Designing Corporate Ventures in the Shadow of Private Venture Capital

Henry Chesbrough

“The search for innovation needs to be organizationally separate and outside of the ongoing managerial business. Innovative organizations realize that one cannot simultaneously create the new and take care of what one already has. They realize that maintenance of the present business is far too big a task for the people in it to have much time for creating the new, the different business for tomorrow. They also realize that taking care of tomorrow is far too big and difficult a task to be diluted with concern for today. Both tasks have to be done. But they are different. Innovative organizations, therefore, put the new into separate organizational components concerned with the creation of the new.” — Peter Drucker

Since Drucker’s advice of a generation ago, many companies have tried to separate their new business endeavors from their current business structures in an attempt to stimulate greater innovation and generate additional business growth. These attempts have generally met with only temporary success. The general pattern is a cycle that starts with enthusiasm, continues into implementation, then encounters significant difficulties, and ends with eventual termination of the initiative. Yet, within a few years, another generation of businesses undertakes the effort anew, and the cycle occurs again.

For example, in the 1960s and early 1970s, 25% of the Fortune 500 had a corporate venturing program. These were largely disbanded, though, during the late 1970s. Then in the early 1980s, as the independent venture capital market grew again, corporations renewed their interest in corporate venturing. These initiatives were again discontinued after the market downturn in 1987.
Then, as the extended bull market of the 1990s has gained momentum, corporations have again re-introduced corporate venturing activities. ³

While the cycle appears to continue, the method of structuring these corporate ventures appears to have changed. The most recent cycle of corporate venturing has utilized venture capital structures to motivate employees to become more entrepreneurial and take more risk. Adobe, Intel, Lucent, Sun Microsystems, Texas Instruments, and Xerox, among others, have all introduced corporate venture capital programs to promote greater innovation. Is this a step forward or is the corporate venturing cycle simply going to run its course one more time until the market turns down again?

**Exxon’s Natural Experiment in Corporate Venturing**

A remarkable natural experiment at Exxon usefully contrasts corporate venturing and private venture capital. ⁴ It suggests that there is something different about venture capital. As part of its strategic mission to diversify its businesses away from an exclusive reliance on the petroleum industry in the 1970s, Exxon embarked on a two-fold corporate venturing program. One portion of the program was a series of external financial investments alongside private venture capital funds, to be followed by a second program of internal ventures that were to be started and managed in a special unit inside Exxon. The Exxon strategy was to probe and assess new venture opportunities via external investment, then invest in the most promising of these venture opportunities via internal venture organizations.

There were 18 such external investments made under the first program, starting around the year 1975. Exxon invested approximately $12 million in these external startup companies. These performed well financially: of the 18 ventures in which Exxon invested alongside other private investors, three of them were sold to other companies at a profit, and five went public via an initial public offering (IPO). By 1982, Exxon’s investments in these firms were worth $218 million, for an internal rate of return of approximately 51% per annum (assuming all investments were made in 1975, and making no adjustment for inflation). This was an impressive success in financial terms, whether compared to Exxon’s overall rate of return or to the median return of similar vintage private venture capital funds.

Following through on its strategy, Exxon then initiated 19 internal venture activities to commercialize the most promising areas identified through its external investment programs. One might have expected the internal programs to fare even better, due to their narrower focus on areas where significant opportunity had already been demonstrated through the external investment probes.

To the contrary, Exxon’s financial results were dramatically lower from these internal ventures than those from its external investments. None of the 19 entities achieved an external liquidity event (such as the sale of the company
to an outside firm or an IPO). None of the 19 ever managed to reach a break-even point, where their revenues were covering their costs. Exxon terminated and wrote off all of the internal ventures.⁷

Exxon's experience in the 1970s is worth recalling today. Many corporate venture capital programs are being justified on grounds similar to those of Exxon: utilize private equity investing to identify promising growth areas in markets near those of the corporation and then utilize those investments to leverage the parent company's business. As the Exxon example shows, though, it is a long road from identifying a potential opportunity to realizing that potential in a new venture within the parent company.

In many respects, it has gotten more challenging to design corporate venture programs since Exxon's aborted experiment. Independent venture capital was a quiescent cottage industry in the mid-1970s, confined to a handful of enterprising partnerships on the East Coast and West Coast of the United States. There were 50 active venture investors in 1978 who had raised $300 million over the previous 18 months.⁸ Giant enterprises such as Exxon had little to worry about from such a small source of money.

These days, any corporate venture program that has any chance of success must be designed in the shadow of independent venture capital. This is due in no small part to the sheer growth and velocity of the independent venture capital sector. In 1998, it raised over $13 billion and has raised over $21 billion in the first nine months of 1999.⁷ This enormous and growing pool of money lures many talented managers and technical staff out of successful established companies into startup companies.⁸ This group of experienced personnel, who are willing to take greater risks in return for greater rewards, is exactly the same pool of talent that most corporate venturing programs hope to leverage. External venturing with outside venture capitalists is an increasingly viable and attractive option for these personnel, one that casts a long shadow over corporate venturing initiatives.

