Organization Science
Vol. 20, No. 3, May–June 2009, pp. 601–620
ISSN 1047-7039 | EISSN 1526-5455 | 09 | 2003 | 0601
DOI 10.1287/orsc.1080.0373

Gems from the Ashes: Capability Creation and Transformation in Internal Corporate Venturing

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Our longitudinal study of the entire population of internal corporate ventures within a large European electronics manufacturer finds that the conventional focus in the corporate venturing literature to evaluate ventures based on business growth and financial performance may be misguided. Instead, we found that ventures are temporary conduits for capability development and play a primary role in launching the founding stage of new capability life cycles. Ventures' main contribution was often to transfer valuable capabilities to other ventures or the firm's existing business units. The benefit from investing in ventures was therefore largely independent of their commercial success. Furthermore, estimation of success rates proved highly sensitive to the stage of the ventures at which sampling began. These findings suggest the need to reconceptualize the notion of early stage ventures and their success. We further found that the venturing process can be conceptualized as a nested system of simultaneous selection at both the venture and the capability level. We show that these selection processes are distinct yet operate in a coevolutionary way and are amenable to proactive management.

Key words: corporate ventures; performance; failure; capability life cycles; coevolution
History: Published online in *Articles in Advance* July 25, 2008.

The premise that underlies much theorizing about internal corporate ventures is that they are an effective vehicle for driving new business development within established organizations (Block and MacMillan 1993, Thornhill and Amit 2001). Despite this widely accepted premise, research on the linkages between corporate growth and corporate venturing activities provides a much less clear picture. Although some studies find a relationship between corporate venturing and corporate growth (e.g., Zahra 1991, 1996a), the success rate of ventures, measured in terms of their survival, ability to deliver to bottom-line performance, or drive significant new growth, is typically quite low (Campbell and Park 2004, Stevens and Burley 1997). Some observers note that less than 5% of corporate venturing units created new businesses that became substantial lines of business for their parent companies (Birkinshaw and Campbell 2004).

Despite this rather disheartening track record, there is nonetheless widespread acceptance that internal corporate venturing is an important element of companies' growth strategies (Bhardwaj et al. 2006). Setting aside the creation of new growth businesses, advocates of investment in venturing point to indirect benefits, such as the development and exploitation of new routines and capabilities (Dougherty 1995, McGrath et al. 1994, Zahra et al. 1999). Ventures are further associated with the creation of internal variety, which has been theorized to be important for firms to be able to respond to shifts in the external environment and to adjust their broader corporate strategies (Burgelman 1991, Burgelman and Grove 2007, Levinthal 1997, March 1991).

A focus on indirect benefits implies quite a different theory of the contribution of the corporate venturing process to firm performance than a theory emphasizing its new business development role does. A theory of the indirect benefits of ventures emphasizes their capability-building and learning outcomes. Yet the process through which new capabilities are founded and developed, given that the organizational unit that initiated them is likely to fail, is poorly understood. Extant theories do not explain how capabilities created and developed in the context of a venture come to play a role in creating a competitive advantage for their parent firms elsewhere. Our study focuses on how this capability creation and transfer process takes place and how a corporation can facilitate the proactive management of capability creation and transfer.

A useful point of departure is the idea of the capability life cycle (Helfat and Eisenhardt 2004, Helfat and

Peteraf 2003). Helfat and Peteraf suggest that important organizational capabilities develop through specific stages: a founding stage, in which the initial underpinnings of a capability are established; a development stage, in which the capability is enhanced; and a maturity stage, in which capability building ends. More importantly for our discussion, they also develop the concept of capability transformation via branching, in which internal and external selection processes act on capabilities to cause them to move in six potential ways: retirement, in which case the resources linked to the capability are removed; retrenchment, in which the utilization of a capability declines; renewal, in which a firm places a capability in a new development stage; replication, in which a firm seeks to copy a capability developed in one setting and use it in another; redeployment, in which a capability developed to serve one product/market is moved to another; and recombination, in which the original capability is combined with another.

Our empirical findings with respect to capability creation and development in ventures are consistent with the notion of capability life cycles but depart from it in theoretically important ways. First, we find evidence for the transformation of nascent, or incomplete, capabilities that in previous literature would not have been considered to be sufficiently mature to experience branching events. Second, we show how corporate ventures act as rich breeding grounds for the initiation of capability founding events but that development and eventual exploitation of a capability in most cases required a transfer from its point of origin, a new idea to both the venturing and the capability life cycle theories. Third, we show how the internal selection environments for both ventures and capabilities influence one another in a coevolutionary manner, shifting the emphasis in previous literature on internal ecologies from a venture-level focus to a combined capability/venture logic. Furthermore, we suggest how such a coevolutionary process can be proactively managed, by venture redirection and capability transfer, which might be considered dynamic capabilities. Finally, we are able to show the relationship between capability creation in ventures and renewal outcomes for the core business when capabilities developed in ventures are transferred there. Our conclusions draw on a longitudinal, empirical study of the complete portfolio of all corporate ventures founded between 1998 and 2001 within a global electronics firm, beginning with the very earliest-stage ventures and continuing until their outcomes were known.

