

CONTRIBUTED ESSAY

Raising Mice in the Elephants' Cage

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The history of the last fifty or so years has provided numerous examples of industries in which opportunities opened up by major technological change have not been captured by the in-place major players, but rather are exploited by entirely new companies. This phenomenon, and the underlying causes, have been the subject of a number of studies and publications, prominent among which are Richard Foster's *Innovation: The Attacker's Advantage* (Foster 1986), and more recently, Clayton Christensen's *The Innovator's Dilemma* (Christensen, 1997). The increasing pace of technological evolution only exacerbates the potential for successful companies to miss major opportunity for growth. The focus of this paper, which is based on many years of personal participation in and observation of the information technology industry, is hinted at by the title. The central thesis is that the success of large enterprises in their dominant businesses is based on a culture and set of processes which are ill adapted to dealing with rapid and radical change in technology and opportunity. As a result, these enterprises more often than not fail to capture a proportionate share of opportunity in new products and services in their industry sectors—opportunity which in many cases grows to dominant proportions. Success requires that these new opportunities—the mice—be nurtured in a radically different environment from that appropriate to the large base businesses, the elephants. There is more than ample evidence that mice are unlikely to survive and prosper when raised in the elephants' cage.

Growth and Opportunity

The information technology industry, including its large component of communications, has for the past thirty years been a major driver of change and growth in the world economy, and is mid-stream in transforming at least the operational aspects of every institution in

society. This growth of the information technology industry, in aggregate in the range of 15–20% per year, will continue for at least the next two decades, as the technology continues to surge forward in its capability, and the application and exploitation of these technology advances lag another five to ten years behind the raw technology advance. The improvement in the key underlying functional capabilities—processor power, memory chip capacity, disk storage density, communications data rates, and other closely related fundamental capabilities—will continue to advance at a rate of ten times each five years, a hundred times in ten years. The capability we have today is thus ten percent of what we will have in five years, one percent of what we will have ten years hence. This phenomenal growth is a near certainty, since precursors of these advances can be seen in research laboratories around the world. These large factors of improvement guarantee the creation of major new opportunities at every level of the information technology value chain, as well as "disruptive" change, in Christensen's terminology.

If history is a faithful guide, much of this new opportunity measured in revenue terms will be captured by today's major players, albeit with a very nonuniform distribution among the players. But a major portion of the revenue growth, perhaps half of the industry growth over a five-year period (during which the total will likely more than double), will be captured by newly emerging, previously unrecognized players, offering new products and services, building on new business models. More striking these emergent players are likely to capture an even larger portion of the newly created market valuation. A look backward over any recent five-year period will confirm the plausibility of this view. The most recent five-year period has been dominated by the explosion of the internet and electronic commerce, both between businesses and other businesses, and between businesses and consumers, and the beginning of the major wave of pervasive personal use. Major new players and products have achieved dominant positions, including Cisco, Netscape, Amazon, America On Line, and the Palm organizer, to name but a few. In earlier eras one would have pointed to the growth of the workstation and the PC, with the consequent spawning and explosive growth of Microsoft, Intel, Apple, Sun,

Compaq, Dell, and others. Even earlier one would point to the rise of the minicomputer and to Digital, Wang, Prime, and Data General as the leaders. Many of those key players are now either absorbed by others or otherwise greatly diminished. And it is important to note that in most cases the ultimate dominators of the newly emergent segments developed that dominance when the segment was tiny, early on in its development. Later entrants, usually larger industry players, often struggled without success for years in attempts to displace the early leader.

A key issue for today's successful companies is how to capture a larger portion of this new opportunity, opportunity which is barely visible at the beginning of a five-year period, often unnamed at that point, included if at all under "other" in market segmentations. The rate and magnitude of revenue growth in these new opportunity segments are such that without significant participation in them, large players, particularly those without a very defensible dominance of some key sector, will tend to fail by a large margin to grow at the pace of their industry. In an industry sense, they will lose market share. They will miss enormous opportunity to create value for their shareholders. Their failure to deal with the changed opportunity will, as history shows, lead to major business failures by more than a few firms.

Over a fairly long career in the information technology industry, I have watched many companies deal with these challenges, and I have had the opportunity to test the strengths and weaknesses of various approaches and to discuss them with a number of industry leaders. These experiences has led me to formulate a set of principles that are useful for thinking about this hard problem and developing guidelines and business processes to increase success.