Clearly, the impressive rise of independent venture capital has changed the world of corporate venturing. However, there are important lessons to be learned from the past, as Exxon's experience demonstrates. In order to design successful corporate ventures in this new environment, it is helpful to re-examine the past history of corporate venturing and to interpret that history against some salient characteristics of independent venture capital. Armed with these insights, we will then consider how to design corporate ventures in the shadow of independent venture capital. One promising example of such a design is that of Lucent Technologies' New Ventures Group. While its approach is no panacea, it has clearly thought through the problem of how to stimulate greater innovation within Lucent in the presence of a vibrant venture capital industry. Indeed, one appealing aspect of Lucent's approach is that it leverages outside venture capital when that helps advance Lucent's objectives.
Previous Research on Corporate Venturing

The first academic evaluations of corporate new venture organizations were rather cautious in their assessments. Von Hippel reported that when the parent firm had significant prior experience in that market (vs. having experience with the technology, which was not associated with better outcomes), the new venture was much more likely to succeed.\textsuperscript{9} He also noted the problems that venture sponsors faced in building and sustaining internal support for new ventures from the top management of the company. The problem for a sponsor was one of adverse selection: over time, the best performing ventures gradually migrated to other divisions, or went off on their own. The remaining ventures became the “problem children” for the sponsor of the new venture division, and this was not a way to boost the sponsor’s career within the firm.

Norman Fast conducted another study that attempted to explain the factors that were associated with the success of “new venture divisions” (NVDs).\textsuperscript{10} In addition to the issues Von Hippel identified above, Fast found a surprising third problem encountered by NVDs inside an organization: the problem of new venture success. Fast found that successful NVDs were often viewed as threatening to established businesses in the parent firm. This threat arose from the ability of the new venture to compete for corporate resources.\textsuperscript{11} As the venture realized greater success, it required more resources, and these resources were perceived to diminish the amount of corporate resources available to other businesses in the firm.

Kenneth Rind further explored the potential inherent conflicts of interest that can arise between the sponsoring firm and the new venture it is trying to cultivate.\textsuperscript{12} He noted that if the venture was serving a market already served by the parent firm, that might constrain the venture’s marketing options so that they didn’t conflict with those of the parent firm. A further issue that Rind identified was the problem of the governance: the costs required to manage a new venture successfully would be incurred early in the venture’s life under one NVD manager, while the benefits to those investments, if they indeed occurred, would arise later on under another manager. This could create perverse incentives for new venture managers to avoid costly, risky decisions, because they will incur the costs of those decisions, yet may not be around to receive credit for their subsequent benefits.

One could think of compensation mechanisms that might resolve this intertemporal governance issue. However, such mechanisms do not appear in empirical surveys of corporate venture programs. A study by Block and Ornati examined the compensation practices of firms when they establish new venture divisions.\textsuperscript{13} They reported that most of the companies using corporate venture programs in their survey do not compensate venture managers any differently from their other managers.

Why would so many companies eschew the opportunity to provide a higher risk/reward compensation package to new venture managers to motivate
and reward risk-taking behavior? The primary reason mentioned by Block and Ornat's survey respondents was maintaining internal equity. Managers at similar levels in other parts of the company would see it as unfair that a peer manager received a disproportionately higher compensation level because of the performance of the new venture unit. One venture capitalist made a telling remark to Block and Ornat: "The only reason for our existence is the inability of corporations to provide the financial incentives which can be achieved in an independent startup." 

A study by Siegel, Siegel, and MacMillan studied the potential conflict between two frequently cited rationales for new venture businesses. One rationale is strategic: to exploit the potential for additional growth latent in the company. A second rationale is financial: to create additional revenue and profit in the new venture itself. Siegel et al. point out that to maximize the financial return from the new venture, firms are best advised to provide complete autonomy to the new venture's managers. However, if the primary motivation for the venture is strategic, then providing this greater autonomy increases the potential likelihood of conflict with the established businesses of the company. Here, the firm may need to intervene in order to manage the potential conflicts between the new venture and the established business. Such intervention will likely have the effect of lowering the autonomy and hence reducing the financial performance of new ventures.

Overall, previous studies of corporate venturing activities have reported significant difficulties for the sponsoring companies. There are problems with developing the relevant market experience. There are problems of adverse selection. There are conflicts between the strategic objectives of new ventures and their financial objectives. There are issues of compensation and internal equity. There are even problems of resource allocation if a new venture actually succeeds. Despite Drucker's admonition, it is not easy to manage the separation of the current business from the new business.