Evolution of Capabilities in Internal Corporate Ventures

Internal corporate ventures (henceforth, "ventures") are internally staffed new business development projects. These might include commercializing technology developed in an R&D context or leveraging customer relationships to broaden the array of services a company can offer. They usually include a mandate to develop new capabilities for the parent firm, what Helfat and Peteraf (2003) refer to as the "founding" stage. Empirical evidence suggests that effectiveness of new capability creation is correlated with subsequent value creation (McGrath et al. 1995, 1996).

The traditional outcome sought from corporate venturing is the successful launch of a new growth business, and this forms the dependent variable in most studies of the venturing process. Outcomes have typically been assessed in terms of profitability and growth. A common research strategy was to compare cases in which ventures achieved commercial success with those in which they did not, to derive critical success factors. Product pairs were frequently compared. Common methods were to use retrospective, single-respondent surveys or interviews with executives involved in ventures to derive conclusions from their responses. Major decisions took place at the level of the project and were usually couched in terms of "go/no go" decisions at key stages/gates (Cooper 1979, Cooper and Kleinschmidt 1987, von Hippel 1977, Zirger and Maidique 1990).

One problem with such approaches to understanding venturing is that, because the studies examined ventures that survived long enough to either succeed or fail, potentially important information about ventures that were started, but terminated along the way, is missing. Because data were often collected retrospectively from reporting executives, it is impossible to rule out the potential impact of retrospective bias. A further issue is that because most of these studies looked at the venture level of analysis, they could not gain much insight into the indirect benefits of venturing, in the form of organizational learning or capability building. Finally, these studies tended to look at individual ventures, rather than the portfolio of ventures a firm was investing in, in which case portfolio influences on venture outcomes are missed.

A more nuanced approach to understanding the corporate venturing process emerged as scholars began to apply resource-allocation process models and ecological theories to corporate decision-making environments and to attempt to understand the impact of management practices on venturing programs (Burgelman 1996, 1983, 1991, 1994; Stopford and Baden-Fuller 1994). Burgelman proposed an internal ecology in which initiatives are subject to the processes of variation, selection, and retention. Variation refers to the creation of ventures that create variety in the activities a firm is currently performing. Selection acts through the resource-allocation process (Bower 1970, Noda and Bower 1996). Ventures "selected in" are able to capture sufficient corporate resources to continue. Those "selected out" are either

deliberately killed or allowed to wither away. There is some evidence that formal processes tend to select "in" ventures that are consistent with current corporate strategy; those ventures that challenge or do not fit existing conceptions of corporate strategy require more informal mechanisms, such as championing or political maneuvering, to obtain resources (MacMillan 1983, Starr and MacMillan 1990). Finally, retention refers to maintaining the venture within the firm. In this research the venture as a project or initiative is the unit of selection.

The intraorganizational ecology perspective created a framework for describing the relationship among the strategy of a firm, the resource allocation process, and the outcome of corporate ventures. Burgelman, for example, posited that ventures can be hugely important sources of insight for corporate executives that can lead to the reinterpretation of the current strategy, a case of retention actually altering the selection environment.

Because this research is largely silent on the role of ventures in capability creation, it overlooks the possibility that a second selection environment might be operating at the capability or resource level, below the level of a particular venture. Evolutionary economists, in contrast, embrace that idea, although not in the specific context of venturing. They have argued that the organizational routine is the equivalent of a gene in the natural world and have thus proposed that the building blocks of organizational capabilities lie at a level below any particular organizational structure within which they are embedded (Nelson and Winter 1982, Winter 1990). In the course of pursuing a venture, an organization can be creating new capabilities—such as new skills, assets, and systems—that may be useful outside the context in which they were developed (Floyd and Lane 2000, Galunic and Rodan 1998, Teece et al. 1997).

The life cycles of capabilities might bear little correlation to the life cycle of a venture or even the organization in which it is embedded. As Helfat and Peteraf point out, "... the lifecycle of a capability may extend beyond that of the firm and the industry in which it originated" (2003, p. 998). They suggest that, when faced with selection events, capabilities can also "branch" in that they are replicated in different geographic markets, redeployed to new product markets, or recombined with other capabilities. Other scholars have observed that routines, capabilities, and know-how can move beyond the boundaries of the organizational structures that spawned them, although the process is not always easy (Galunic and Rodan 1998, Helfat and Raubitschek 2000, Hoetker and Agarwal 2007, Szulanski 1996).

We have so far suggested the following: despite strong evidence of low rates of commercial success, firms persist in investing in venturing. We believe that a key motivation for doing so is that venturing can play an important role in the capability development process, although the theory of this role for corporate venturing has not been well delineated. Ventures might spark the founding of new capabilities, might help develop capabilities, or might play a role for capability transformation in which capabilities originally created in ventures "branch" into other areas. The interesting dynamic this leads to is that if new growth businesses are not the vehicle through which companies realize the benefits of their investments in venturing, then the capabilities founded and developed in a venture need to be transferred somewhere else to be exploited. However, theory is largely silent about how this process of capability creation and transformation occurs and how to structure an internal selection environment that encourages fruitful "branching" with respect to capability development, even as individual ventures are "selected out." This gap sets the stage for our empirical analysis, in which we examine how an entire portfolio of ventures was managed.

