unable to handle one another's calls (or simply refused to). That environment made the growth of tele-phony-and therefore the growth of AT&T-very difficult.
In 1907, AT&T's president, Theodore Vail, began pursuing an aggressive policy of consolidation and at the same time attempted to strong-arm the independents into accepting standards imposed by AT&T. The independents fought back and, taking advantage of antitrust sentiments, persuaded the federal government to file a suit objecting to AT&T's interconnection and acquisition policies.
Vail's vision was to expand telephone service throughout the U.S.; consolidation, he was convinced, was a must. Rather than abandon the vision in the face of the suit, he chose a different means of achieving it. Vail proposed offering universal service throughout the U.S.-but he argued that to provide service to underserved areas, AT&T would have to be protected from competition in high-density areas. He asked for a government umbrella. Despite an environment that was fiercely against monopolies-witness the dismembering of Standard Oil-the government agreed, and the re-suit was a federally mandated monopoly endorsing Vail's vision.
With this deal, Theodore Vail changed his operating environment and set the stage for AT&T to become one of the most prominent corporations in the world for much of the 20th century. It was a stunning strategic action.
Not all nonlinear strategic actions turn out to be so happy for their perpetrator. One classic example involved a decision that must have seemed minor and innocuous at the time. As the story goes, when IBM entered the personal computer industry, it chose to base the IBM PC on an operating system supplied by Microsoft. As part of the deal between the two companies, IBM let Microsoft market this operating system to third parties. This must have been an easy decision from IBM's standpoint because for all practical purposes, third parties didn't exist. IBM gave away something that, in their view, cost them nothing.
However, the availability of a standard microprocessor and operating system virtually ensured the creation of third-party competition. Over time those companies grew and provided an increasingly competitive environment for IBM. The decision to license the operating system must have seemed so minor to IBM managers two decades ago that they might not even have considered it a strategic action. Yet it changed their environment profoundly, just about guaranteeing the relative decline of IBM's presence in the "IBM PC" business.
Two strategic actions in Intel's history, one linear and one nonlinear, provide another illustration. In the mid-1980s, Intel faced major technological and manufacturing competition in the memory business from half-a-dozen very large and well financed Japanese conglomerates. In a wrenching strategic shift, we gave up on memories, the original business on which the company was founded, and dedicated ourselves entirely to the pursuit of the emerging business of microprocessors. To do that we had to shrink the company and acquire new capabilities. But we were convinced that in our environment, it was the only way we could succeed. As it turned out, we were right.
With the decision to get out of memories, our corporate strategy changed in a big way. But our environment did not. The Japanese companies continued to make memory chips; we just chose not to compete. This was a linear strategic action.

During the same period, we made another strategic change. At the time it was customary in the semiconductor business to license your technology to your competitors so that those second-source suppliers could also make your product. Why, you might wonder, would a company create its own competition? Theoretically, this unnatural act worked out as a win for all parties: The developer of the product benefited by wider customer acceptance due to a broader supplier base; the second-source supplier benefited by getting valuable technology for little or nothing; and the customer benefited by having