**Venture Capital as a Benchmark Reference for Corporate Venture Designers**

One very useful reference point for considering the issues in utilizing corporate venturing structures to pursue innovation opportunities is the independent venture capital model of launching and growing new companies. One reason to make this comparison is that private venture capital is an increasingly important part of the commercialization of new technology in the U.S. economy. A second reason is that many of the organizational issues that arise in corporate venturing are addressed in a very different manner in ventures financed through private venture capital. A third reason is that there are many cases where a promising innovation diffused out of a corporation and was only able to be commercialized outside the firm, funded through venture capital.
The general topic of venture capital is an extensive one. The focus here is to abstract from research on how venture capital structures new ventures and to create a set of stylized facts that provide a contrasting benchmark with which to assess the efficacy of internal corporate venturing.

An initial stylized fact is that the venture capital model aligns incentives between the venture capitalist (VC) and the investing limited partners that provide the capital for investment, and the model similarly aligns incentives between the VC and the entrepreneur in whom the VC invests. If the venture proves to be successful, the entrepreneur’s success directly generates economic value for the VC, and the VC’s gain-sharing arrangement with its limited partners assures that 70% to 80% of that gain is readily distributed to the limited partners by the end of the fund.

A second stylized fact is that the financing of new ventures is carefully staged, with small financial commitments offered initially, along with the option (but not the obligation) to invest more later, pending the achievement of certain milestone events by the venture. This use of contingent, staged financing imposes tremendous constraints and discipline upon the venture. These constraints force the venture to focus on only the most essential elements of its business plan necessary to achieve positive cash flows. At each stage of financing, there is a credible threat to discontinue further financing. Note that under these arrangements, the problem of zero-sum bargaining for internal corporate resources does not arise.

A third stylized fact is the intensive oversight provided by venture capitalists to firms in their portfolio. One survey by Gorman and Sahliman found that VCs visited their portfolio companies an average of 19 times each year, with over 100 hours of direct contact between the VC and managers of the venture. One important manifestation of this intensive oversight was demonstrated by Lerner, who found that VCs generally increased their participation during times of CEO crisis. This increased monitoring allows VCs to gather information that may not be gathered by corporate venture sponsors. In addition, it provides a faster decision cycle. VCs’ intensive monitoring gives them the information necessary to commit to a course of action in a short amount of time. Their arrangements with their limited partners mean that their decisions will stand without further review by other levels of management.

A fourth stylized fact is that VCs are structured so as to be indifferent to what business model portfolio companies use to achieve their success. By construction, the VCs have no established assets and no business model that might be put at risk by the activities of a new venture. By contrast, Hellman noted that corporate venture investing would likely be strongly affected by whether the activities of the venture were complementary to—the activities of the corporate investor. Corporations would have a vested interest in supporting startups that build upon their current businesses and technologies, but they would rationally pay less for startups that threaten those assets. Similarly, corporations would support startups that leverage the
corporation’s existing business model, but would underfund those that required a very different model to achieve their objectives.25

These four stylized attributes of the independent VC model are compared with the attributes of corporate venturing in Table 1. This comparison helps us understand what happened at Exxon and what might happen to poorly designed corporate venture programs today as well. Consider first the incentive alignment in the structure of venture capital. This proved to be very difficult to replicate in Exxon’s corporate venture program. Obviously, providing stock grants for Exxon’s corporate stock to venture managers would blend the performance of a tiny startup with that of a huge oil company. Other, more specific surrogate equity measures, such as phantom stock, ran into conflicts with the internal norms of equity with the compensation of other, “similar” Exxon managers.

The incentive differences also worked the other way. If a private VC venture fails to meet its milestones, its top managers might be replaced or the venture might even be shut down. By contrast, Sykes reported that Exxon tolerated poor venture performance from its venture managers.27 When milestones were missed, the managers essentially renegotiated, setting new targets for the following period. This supports Sahlman’s speculation: “Should the [internal] project not be successful, team members probably will find other tasks within the corporation, provided they have not been guilty of gross incompetence or malle- lance. Though the pecuniary rewards for success are modest, so too can be the consequences of failure.”28

Consider next the method of financing new ventures. The VC projects were carefully staged, with infusions of capital metered out when and if milestones were met and new information justifying additional investment was obtained. By contrast, Sykes reported that Exxon’s internal venture decisions had to run a gauntlet composed of many organizational levels.29 To minimize the frequency of these delays, venture managers asked for, and received, significant sums of money for their projects up front. These infusions of capital only were reviewed annually in the corporate budget cycle.