Methods

This paper draws on data collected in a four-year, longitudinal, within-company examination of the venturing practices followed by a major European electronics firm, which we shall call ALPHA. The bulk of the data was originally collected within the dissertation of Tukiainen (2004). The study design was a longitudinal case study design, which is often useful for theory building (Eisenhardt 1989, Yin 1994). We developed complete case histories of 37 internal ventures within a single company.

Research Setting

The company we studied is a global player in the global electronics sector. As of the end of our study period in 2003, ALPHA's revenues exceeded $37 billion U.S. dollors and its net income exceeded $4.5 billion. It is widely regarded as an innovative leader in its field and has grown substantially over the past 10 years, from 28,000 employees in 1994 to more than 51,000 in 2003. We were granted access to the entire population of ventures underway in ALPHA that were started between 1998 and 2001. Although our observation period continued past 2001, we did not include any new ventures begun after 2001 in our study to ensure that we could follow each venture until its outcome was known. Thus, we followed the entire population of ventures until they were either launched or discontinued. It is important to note that this departs from the widespread tradition of examining only those ventures that had developed to the point of market introduction. We begin our analysis at a much earlier stage, giving us the potential to observe capability creation beginning with what Helfat and Peteraf (2003) term the "founding" stage of a capability life cycle.

The design of our study is particularly suited to improving our understanding of capability development

and deployment and the mechanisms regulating these processes. First, it is field-based and longitudinal, a type of design that researchers are often encouraged to undertake but which few actually do. We had the opportunity to follow an entire population of ventures from their inception to their conclusion. This research setting allows us thus to overcome the bias toward successful and relatively mature ventures that is present in much of the received literature on corporate ventures. Second, our sample contains no antifailure bias. Most of the 37 ventures that ALPHA started were discontinued during the study period. They would therefore have been considered failures in studies that use measures of commercial success as their outcome variable. Third, we were able to gather evidence at the capability level, which is rare for empirical studies. Absent the ability to separate venture outcomes from capability outcomes, one would not be able to empirically test Helfat and Peteraf's contention that capabilities should be studied independent of the organizational structures in which they are embedded. Fourth, because we had the opportunity to collect data on the whole population of ventures in ALPHA we are able to examine firm-level processes of capability management, including the interdependence between ventures, which one could not observe by studying single projects or even matched success–failure pairs. Finally, the time period of our study covers a full cycle of growth and decline in corporate venturing activities, which allows us to separate venture management activities from the broader selection environment imposed on firms.

Data Sources and Data Collection

We collected both quantitative and qualitative data about the ventures in our study. Sources included semi-structured interviews, internal documentation (including business plans, project plans, and budgets), Web pages, news articles, and press releases. We were given complete access to the ventures' files, as well as to venture leaders and other informed participants. Because one of the authors was on site during almost all of the study period, we were also able to capture information on decision making in real time and to talk to venture participants as the ventures unfolded.

We conducted one to six interviews for each venture. We always interviewed the venture manager at least once, in addition to members of the venture team. We supplemented these interviews with interviews of senior managers in the new ventures division, particularly those who sat on venture boards or were otherwise involved with important decisions that had a bearing on the management of capabilities. Having multiple informants per venture allowed us to triangulate information provided by individual informants thereby mitigating informant biases and leading to richer and more elaborated information (Graebner and Eisenhardt 2004). It is worth noting that our research took place concurrently with venture development, so we were not reliant on retrospective recall.

Altogether we conducted 109 interviews. Interviews lasted from 1.5 to 4.5 hours and followed a semi-structured interview guide that contained variations depending on the role of the interviewee. Interviews were taped and subsequently transcribed. We asked follow up questions by phone or e-mail when this was necessary. In parallel with the interviews, we reviewed each venture's internal documentation including business plans, project plans, and budgets to derive questions specific to the individual venture. The multiple levels of analysis and the breadth and the richness of the data we collected allow us to combine quantitative analysis methods with qualitative methods (Strauss and Corbin 1998, Yin 1994). We followed standard procedures for inductive research (Eisenhardt 1989, Yin 1994), developing a venture report for each venture and a case study of the venturing context in ALPHA. To ensure the accuracy of our information, we also e-mailed the reports to all interview sources for review and correction.

Development of a Quantitative Coding Scheme

Using a combination of constructs that emerged as we studied the ventures and our reading of the strategic management and corporate venturing literatures, we created a quantitative coding scheme that would allow us to systematically analyze the patterns we were observing of capability and venture management practices and associated organizational learning (Helfat and Raubitschek 2000). In developing and applying the codes, we worked with a group of three senior managers from ALPHA who helped us ensure the accuracy of our conclusions. Inter-rater agreement was calculated to establish coding reliability. Inter-rater agreement was on an acceptable level, exceeding 73% in all codes.

Coding for Venture Outcome. Venture outcomes capture the outcome of the selection process at the venture level that has been the focus of prior studies (Burgelman 1991). Rather than observing a continuation–discontinuation dichotomy, as prior literature might suggest (Cooper 2001), we observed three additional outcome categories. Those we called "spin in" involved a venture being combined with an established business. Those we termed "launched in a new division" were combined with others to form a new business division within ALPHA. This outcome was close to a traditional launch yet took place within a different organizational structure. And finally "spin out" ventures were either launched as stand-alone businesses or sold either partly or wholly to external collaboration partners.