suppliers compete for his business. In any case, that's how it was done.
In the harsh business climate of the time, we realized that if we gave away our designs and turned our proprietary work into a commodity, betting our future on the microprocessor business wouldn't work any better than staying in the memory business and slugging it out with the Japanese.
Hard times give you the courage to think the unthinkable. We decided to charge our competitors more for our designs. They balked. They assumed the customers would browbeat us into giving our designs away.
The customers did browbeat us, but we couldn't afford to buckle. Starting with the next generation of microprocessors, we had no licensed second source. In time this decision changed the environment that we operated in. It significantly reshaped the customer-supplier relationship. The balance of power between us and our customers shifted in our favor.
This strategic action was less dramatic than completely abandoning the memory business. Yet its impact on our business environment was profound and lasting. By stir-ring the power balance between supplier and customer, we performed the industry equivalent of turning cream into butter.
What is especially interesting about nonlinear strategic actions is that more often than not the companies initiating them are unaware of their potential impact. In the case of our decision on second sourcing, all we wanted to do was to make a little more money on microprocessors. If anyone had suggested that this decision had the power to transform the computer industry, turning it into a multibillion-dollar horizontal industry, we would have said, "Huh?" Only many years later did we realize what we had done.
I suspect it was not much different at IBM.
Conversely, even decisions that are consciously meant to transform an industry to a company's advantage may achieve transformation without benefiting the company itself. Napster, a pip-squeak startup, demonstrated the feasibility of unleashing a 10X change in the efficiency of distributing music. Judging by the feverish defensive actions it provoked in the huge music industry, Napster's business concept qualifies as a nonlinear strategic action. Yet Napster was not able to capitalize on it.
Or consider this: In 1966, Boeing introduced the 747, the result of an enormous and very expensive development effort. One might speculate that Boeing's managers intentionally upped the ante on their domestic competitors like McDonnell-Douglas. In that, they succeeded. But four years later Air-bus Industrie was formed by a consortium of European governments. Thanks to their ample state funding, Airbus became world-class competition to Boeing-much more significant than the domestic competitors it had left behind. Could the European countries have been motivated by the high-profile challenge of the 747's mega-development? It seems plausible. Creating the 747 was nonlinear, yes. To the long-term benefit of Boeing? I'm not so sure.
Nonlinear strategic actions would seem to have immense appeal for the ambitious strategist. Not only can they improve the position of the company within the environment, but they hold the promise of shaping the environment so that it is favorable to the company's new strategy. They are the Holy Grail of strategic actions. Unfortunately, they often don't work out as intended.
WHAT INDUSTRY IS THE NEXT CANDIDATE FOR NONLINEAR strategic actions? My favorite choice is the health-care industry.
The signs are suggestive. First, it is huge-it represents some 15% of the gross domestic product of the U.S. Second, its existing customers are, to put it mildly, restless and, thanks to the Internet, better informed than ever. Third, the economic pressures on it are becoming worse: The aging of the population is increasing demand for services without a corresponding ability to pay for them.
Last, there is a confluence of technologies that may create the potential for a 10X change in how things are done. I'm referring to genomics and proteomics, the study of the genetic and protein structure of human beings, combined with the ability to access and manipulate very large databases, as well as the trend toward basing drug development on molecular modeling using modern computational technologies. Interestingly, the computational technologies used in both database deployment and drug development are based on mass-produced, low-cost technology developed for commercial information processing, an example of how the success of one category of applications may become the enabler of another.
A hint of what could happen on a broad scale is illustrated by the fight against the SARS epidemic. Using computers on three continents employing technologies developed over 50 years of commercial computing, some dozen institutions collaborated via the Internet to identify the SARS virus in a matter of weeks. They were aided by increasingly complex gene arrays used in the analysis-Moore's law applies to gene array technology too. By comparison, the identification of the AIDS virus took 2 1/2 years. This is a 10X change if ever there was one.
Does the jockeying by participants in the health-care industry correspond to stirring water or cream? And what might agitate this mix of technologies to the point of transformation?
AT&T's history suggests a deal between a large incumbent and the government as one source of nonlinear strategic action. The Napster example suggests another, the power of a disruptive force coming from a small outsider. Will there be a Theodore Vail of health care? Will a biotech company struggling for financing today emerge and stand the industry on its head? Will the present players even recognize such an action as it is happening, or will they realize only in retrospect that the environment has evolved-and that they have not?

[Sidebar]
Effecting deep strategic change, the author argues, is like beating cream into butter: Agitation changes the environment, which in turn forces the agitator to adapt.

[Sidebar]
Companies that unleash major changes often don't see what they've done.

[Sidebar]
Health care could be the next industry to undergo 10X change.

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