It was harder for Exxon to make timely decisions as well. Sykes wrote that, “During the early stages of the venture when expenditures are low, most decisions [were] delegated to the venture management or to those directly

---

**TABLE 1. Comparison of Corporate Venture (CV) and Venture Capital (VC) Structures, Relative to Specific Organizational Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>CV</th>
<th>VC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incentive Intensity</td>
<td>weaker</td>
<td>strong</td>
</tr>
<tr>
<td>Financial Discipline on Downside</td>
<td>weaker</td>
<td>strong</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Internal</td>
<td>External, including outside Board</td>
</tr>
<tr>
<td>Discovering Alternative Business Models</td>
<td>constrained</td>
<td>unconstrained</td>
</tr>
</tbody>
</table>
TABLE 2. Potential Advantages of Corporate Venture (CV) vs. Venture Capital (VC) Structures

<table>
<thead>
<tr>
<th>Attribute</th>
<th>CV</th>
<th>VC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Horizon</td>
<td>indefinite</td>
<td>tied to fund length</td>
</tr>
<tr>
<td>Scale of Capital Invested</td>
<td>potentially large</td>
<td>smaller</td>
</tr>
<tr>
<td>Coordination of Complementarities</td>
<td>extensive</td>
<td>limited</td>
</tr>
<tr>
<td>Retention of Group Learning</td>
<td>strong</td>
<td>weak</td>
</tr>
</tbody>
</table>

supervising the venture management. As the venture grows and needs larger financial or functional resources from the parent, the reviews extended wider and higher. This delayed the time it took to make decisions for the venture. Worse, these decisions over the fate of the venture increasingly involved people who had spent little or no time monitoring the venture previously. Whenever the venture deployed a business model different from that of Exxon, these senior level reviews likely resulted in less support and funding because the new venture did not leverage Exxon’s current resources.

**Designing Corporate Ventures in the Shadow of Venture Capital**

It is clear that any corporate venturing activity in the foreseeable future in the United States will take place in an environment in which independent venture capital is a significant and growing reality. It is not enough, however, for corporate venturing to be managed to be more like private venture capital (though corporate ventures may benefit from adopting certain practices employed by private venture capitalists). If corporate venturing is to endure beyond the next downturn in the equity markets, it must offer some structural advantages over private venture capital in its ability to manage the development and commercialization of new technologies. If these structural advantages cannot be identified and then leveraged, company shareholders reasonably will ask why corporations don’t simply return excess cash for the shareholders to invest themselves.

While the evidence to date is fragmented, there may in fact be some advantages for corporations in commercializing new technological opportunities through external venture structures. It is premature to claim that these structural differences can sustain corporate venturing activity in the shadow of private venture capital, but at least they provide a potential rationale for doing so. These potential advantages are listed in Table 2.

One difference may seem trivial, the difference of time. Approximately two-thirds of venture funds in the U.S. are organized as limited partnerships. These venture funds are created with a limited lifetime, generally between seven
and ten years. This limited horizon acts to enforce the incentive alignment between limited partners and the general VC partner by ensuring that gains earned through successful investments are returned to the limited partners and not simply "rolled over" into new risky investments. The limited horizon also provides a safeguard of last resort for the limited partners. If the general partner has performed poorly despite the other incentive alignment features in the fund, the limited partners can take their proceeds at the termination of the fund and simply go elsewhere.

Corporations, by contrast, have an indefinite life span. There is no "end of the fund" pressure to gain liquidity for venture positions that have yet to either be sold or go public. This difference suggests one implied structural advantage or corporations over private venture capital firms: the ability to fund and sustain longer-term projects. Any new VC fund takes some period of time to invest its proceeds after the fund closes its financing. At the other end, winding up the portfolio and achieving liquidity for the fund's investments also takes time. Corporate ventures may enjoy an advantage here for projects that require an expected duration of as little as six years to deliver value, and that advantage grows as the time needed to deliver value increases.

A second potential advantage is one of scale. While venture firms aggressively syndicate larger investments and can deploy increasingly large sums of money collectively as a result, the aggregate amount of investment they make in individual ventures remains substantially below that of the largest corporations. This advantage has proved to be important in the past. Alfred Chandler analyzed the limits of "personal capitalism" in Britain in comparison with the ability of U.S. and German corporations to amass the capital needed to finance the large investments required to drive the development of the chemicals, railroad, and steel industries. To take a more recent (and admittedly extreme) example, the development of the IBM System 360 was said to have required over $4 billion in 1963 dollars. In today's dollars, that amount exceeds the combined total annual spending of all venture capital firms in the United States. As a practical matter, this second advantage is likely to matter in only a small number of cases, as firms seldom invest sufficient sums of money in their corporate venture activities to benefit from this advantage.

A third potential structural advantage stems from the corporation's ownership of important physical, knowledge-based, and other intangible complementary assets. To the extent that these assets cannot be freely traded, but can only be controlled through owning the corporation itself, then the corporation enjoys a structural advantage over private VCs in coordinating complementary technology developments. When venture activities complement these corporate assets, corporations potentially could benefit more from their realization than would private venture investors.