Coding for Capability Creation. In our interviews, we always asked for information on what benefits ALPHA

derived from the ventures. To our surprise, venture managers would frequently make the point that, even though a venture was discontinued, it nevertheless created valuable capabilities with the potential to generate future profits. To confirm this conclusion, in each case we discussed the value of these emerging capabilities with a group of three senior managers. The forms of specific capability creation that emerged from the cases fell into four general categories. The first were capabilities built to the point that the venture was able to introduce a new product to the market. The second were the capabilities embodied in specific inventions that could be protected by patents. The third was a construct that we came to call "personal capabilities," which was more difficult to measure. These represented cases in which one or more members of the venture team reported that they and/or their colleagues had learned something of potential value in the context of the venture. An example of a personal capability might be the ability to work with others cross-culturally or the creation of a network of connections with important customers or industry influencers. Developing personal capabilities such as these has been shown to increase the overall capability of the organization to engage in uncertain activities (Christensen 1997). Although less easy to quantify, ALPHA executives felt that personal capability development was an extremely important result of being part of a venture team. Because it is hard to quantify personal development precisely, we coded each venture with a "1" if the managers who assisted us in coding reported significant increases in capabilities among team members and a "0" if they did not.

The fourth category was what we came to term "new organizational capabilities," consistent with capability life cycle theory. An organizational capability (as opposed to a personal capability) was defined as the increasing ability of the venture team to accomplish its objectives through the combination of skills, assets, and systems in new ways. This construct has many precedents in the literature and is sometimes termed "organizational competence" (McGrath et al. 1995). Because organizational capability is also difficult to measure precisely, we coded each venture with a "1" if managers who assisted us in coding reported the development of important new capabilities and a "0" if they did not.

Coding for Capability Transformation. We found that the patterns of capability transformation in ALPHA mirrored the branching events theorized by Helfat and Peteraf (2003); however, the process in ALPHA was proactive and deliberate. At venture reviews, ALPHA management would regularly ask the question, "where else might the outputs of this venture have value?" The question became particularly urgent in the case of ventures facing discontinuation. What would then quite frequently happen was that the venture, or some of its constituent elements, would be moved elsewhere within ALPHA. Elements of capability were thus replicated in different markets, redeployed to different products, or recombined with capabilities elsewhere in the organization.

To systematically study this process, we created a set of codes that would capture different forms of capability transformation. In each case, we coded the venture with a "1" if a capability was transformed to follow a branch different from a continued evolution along its prior trajectory and a "0" if it did not. We found a number of instances in which capability retrenchment (Helfat and Peteraf 2003) took place—that is, emerging capabilities were simply abandoned. We also found many instances of redeployment, in which ALPHA systematically transferred one or more members of a team to another venture or even a mainstream business with the mandate to further develop an emerging capability. In other cases, an early idea or concept upon which a venture was based would be picked up elsewhere in the organization and developed further, thereby leading to continued capability development in the receiving organizations. Some of the products and associated capabilities that were developed in ventures were transferred elsewhere to be launched from another part of the company, resembling a form of replication. And some personal capabilities, either technical or organizational, were transferred elsewhere in recombination with existing capabilities. Finally, organizational capabilities in areas such as marketing or distribution arrangements that were more or less independent of a particular technology were redeployed to other product markets within ALPHA. We thus defined codes to capture capability transformation through the transfer of a team, idea, product, technical capability, personal capabilities, and organizational capability.

With these codes in hand, we were able to assess the way in which capability creation and development took place throughout ALPHA's portfolio of ventures. What we were particularly interested in understanding was the relationship among venture management, capability management, and the creation of value for the corporation.

Redirection. Unlike the more linear process depicted in many venture studies (such as those featuring stage/gate processes, for instance), ALPHA's ventures quite frequently changed their technical objectives, their market objectives, or their overall goals. We named such events "redirections" and captured when they occurred. A redirection represented a significant change in the venture. Commonly, changes would involve a shift in the business model, a change in the target market envisaged, or a change in the technology to be deployed. Table 1 provides a summary of the coding scheme we utilized and defines the codes.

Table 1 Constructs, Codes, and Definitions

Construct	Construct definition	Coding category	Category definition
Venture outcome	Venture outcome captures the decision made by the venture board with respect to the venture's next stage of development. This represents the outcome of the selection process at the venture level.	Continues	The venture continued until the end of our study period.
		Discontinue	The venture is completely discontinued.
		Spin-in	The venture is moved to and integrated into an existing business unit.
		Launched in a new division	The venture was combined with other ventures into a new business division. This is similar to a traditional business launch.
		Spin-off	The venture is spun off into a separate company that is at least partially owned by external investors.
Capability creation	Capability creation refers to new capabilities created in the venture that were perceived to be valuable by respondents.	Products	The venture developed and commercialized new products.
		Patents	The venture filed for and received patents.
		Personal capability	The people involved with the venture developed new skills that were perceived as valuable by our respondents.
		Organizational capability	The venture created new organizational capabilities, where these were defined as an increasing capacity for the organization to achieve its intended objectives.
Capability transformation	Capability transformation refers to the transfer of capabilities developed within the venture to another part of the organization. The codes represent which type of capability was transferred.	Team	The venture team was transferred to another venture or to an existing business unit.
		Idea	The concepts underlying the venture were pursued by a new venture or within an existing business unit.
		Product	The product was transferred to another venture or existing business unit.
		Technological capability	Technological capabilities have been transferred to another venture or existing business unit.
		Personal capability	Skills or knowledge developed in the venture were taught elsewhere in the organization.
		Organizational capability	Organizational capabilities have been transferred to another venture or existing business unit.
Redirection	Redirection refers to a significant change in the strategic direction of the venture such as a change in technology, business scope, model, or target market.	Number of redirections	Number of redirections refers to the number of times that a venture underwent a major shift in target market, objectives, or scope during our observation period.