Why this is a hard problem: Chess players at the poker table

Large companies—their cultures and their processes—are organized to succeed in doing what they do well: managing and growing large businesses, usually with a well-defined set of customers. In my parlance, they are very good at raising elephants. The processes used to do this are thoughtful and deliberate, rational, analytical, and

quantitative. And because of the relative continuity of most large business sectors, the processes are designed to look ahead a number of years and develop plans that have a high degree of certainty of execution. This is a chess style of management. A good chess player does not make a move before understanding the likely sequence of the next ten or more moves. Analysis plays a large role and uncertainty is minimized. The experience with IBM's chess-playing computer, Deep Blue, demonstrates the degree to which this analysis can be codified and systematized.

What later proves to be major new opportunity is rarely wrapped in mystery or secrecy in its early stages; rather it is usually visible to all. However, the ultimate winners are not definitively labeled as such: they are mixed in a much larger pool of what will ultimately prove to be losers. As pointed out above, these winners usually develop a dominant position very early in the evolution of a new segment. What is very clear is that they do not do this with a chess-like set of processes; rather, they manage in a style which is much more akin to poker.

One cannot play poker without being comfortable with placing bets in situations with large uncertainty. The pace is fast, and one cannot take time out, or hire consultants, to get accurate estimates of the two cards yet to be dealt, nor can one learn much about the hands of competitors. The dealer assumes that the hesitant player has dropped out for that hand, and deals right by him. This willingness to place (small) bets in highly uncertain conditions, using intuition more than analysis and trusting one's own judgment, is an essential element of developing a strong early position in new areas of opportunity.

One of the major difficulties for the large successful company is the unwillingness of most chess players to play poker and their total discomfort with every aspect of the game. The chess processes, which have been proven to be effective in the main part of the business, prevent the person at the poker table from putting up any chips at the pace the hands are played. In my view, a large information technology company that wants to participate fully in the growth of the industry must, unless it dominates some major rapidly growing sector, recognize the need to implement a separate,

poker-like, set of processes for capturing new opportunity either from an internal base, or partnering and investing in emerging external companies. The chess process will almost always come to “no,” and even that will be at a slow pace.

There are many other reasons why emerging opportunity is not pursued in large successful companies, but in many cases they are results of dealing with potential opportunity by using chess processes. The new product, service, or technology is often seen as confusing to the understood customer set. It is often potentially damaging to an existing business model. In any case, the opportunity is clearly not large in the next few years, and the uncertainty is high. Besides, it is usually clear from the chess analysis that the investment required will clearly provide greater returns in the planning horizon if aimed instead at improving existing businesses incrementally.

In some cases the decision is made, despite the above inhibitors, to proceed with the development of a new technology, the creation of a new product, or the launching of a new business. As in the case of making the decision to pursue a new and uncertain opportunity, the typical large-company business processes and culture can be a major inhibitor of success in getting from concept and commitment to success in the marketplace. On the flip side, there are major advantages that are enjoyed by large companies in this process. The key is to develop, for each case, a trajectory of progress which builds on the advantages and avoids the pitfalls along the path of progress.

For an internally developed idea and proposal, even if the proposal is being pursued by others (as is almost always the case), one can usually identify two major phases of progress between concept and marketplace success. The first phase consists of invention, reduction to practice, the building of the first prototypes, and initial interaction with a few leading-edge customers. For a new technology, this can be a period of several years, whereas for a new application of existing technology the period is much shorter. It is in this phase that the mature company with deep technical roots has a major advantage over the pure startup with limited resources. I call this the incubation phase. In this phase the new concept is not subjected to the pressures of a going business, and it is nurtured and supported in its environment. The primary measures are of progress

toward the prototype goals, aimed at first exposure of the concept to customers and markets. Typically the organizational focus of this phase is in a central research and development organization rather than in a line of business, and it is this phase that many of the large information technology companies have traditionally excelled.

Yet, having achieved success in this incubation phase, the new concept or product is still far from becoming a factor in the marketplace, and even farther from having the potential to be the base of major growth of an already-large base. Success is required in the second phase, bringing the innovation to market, and the challenges in this phase are quite different from those of the invention and reduction to practice phase. The level of resources, the types of skills, the actions that must be taken within and outside the company change dramatically, and often the level of risk, or at least of perceived risk, increases dramatically. It is often at this point, when the business players see both the potential for market disruption and the demand for significant resources, that the internal environment can change from being supportive and nurturing to being either overtly or covertly hostile. It is in this phase that many companies fail, and it is here that the incompatibility of the culture and processes of the ongoing businesses with what is needed for success in the new is the root cause of the failure.