In addition, certain technologies require the development of complementary technologies in order to deliver value, and corporations would likely have advantages over private venture capitalists in coordinating these complementari-
ties. One recent large sample study by Gompers and Lerner comparing corporate venture investments and private venture investments found that when corporations invested in activities that were related to their own line of business, their returns actually were competitive with those of private VC funds. Corporate investments in unrelated activities were found to earn an inferior return, both in comparison with related investments and with private venture capital. This suggests that corporate investments in related venture activities are able to compete with private venture capital.

The evidence to date of this advantage is taken from complementarities in technology. However, the principle of corporations leveraging complementarities with non-tradable corporate assets in their venture activities can be extended to all such assets. Knowledge-based assets, for example, can support a structural advantage over private venture capital provided that this knowledge accrued to the corporation and did not simply reside in a few people’s heads. Another non-tradable asset that can offer leverage is an intangible asset such as a brand or the company’s reputation. This rationale of complementarities is the primary rationale used to justify the many corporate venture investments of the Intel Corporation.

A final potential structural advantage stems from the very weakness of incentive systems in providing strong risk/reward packages to its employees. The same inability to pay high bonuses or large amounts of stock to individual employees also works on the downside: corporations do not punish failure as fully as private venture firms do. Because of this, and because most new ventures fail for both VCs and for corporations, the potential exists for companies to retain more learning from these failures. Instead of disbanding the firm, breaking up the team, and scattering people to their individual job searches (as would be done in the failure of a private VC-financed venture), corporations could conduct post-mortem learning activities with the team in place. Some portion of the team then could be deployed on a new opportunity, while others could evangelize the positive elements of the experience back in the rest of the corporation. In this process, other venture attempts that built upon the experience of the prior attempt might meet with greater success.

The advantage of this is embodied in the concept of “intelligent failure.” There is a human tendency to block out the experience from a failed endeavor. In the context of commercializing technology, much valuable information from a failed venture may be lost as a result. It is not by accident that many of the most successful technology entrepreneurs have had at least one failure in their own past experience. Much can be learned from failures, if one has the will and ability to do so.

Some anecdotal evidence exists that some corporations do “fail forward” to some degree. 3M has a reputation as a company that will acknowledge and even celebrate certain “noble failures.” Some HP managers have commented that David Packard used to say, “If you’re not failing once in a while, you’re not taking enough risk.” In a recent presentation by senior IBM managers, one of
them said that, "If you haven't been yelled at by a senior manager lately, you're not doing your job." Xerox PARC's famous Computer Science Laboratory, which was the birthplace of many of PARC's most storied discoveries, is now run by a manager who was the initial leader of one recent failed spinout venture.

These structural disadvantages of corporate venturing shown in Table 1, combined with the potential advantages in Table 2, comprise a set of design principles that can inform the design of new corporate ventures in the shadow of independent venture capital.

One Innovative Corporate Venture Design: Lucent's New Ventures Group

One organization has recently embarked on a corporate venture design that was developed with the shadow of private venture capital very much in mind. Lucent created its New Ventures Group (NVG) in 1997 in order to commercialize technologies out of its Bell Laboratories that did not fit with any of Lucent's established businesses. In addition to capturing value from these technologies, Lucent also wished to speed up the time it took for its technologies to go into its mainstream businesses as well.

Lucent was careful to conduct extensive external benchmarking activities to determine whether and how to utilize corporate money to finance new technology ventures. Some of this benchmarking activity involved discussion with other companies who had experience with this activity, including Intel, 3M, Raychem, Thermo-Electron, and Xerox. The planning staff also held numerous discussions with the private venture capital community to understand how their approach to financing and commercializing new technologies worked.

Lucent learned early on that it needed to craft an operating model to blend the incentives, risk taking, and speedy decision making of private venture capital with the deep technological resources and the culture of Bell Laboratories. The key challenge for the NVG was to graft a more entrepreneurial spirit onto the culture of the organization. This required faster decisions, more individual risk taking, and greater individual identification with the business opportunities latent in the deep technical resources of the company.

To manage the cultural change process, the NVG consciously created what became known internally as "the phantom world." The phantom world did not exist outside of Lucent; it was a hybrid constructed out of a pure venture capital organization and a large technology-based company. It could be thought of as a "half-way house," which would enable people and ideas that weren't ready or able to go out directly to obtain pure venture capital to develop their ideas further within Lucent. By being sensitive about the cultural gaps that had to be bridged, and by being sensible about the right mix of risk and reward to offer, the phantom world created a launching pad for ideas to move out of Bell Labs into markets outside of Lucent's traditional business channels.
TABLE 3. Lucent's NVG Portfolio, as of Q4, 1999