Internal Corporate Venturing in ALPHA

Internal Corporate Venturing Structures at ALPHA

Venturing activities in ALPHA during the study period were concentrated in a dedicated new ventures division, which we shall call the NVD. It was formed in 1998 to develop new businesses for ALPHA by exploring new product, market, or technological opportunities that were not within the agenda of ALPHA's established businesses. ALPHA's 1999 annual report summarizes what company executives intended for the NVD:

> [ALPHA's] Venturing Unit's mission is to see what the world will look like in three to 5 years time. It explores new business areas for [ALPHA]. If the business case stands up, the company creates a new venture. The Venturing Unit provides a greenhouse for new business ideas. At first, one or two people are asked to investigate a new idea. If the idea has merit, a larger team could be assembled to turn it into a business. [ALPHA's] Venturing Unit also runs pilots and other early stage venturing, often together with one or more partners.

Decision makers within ALPHA chose to organize venturing efforts within different structures in the corporation. Its two primary ongoing businesses would continue to invest in new technologies, business practices, and markets that supported their business activities. However, businesses that were based on a different business model, attacked a different market, or used radically different technology would be pulled away from the established divisions and moved into the new ventures division (NVD), which reported directly to the senior executive team. The company president was the division's personal sponsor.

Venture Management Process Within ALPHA

ALPHA managed its ventures with an extremely disciplined process of resource allocation. Among its notable features were (1) the establishment of a venture board

that oversaw all ventures; (2) the creation of specific stages through which ventures were expected to evolve; (3) frequent and formal project reviews; and (4) allocation of funds commensurate with the stage of the venture.

Venture Board. To evaluate its ventures, ALPHA utilized a venture review board that had a very broad membership. As the NVD head of business development explained,

> We established a venture board. This consists of the head of NVD, the head of business development (who was me at that point), then the heads of HR and Legal (for personnel and intellectual property considerations). Then we tried to include also a representative from the right business unit. This facilitated moving the technology over to the business unit later on. In most of our cases, we did end up transferring technology from the ventures to the business units.

Venture Stages. The board and the venture team interacted as the venture was evaluated during rigorously enforced venture stage reviews. Each venture was placed within a stage, from the earliest (V0) to full-scale business emergence (V3). An executive on the leadership team of the NVD described the stages as follows:

> V0 is the stage where we have recognized the business idea, have the critical elements of the business idea, let's say target customer group, the product concept, the need of the target group we are trying to fulfill, the benefit our apparatus is giving them and the position in competition. We also must have recognized the upside potential for the idea in a corporate scale and also in financial terms.... At V1 we could have some kind of pilot, depending on what kind of business model we are talking about; we could have the first test if the idea works with some representative customers...; if partners are needed, we would have some partners; if technology is needed, [at this stage] it is tested or demonstrated, verified. V2 would be the market or business commitment phase... V3 would be [the stage] where a traditional VC exits, when it is a full blown business. Actually [in our case] it's often business unit integration that is the target....

Every venture that had achieved milestone V0 during the study period (1998–2001) was included in our sample. We believe this to be unusual, in that many studies of ventures take place far later, when many potential projects would already have been selected out. This can lead to misinterpretation of the working of the total process (Stevens and Burley 1997).

Venture Reviews and Funding. Funds for the ventures were allocated in a manner similar to the "milestone" allocation heuristics practiced by venture capitalists, with funds grants dependent upon whether the venture moved to the next stage. With each grant of funding, the venture team and their resource providers agreed upon activities to be completed before the next project review. Only after the next review would projects be allocated additional resources. In this way, the total cost of each venture could be to some extent anticipated at any given time. This practice also facilitated a continuing dialogue between members of the venture team and its venture board.

Resource commitments grew from stage to stage in the venture development. As one venture development manager describes it:

> At this stage [V0] we have found the champion, one full-time person pushing this idea, taking care that it doesn't die.... In V1 we have a team, a core team of the business unit, 5 times more commitment in talent... V2 would be "fully resourced." If you put it money wise, you might want to put in $150.000 here [V0], here [V1] $1.5 million and here [V2] $15 million and here [V3] it depends, it might be $150 million.... These are rough guesses. This is a way to manage the risk, if you take it financially wisely, you can make a big number out of these [V0 ventures], but the commitment is small. The number of ventures you can support has to go down when you move here [V3 ventures]. If you can make one of these [V3 ventures] in 5 years, it's pretty good.