The internal vs. the external path: The case for excubation

The critical decision to be made at this point, where the prototype and customers' reaction to have proven sufficiently compelling to drive a decision to make a major push toward the marketplace, is whether to proceed with an internal entity or to make a major move toward separation. I call this move to an entity with major independence from the parent company "excubation," a term designed to indicate the contrast with the incubation phase which it follows.

Incubation implies major, even excessive, nurturing and monitoring as well as protection from many of the forces of the real world. From what I have seen, there comes a time when continued incubation dramatically increases the likelihood of failure. In addition to its overhead and its prevention of the creation of a

competitively strong team, incubation often focuses the new technology on too-narrow targets of opportunity, those within the limited interest of the parent company. And it causes enormous waste of resources since Darwinian principles are not at work. An excubated entity, with major equity participation by its parent, can have the best of both worlds, but only if the control from the parent is restricted to that exercised by parent company Board members in their Board role. Experience shows that large companies do not easily come to the conclusion that excubation is the right path. Unless the new thrust is so clearly in the white space relative to the business unit's market and product ambitions that it has no interest (a rare case in my experience), the chess players will typically attempt to embed the new thrust in an existing organization, based on proposed synergies and economies.

I refer to this approach so commonly followed as attempting to raise the mice in the elephants' cage. The argument for doing so points out that the cage has plenty of room, and that it makes no sense to develop a new cage for the mice; besides, there is plenty of straw and food around, so it can be done without much additional expense; and certainly the elephant keepers will not be burdened by the additional responsibility. In reality, however, the behavior of the elephants will usually result in the demise of the mice. It is not that the elephants are behaving badly, but that in going about their normal business they are likely to either trample the mice (who rustle about in the night and really do annoy the elephants), or suffocate them with their randomly placed, but substantial, droppings.

While it is true that being embedded in a large company provides a number of sources of support not easily available to a small stand-alone company, there are several areas, key to success, where the embedded company will be far weaker than the stand-alone company with which it is likely to be competing. Key among these are the following. First, an embedded company, and its best people, are inevitably distracted by the monitoring and other processes that are part of that culture. This limits the ability to focus maniacally on a single goal. Second, the culture and value system of the larger company will typically inhibit the ability to build the strongest

possible team. The creators of the idea are usually a good base for the technical team, but to get a first-rate marketer or business development person to join something which is tiny and not obviously central to the company's interests is likely to be impossible. The scale of the project and the size of the team affect the perceived value of a position in this culture, with the likely result that the startup effort can only recruit from the second and third teams. Third, decision-making is inevitably slowed by the management hierarchy. Fourth, the pressure to get to market, provided in the stand-alone environment by the need to manage cash, is lessened. And finally, the ability to use market-value creation as a tool to both benefit the stakeholders and to attract a top team is eliminated. The net result is that often a team and environment are created which are markedly inferior to what can be obtained in a stand-alone environment.

All this is not to say that there is no value in having the right connections to the parent. Among other things, the parent can provide, on a very limited basis and on request, specific help in key areas such as the management of intellectual property or access to key expertise or tools. In addition, often there is the opportunity for the parent to be one of the leading-edge users of the excubated company's technology and products.

To get to a statistically significant data base to support the above assertions would be a major project. There is, however, in my view, more than enough evidence of the failure of major players to capture the benefit of opportunities where the key technologies and products have been incubated into an early leadership position to make the case. One example with an element of currency is the router business. In this case IBM developed three generations of products internally in its research division, and used these to build the early T1 and T3 internet backbones. Yet the anticipated conflict with the mainstream systems network architecture (SNA) products led IBM to pass on this opportunity. Recently, the last act of this drama has been played out with the licensing of IBM's technology in this area to Cisco, which grew to dominate the area, and which has a current market valuation which is substantially larger than that of IBM. An example of success for IBM is its creation in the late 1980s

of a new company, with Toshiba as an equal partner, to enter the then-emerging market for flat panel displays. This company, Display Technologies Inc., is one of the major manufacturers and probably the technical leader in this multibillion dollar market, and IBM's linkage with DTI was one of the keys to the successful position which IBM has developed in the laptop market with its Thinkpad line of products.

With years of emerging opportunity ahead of us, and an increasing premium placed on velocity and being the early leader, it becomes increasingly important for highly successful companies such as IBM, Lucent, Motorola and the like to develop mechanisms for successfully creating new, major businesses from the results of their massive investments in research and advanced development. They must develop parallel methodologies to track new entities created outside their boundaries and build the substantive early linkages which create benefit for large company stockholders and customers. In my view there is a huge, underexploited opportunity to improve both these processes by recognizing the cultural and business process differences required to succeed in raising mice, some of which will, over time, become the next generation of elephants