<table>
<thead>
<tr>
<th>GROUP 1: Internal NVG Venture Companies</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EC&amp;5</td>
<td></td>
</tr>
<tr>
<td>Full View</td>
<td></td>
</tr>
<tr>
<td>Lucent Public Safety Systems</td>
<td></td>
</tr>
<tr>
<td>NetCalibrate</td>
<td></td>
</tr>
<tr>
<td>Savage</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GROUP 2: Syndicated NVG Venture Companies</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Face2Face</td>
<td></td>
</tr>
<tr>
<td>Lucent Digital Radio</td>
<td></td>
</tr>
<tr>
<td>Persystant</td>
<td></td>
</tr>
<tr>
<td>Siros</td>
<td></td>
</tr>
<tr>
<td>Talarian</td>
<td></td>
</tr>
<tr>
<td>Vendicor</td>
<td></td>
</tr>
<tr>
<td>VideoNet</td>
<td></td>
</tr>
<tr>
<td>Visual Insights</td>
<td></td>
</tr>
<tr>
<td>Watchmark</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GROUP 3: Ventures That Have Experienced Liquidation Events</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Elemedia*</td>
<td></td>
</tr>
<tr>
<td>Lucent Digital Video*</td>
<td></td>
</tr>
<tr>
<td>Maps on Us</td>
<td></td>
</tr>
<tr>
<td>Noteable*</td>
<td></td>
</tr>
<tr>
<td>Speech</td>
<td></td>
</tr>
</tbody>
</table>

* re-acquired by Lucent

Through the end of 1999, the NVG had invested in 19 ventures. Most ventures have been in the Internet, networking, software, and wireless and digital broadcast spaces, which are of strategic interest to Lucent. While most investments have yet to achieve liquidity, the five ventures that have reached liquidity have brought in an 80% return on invested capital for NVG's fund.45

The 19 ventures can be grouped into four categories, as is depicted in Table 3. The first group is the internal ventures that the NVG is managing on its own. There are five venture companies in this group. The second group is comprised of those ventures that the NVG started, but have now syndicated with other VC firms, so that the risks, rewards, and governance are shared with them. There are nine companies in this group. The third group consists of venture companies that have had external liquidity events, either an IPO, or an acquisition. There are five companies in this last group. Three of these last five ventures were actually re-acquired by Lucent.

Table 4 shows how Lucent's design of NVG took the structural advantages and disadvantages of corporate venturing (in comparison with private venture capital) into account. NVG has not tried to fully emulate the incentives offered by private venture capital. Instead, they have developed a hybrid compensation system that provides greater rewards than commonly available through Bell Labs, and they do impose some modest amount of risk on employees who wish to join a venture sponsored by NVG. However, the risks and rewards are far less extreme than what are found in private VC-financed structures.

This has important implications for the people whom the NVG chose to launch new ventures. The NVG managers needed the founder of each venture to personally commit himself or herself to the success of the venture, even as the NVG was making a financial commitment to the venture. This commitment included the willingness of each founder to forego his or her annual bonus, in return for shares in more risky "phantom stock" that would pay off only if the venture succeeded. Fringe benefits within the ventures were also usually less than that in Lucent overall, so founders needed to accept that as well. Some Lucent researchers, when they realized the commitment involved, chose to remain researchers. Others, though, were excited about the opportunity to
### TABLE 4. Design of Lucent’s NVG Operating Model in Comparison with Internal Business Development (BD) and Private Venture Capital (VC) Models

<table>
<thead>
<tr>
<th>Attribute</th>
<th>BD</th>
<th>VC</th>
<th>Comment on NVG location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incentive Intensity</td>
<td></td>
<td></td>
<td>psuedo-equity used</td>
</tr>
<tr>
<td>Financial Discipline on Downside</td>
<td></td>
<td></td>
<td>staged funding used</td>
</tr>
<tr>
<td>Monitoring</td>
<td></td>
<td></td>
<td>outside VCs, Board</td>
</tr>
<tr>
<td>Discovering Alt. Business Models</td>
<td></td>
<td></td>
<td>outside Board, CEO</td>
</tr>
<tr>
<td>Time Horizon</td>
<td>NVG</td>
<td></td>
<td>no specific fund length</td>
</tr>
<tr>
<td>Scale of Capital Invested</td>
<td></td>
<td></td>
<td>now shifting toward larger deals</td>
</tr>
<tr>
<td>Coordination of Complementarities</td>
<td></td>
<td></td>
<td>increasing re-acquisitions</td>
</tr>
<tr>
<td>Retention of Group Learning</td>
<td></td>
<td></td>
<td>limited career downside risk</td>
</tr>
</tbody>
</table>

become entrepreneurs and to carry their research out of the lab and into the market.