Analysis

Venture Outcomes

Table 2 summarizes the outcomes for each venture, together with the "V" decision stage and age at which the final outcome materialized, the type of opportunity the venture sought to pursue, and the venture size at the time of the final outcome. The size of ventures ranged from one to more than 1,400 employees. Ten ventures originated in business units, and twenty seven ventures had their roots in other parts of the organization such as research and development or were developed entirely within the new ventures division. Some ventures incorporated acquisitions. These ventures all represented forays into either new market spaces or new technologies. Seventeen ventures primarily focused on exploiting new technologies, twelve ventures primarily addressed new markets, and eight ventures addressed service opportunities. To preserve confidentiality, we have listed them here by aliases. Table 3 provides a summary of venture outcomes.

Continuation. At the end of our study period, only three ventures continued, two in stage V2 (commercial launch) and one in stage V1. Subsequent to the end of our study, all three were moved into established business units, which meant that they were eventually launched (we coded them as "continues" because that is the stage they were in at the end of our study period). One (Bonn) is today being held up as one of the NVD's major successes and promises to position ALPHA for first-mover advantage in an extremely high-growth market segment. After our study, it was moved wholesale to one of ALPHA's core businesses where it was integrated with its most high-profile product categories.

Table 2 Description of the Ventures and Outcomes as of End of Study Period

Venture	Venture concept	Size (people)	Interviews	Venture outcome	Venture stage when ended	Type of opportunity, new…
Zurich	New market entry toward education market by wireless products	2	2	Discontinue	V0	Market
Paris	Explore the opportunity to create an adapter to combine the use of mobile phone and TV	1	1	Discontinue	V0	Technology
Prague	Combining point-to-point and point-to-multipoint broadcasting technologies in broadband distribution	1	1	Launched in a new division	V0	Technology
Bonn	Create a market and develop devices that allow digital TV in mobile devices	70	5	Continues	V2	Technology
Warsaw	Pursue personal life management services	1	1	Discontinue	V0	Service
London	Develop applications for new-generation terminals	10	3	Spin-in	V1	Service
Budapest	Develop and commercialize location-based media applications as well as wireless advertising and marketing	30	4	Spin-in	V1	Service
Copenhagen	Market entry for kids, market by new communications devices and services	15	6	Spin-in	V1	Market
Berlin	Pursue opportunity in softbooks	0	2	Discontinue	V0	Market
New York	Create new convergence products for home domain markets	40	3	Launched in a new division	V2	Technology
Tallinn	Create a market and product for mobile Internet access with big screen	153	5	Discontinue	V2	Market
Vienna	Pursue opportunity providing Internet services in public places	2	2	Discontinue	V1	Market
Bratislava	Commercialize opportunity in wireless print media, distribution, and digital rights management	20	4	Spin-in	V1	Technology
Hollywood	Create and commercialize messaging-based Java services	5	2	Discontinue	V1	Service
Rome	Create new user experience for mobile communications through virtual display	8	2	Discontinue	V1	Technology
Helsinki	Developing and offering a mobile e-mail access service via mobile phones	15	3	Continues	V2	Service
Madrid	Entry into new market through distribution of personalized content	1	1	Discontinue	V0	Service
Milan	Entry into citizens, service solutions	1	1	Discontinue	V0	Service
Delhi	Develop core technologies for personal use experience, mobility, and privacy. Exploit opportunities of ubiquitous computing	4	4	Spin-in	V0	Technology
Vancouver	Commercialize wireless access in aviation	1	1	Discontinue	V0	Market
Barcelona	System solution to provide local services in unlicensed frequency bands	27	4	Discontinue	V1	Technology
Tokyo	Create new digital content distribution kiosk	8	2	Discontinue	V0	Market
Montreal	Enter into optical access business	10	3	Spin-off	V2	Technology
Sapporo	Commercialize new wireless payment technology	5	2	Discontinue	V1	Technology
Stockholm	Commercialize personal pocket-size hard-disk server	10	4	Discontinue	V1	Technology
Atlanta	Develop and commercialize behavior data analysis software and tools for mobile service personalization	5	2	Spin-off	V1	Technology
Athens	Create a new broadband access product	2	1	Discontinue	V1	Technology
Melbourne	Develop advanced caching technology for fixed and wireless content delivery	2	2	Discontinue	V0	Technology
Oslo	Commercialize wearable voice recognition device	12	2	Continues	V1	Technology
Seattle	Develop and introduce media content management and distribution devices, applications, and services	2	2	Discontinue	V0	Market
Dallas	Commercialize technology to deliver high volume content by optimized distribution scheduling	10	3	Spin-in	V2	Technology

Table 2 (cont'd.)