The NVG operating model in Table 4 also influences the type of people who can be brought in from outside to help launch new ventures from within Lucent. A pure entrepreneur with no experience of operating within a larger company would likely be unable to function effectively in the NVG operating model. He or she might never have seen corporate overhead charges, annual operating plans, and company-wide occupational safety, environmental, or other corporate policy and personnel initiatives. There is an opposing pull from the pure VC model as well. Managers hired from outside of Lucent, and some internal Lucent researchers, seek a truly independent venture capital style arrangement. This involves substantial equity options, a commitment to achieve liquidity for that stock, and a pursuit of financial success no matter what the cost or impact is upon the parent companies’ business. The NVG model strikes a balance between the pure corporate development model on the one hand and the pure VC model on the other in terms of the incentives it provides to hire an outside CEO.

The NVG operating model in Table 4 emulates some of the governance features of private venture capital. The money is given to individual ventures through staged financing increments, very much like rounds of investment by venture capital firms. In nine of the ventures, NVG even syndicated later rounds of investment with outside venture firms, and invited the outside venture
partners onto the Board of the venture. This helps provide diligent monitoring and oversight and allows NVG ventures to access some of the external VC network of contacts in order to help identify appropriate CEO candidates and promising business model approaches. To date, most NVG ventures have hired an outsider to serve as CEO for the venture and have pursued a wide variety of business models. Importantly, they have shifted business models when it became clear that an initial model was not working. Thus, the NVG model makes intelligent use of independent VC firms (and in turn, selectively sharing the profits from these ventures) in the pursuit of its objectives.

However, the NVG has also taken care to leverage the potential structural advantages of corporate venturing noted above. While the managers of NVG are measured on their return on invested capital, there is no fixed life of the fund and no associated “end of fund” drive for liquidity. To date, the funds invested have been kept deliberately modest, but NVG managers are beginning to build credibility within Lucent from their initial investment results. As their credibility increases, NVG managers are beginning to evaluate larger-scale initiatives that most venture capital firms would not consider. This will allow the NVG to enjoy potential scale advantages in the future.

NVG managers are particularly interested in projects that can exploit one of more complementarities with Lucent’s assets. Much of NVG’s due diligence process involves extended discussions with internal Lucent business managers to identify important industry trends and missing elements in Lucent’s internal offerings and to assess the ability of Lucent’s channels to support new product and service offerings. These discussions help to validate the business potential of a new venture. They also help to align the ventures with the overall strategic direction of Lucent’s businesses.

Lucent has also taken steps to retain group learning from the experience of its NVG ventures. Lucent employees have the ability to rejoin the company if the venture does not succeed, preserving some institutional memory of a failed venture (though the outside CEO typically is expected to leave the company). Another benefit is that other Lab staff that do not spin off into new ventures are nonetheless being influenced by the NVG process. The presence of the NVG provides a potential alternative path to market for Bell Labs technologies, and this is viewed positively by many Bell Labs researchers. Lucent is even finding that there are recruiting advantages to its NVG program. The biggest competition it has for new Ph.D. hires is not from other research laboratories; rather, it is from startup firms. The NVG is helping Lucent recruit new Ph.D. scientists and engineers who appreciate joining a world-class research organization that also might provide a spinout opportunity for their ideas down the road.

The NVG process also appears to be achieving its goal of serving as an impetus for Bell Labs technologies to move off the shelf. Once the NVG group has identified a promising technology within Bell Labs, the Lucent business units have only a limited amount of time to consider whether or not to take over the technology themselves and fund its further development. In the past,
the business units could wait and see whether a technology would become important, and this often delayed the introduction of new technologies to the market. When the NVG serves notice that it is interested in commercializing an internal technology, that effectively becomes a forcing function that has increased the speed with which technology is moving out of Bell Labs into the market.

Once the technology is taken into the market by the NVG, the NVG process also provides more rapid feedback on the value of the technology to Lucent. The three instances to date where Lucent reacquired an NVG venture arose when it became clear that the technologies were too important to Lucent to have them managed independently of the company. This strategic value would not likely have been visible had the technologies continued to sit on the shelf. The ability to take them to market through new ventures allowed the market to provide a “second opinion” to the earlier judgment of Lucent’s business managers, who judged earlier that the technologies were not yet ready for the market.

The NVG has evolved its approach in the two years since it began operation. It has learned to invest more time and effort up front in performing due diligence on prospective investments. To that end, it now specializes its managers in specific investment areas, such as wireless communications or e-commerce, so that due diligence can be performed more rapidly. It also has moved from seeking to supply all of the financing of its ventures to seeking to syndicate funding with outside venture firms in most instances. The composition of its boards has changed as a result, from knowledgeable technologists and consultants to partners of venture capital firms with a sizeable financial stake in the venture. These outside board members add an important independent perspective and often bring a network of useful contacts as well.