Venture	Venture concept	Size (people)	Interviews	Venture outcome	Venture stage when ended	Type of opportunity, new…
Riga	Introduce video content management personal device downloading content to mobile phone	2	2	Discontinue	V0	Market
Singapore	Exploit digital convergence opportunity between TV/radio and mobile services to create new business	5	3	Discontinue	V1	Market
Munich	Commercialize personal pocket-size server	2	2	Discontinue	V0	Market
Sydney	Create and commercialize a new mobile browser and service gateway WAP technology and business	400	6	Launched in a new division	V2	Technology
Boston	Create and commercialize wireless telephone over IP network products for corporations	1,400	6	Launched in a new division	V2	Market
Phoenix	Commercialize services for chronically ill	10	5	Spin-off	V2	Service
Corporate			5			
Total: 37			109			

Discontinuation. During the period of our study, 21 of the 37 ventures (57%) were discontinued outright. Just under half (12) of these were V0 stage ventures (representing the smallest and most early-stage initiatives). Another eight were V1 stage ventures, which represented more commitment on ALPHA's part. Only one discontinued venture in our sample had reached stage V2, the point at which a substantial commitment to the commercial launch of the business would be made. For instance, the venture Berlin, which focused on softbooks, was discontinued after only four months when the initial investigation of the opportunity suggested insufficient market potential with the envisioned approach. The pattern of discontinuation in ALPHA ventures was to stop projects early on when they were still small, sunk cost invested in them was limited, and the downside of exit was relatively modest, consistent with the recommended way of funding forays into new territory (McGrath 1999).

Spin-in. Six ventures in our population were spun in to an existing business unit during the study period. Spinning in involved moving the venture from the NVD and integrating it with an existing business division. Of these, one was at the V0 stage, four were at the V1 stage, and one had reached stage V2. Although spin-ins would be classified as failures by many traditional categorization schemes, we found that these ventures provided important renewal effects in the core businesses.

Table 3 Venture Outcomes by Venture Milestone

	Continues	Discontinue	Spin-in	Launched in a new division	Spin-off
V0	0	12	1	1	0
V1	1	8	4	0	1
V2	2	1	1	3	2
Total	3	21	6	4	3

Such an outcome is similar to what Helfat and Peteraf (2003) describe as "recombination."

An example of the value created by the spun-in ventures can be seen in Delhi, which developed technologies to improve the personal user experience and developed business models for ubiquitous computing. It was spun in as a whole to one of ALPHA's core businesses. Some of its technologies have become part of the core strategy for ALPHA, a powerful renewal effect within ALPHA's core business. In another example, the venture London focused on developing a new set of applications for the next generation of devices that ALPHA was developing. In 1999, the venture board judged that these applications and therefore London's application development capabilities would be crucial to ALPHA's core business. As a result, the whole venture was integrated into one of ALPHA's main business units. The applications that London was developing have become an essential part of ALPHA's devices.

Launched in a New Division. This category represents the traditional "successful" outcome of an investment in corporate venturing, when such an investment allows a firm to launch a new business. During the time of our study, ALPHA executives had been considering a shift in strategy to undertake more enterprise-level, business-to-business sales in the company from their primary emphasis on consumer-oriented businesses. Because there was no established business unit with this mandate, exploring opportunities in this space was the charge of three major NVD ventures (New York, Sydney, and Boston). As our study drew to a close, ALPHA announced a major push into this new business area and pulled these three ventures (all V2 ventures) plus the much smaller V1 venture Prague together with parts from existing business units in what was then branded as a major business launch in a new ALPHA division. This outcome reflects continual development of capabilities.

Spin-off. Spin-off ventures represent those that ALPHA's executives decided they no longer wished to support but that had developed interesting technologies or other solutions that could be used to attract the attention of external collaboration partners. Those ventures that were spun off were partially or wholly sold to outside investors. Three ventures, one in stage V1 and two in stage V2, were spun off. The Phoenix team, for instance, focused on commercializing services for the chronically ill. Although it was making progress toward viability as a stand-alone business, its venturing board decided that the focus area of the venture was too far from ALPHA's strategic core to be a driver of growth. They decided to spin it off as an independent company. Such spun-off ventures could be classified as either successful, in that they created viable businesses from which ALPHA derived a profit at the sale, or as unsuccessful, in that their capabilities did not continue to develop within ALPHA. Although Helfat and Peteraf (2003) mention that capabilities can transfer beyond the boundaries of their originating entity, they do not include a construct in their analysis that is equivalent to spin-off, in which a parent firm deliberately seeks to profit from transferring capabilities elsewhere.

Capability Creation

The capabilities founded and developed within ALPHA's ventures included those underlying the introduction of 31 new products and 442 patents. Six (16%) of the ventures in the portfolio reported new product creation activity. All but four reported having successfully filed patents (in other words, nearly 90% of the venture portfolio was successful in patenting). On the softer side, 22 of the ventures (60%) reported having substantially increased the personal capabilities of team members, and 15 (41%) felt that valuable new organizational capabilities had been developed in the course of the ventures. Tables 4 and 5 show these results.

Moreover, capabilities were founded and developed, even in cases in which the ventures with which they were associated were discontinued. Of the 21 discontinued ventures, one (Sapporo) developed marketable products. Eighteen of them reported successfully filing a total of one hundred and twenty seven patents. Eighteen reported substantial personal capability development, and three even suggested that they had created new capabilities for ALPHA.

Of the three ventures that were continuing as of the end of our study, two reported having successfully developed 5 products, filed 82 patents, and created important organizational capabilities. Of the four ventures launched in a new division, three reported capability development and one reported personal capability development as key. Additionally, they claimed 24 products and 140 patents. Similarly, all of the ventures that were spun in to established businesses reported the creation of valuable capabilities for the organization.