In addition to accessing these external contacts, the NVG is building closer contacts with both lab researchers and managers within Bell Laboratories, and increasingly with business unit managers within Lucent’s ten business groups. These latter links also have proven to be increasingly valuable to the NVG, both as a source of opportunities for new ventures and also for learning about market trends and needs. These enhanced connections with the external marketplace have sped up the NVG’s due diligence process and have improved its effectiveness in spotting important opportunities. They also increase the awareness of and appreciation for technical opportunities within Lucent’s business groups. Ironically, NVG’s early interest in technologies has caused some Bell Labs technologies to move directly into the business groups that might otherwise have been overlooked by those businesses. This is one contribution that NVG makes to Lucent that is not formally measured.
Conclusion

Corporate venturing has had a checkered past, rising and falling with the public equity markets. The recent surge in private venture capital makes the design of corporate ventures even more problematic, as these ventures must compete with independent venture capital for entrepreneurial talent latent in the firm. To sustain themselves through the down phase of the next cycle, corporate venturing structures must be designed to operate in the shadow of independent venture capital.

While they may do well to mimic certain VC practices, corporate venture structures ultimately will only work if they can deliver strategic benefits to their sponsoring companies. To realize these benefits, these structures must do more than mimic independent venture capital. They must leverage the potential advantages of corporate ventures. To be sure, in these days of munificent public equity markets and abundant IPOs, the potential advantages of corporate venturing versus independent venture capital have yet to assert themselves. However, corporate structures do differ in their time span, their scale, their management of strategic complements, and their ability to learn from venture failures. In less exuberant equity markets, these advantages could become more salient.

Lucent’s NVG is one structure that illustrates how corporate venture structures can be designed in this new environment. Its structure balances many aspects of private venture capital with other aspects of its corporate mission. It is consciously a hybrid, lying between a pure venture capital model and a pure corporate development model. It works closely with Lucent’s businesses, yet it retains an independent ability to select technologies and take them to market. It seeks to exploit Lucent’s resources to the fullest, but is free to pursue whatever business model it wishes to use for a new venture. Its managers are compensated on their return on their investment and even reacquired ventures are purchased at market prices. Its returns so far have been impressive, yet it has managed not to antagonize the senior managers of the parent firm.

However, effective Lucent’s NVG ultimately turns out to be, it is likely to be more effective than a corporate venturing strategy that either ignores venture capital on the one hand or simply seeks to emulate all of the practices of private venture firms on the other. The way forward is to acknowledge that the corporate context differs in important ways from that of private venture capital and then to design corporate venture structures that flow from the logic of those contextual differences. Lucent’s NVG provides one example of such a structure.

Notes


5. The amount written off is not reported by Sykes [ibid.].


14. This is consistent with problems of measurement that frustrate most pay-performance incentive systems in large corporations. Zenger finds that engineers have highly inflated beliefs about their relative performance versus that of their peers, and therefore regard large variations in compensation as arbitrary and unfair. The result is a “leveling” effect that dampens salary incentive increases. Todd Zenger, “Compensating for Innovation: Do Small Firms Offer High-Powered Incentives that Lure Talent and Motivate Effort?” working paper, John M. Olin School of Business, Washington University, St. Louis, MO, May 24, 1996; Todd Zenger, “Explaining Organizational Diseconomies of Scale in R&D: The Allocation of Engineering Talent, Ideas, and Effort by Firm Size,” Management Science, 40 (1994): 708-729.

15. Block and Ornati, op. cit., p. 44.


17. This is a specific instance of a more general problem. See Williamson for a seminal discussion of “the problem of selective intervention,” or why a large company cannot do everything a small company can do, and more. Oliver E. Williamson, The Economic Institutions of Capitalism (New York, NY: Free Press, 1985), Chapter Six.


20. Sahlman (1990), op. cit.

21. These milestones might include the creation of a working prototype unit, or the receipt of an initial customer order, or reaching a breakeven point on a cash basis.


23. Lerner, op. cit. The objection might arise, why do entrepreneurs voluntarily bear such risk, and enter into arrangements that entail such significant oversight and financial discipline? Hellman [op. cit.] provides one answer. He studies a model of a wealth-constrained entrepreneur who faces a tradeoff between retaining more control vs. receiving better financial terms. Because the entrepreneur’s effort is non-contractible, VCs will rationally offer better financial terms to entrepreneurs who agree to accept these constraints on their control rights.


27. Sykes, op. cit.


29. Sykes, op. cit.

30. Ibid.


36. It does suggest an alternative strategy for corporate venturing, though, that lies outside the scope of this article. This strategy would rely on venture capital to fund, organize, and govern early stage endeavors, and it would focus corporate internal venture activity on selectively acquiring later stage ventures and grow them from there, rather than start them from scratch.


43. To be sure, many corporations do not do much to proactively learn from their failures. The argument here is that there is the potential for corporations to do more than private VC firms; not that most corporations in fact are doing so.


45. This is a cash-on-cash return and excludes markups taken on private companies in subsequent rounds.