It is also interesting to note that, for the three ventures that wound up being spun off, none of the managers

Table 4 Capability Creation

Venture	Venture outcome	Products	Patents	Personal capabilities*	Organizational capabilities*
Zurich	Discontinue	0	2	1	0
Paris	Discontinue	0	4	1	0
Prague	Launched in a new division	0	7	0	1
Bonn	Continues	4	60	0	1
Warsaw	Discontinue	0	2	1	0
London	Spin-in	0	9	0	1
Budapest	Spin-in	0	11	0	1
Copenhagen	Spin-in	0	12	0	1
Berlin	Discontinue	0	0	1	0
New York	Launched in a new division	0	1	1	0
Tallinn	Discontinue	0	22	1	0
Vienna	Discontinue	0	0	1	0
Bratislava	Spin-in	0	21	0	1
Hollywood	Discontinue	0	12	1	0
Rome	Discontinue	0	1	1	0
Helsinki	Continues	1	4	0	1
Madrid	Discontinue	0	2	1	0
Milan	Discontinue	0	1	1	0
Delhi	Spin-in	0	8	0	1
Vancouver	Discontinue	0	0	1	0
Barcelona	Discontinue	0	41	0	1
Tokyo	Discontinue	0	20	1	0
Montreal	Spin-off	0	4	1	0
Sapporo	Discontinue	1	5	0	1
Stockholm	Discontinue	0	1	0	1
Atlanta	Spin-off	0	6	1	0
Athens	Discontinue	0	1	1	0
Melbourne	Discontinue	0	2	1	0
Oslo	Continues	0	18	0	1
Seattle	Discontinue	0	4	1	0
Dallas	Spin-in	1	2	0	1
Riga	Discontinue	0	2	1	0
Singapore	Discontinue	0	5	1	0
Munich	Discontinue	0	0	1	0
Sydney	Launched in a new division	4	84	0	1
Boston	Launched in a new division	20	48	0	1
Phoenix	Spin-off	0	20	1	0
Total		31	442	22	15

*Coded "1" if respondents reported their existence and "0" otherwise.

Table 5 Pattern of Capability Creation by Venture Outcome

	N	Products	Patents	Personal capabilities	Organizational capabilities
Continues	3	5	82	0	3
Discontinue	21	1	127	18	3
Spin-in	6	1	63	0	6
Launched in a new division	4	24	140	1	3
Spin-off	3	0	30	3	0
Total	37	31	442	22	15

assisting us in the evaluation reported the development of organizational capabilities, although they did claim patents (30), and each one reported that the team members had gained substantial personal insight. They also had not created any products. Such a pattern suggests that ALPHA's management did not see the capabilities developed in these ventures as germane to its strategy.

Capability Development and Transformation

Having passed through the founding stage, capabilities progress to a development stage or are transformed to move down a different evolutionary branch. Our study design allowed us to examine how this process worked in detail. Table 6 provides the results of our coding for capability transformation. Of the original 37 ventures, 26 (70%) reported the transfer of at least one capability developed in the venture to another part of ALPHA.

Transforming the Team. Alpha encouraged mobility among its staff. It was quite normal for a team who had been involved with a venture and developed capabilities to work together effectively to transfer either to another venture or to one of the mainstream business units, in order for the recipient groups to benefit from their experience and learning. Such transfers were explicitly regarded by the human resource community in ALPHA as a key vehicle for internal knowledge transfer. One venture development manager commented on this:

> Whenever you try to do something like [new ventures, the people involved] also learn. Since the ventures are really new to a certain extent they learn more than they would in an average job.

We found 13 instances in which people—either parts of teams or entire teams—who were part of the venturing program moved to another part of the organization.

Table 6 Capability Transformation

Venture	Venture outcome	Team	Idea	Products	Technological capabilities	Personal capabilities	Organizational capabilities
Zurich	Discontinue	0	0	0	0	0	0
Paris	Discontinue	0	1	0	0	0	0
Prague	Launched in a new division	0	1	0	0	0	0
Bonn	Continues	1	1	1	1	1	1
Warsaw	Discontinue	0	0	0	0	0	0
London	Spin-in	1	1	0	0	1	1
Budapest	Spin-in	1	1	0	0	1	1
Copenhagen	Spin-in	1	1	0	0	1	1
Berlin	Discontinue	0	1	0	0	0	0
New York	Launched in a new division	1	1	0	1	1	0
Tallinn	Discontinue	0	0	0	1	1	0
Vienna	Discontinue	0	1	0	0	0	0
Bratislava	Spin-in	1	1	0	1	1	1
Hollywood	Discontinue	1	1	0	0	1	0
Rome	Discontinue	0	1	0	0	1	0
Helsinki	Continues	1	1	1	1	1	1
Madrid	Discontinue	0	0	0	0	0	0
Milan	Discontinue	0	0	0	0	0	0
Delhi	Spin-in	1	1	0	1	1	1
Vancouver	Discontinue	0	0	0	0	0	0
Barcelona	Discontinue	0	1	0	0	1	1
Tokyo	Discontinue	0	1	0	0	0	0
Montreal	Spin-off	0	0	0	0	0	0
Sapporo	Discontinue	0	1	0	0	0	0
Stockholm	Discontinue	0	1	0	0	0	0
Atlanta	Spin-off	0	0	0	0	0	0
Athens	Discontinue	0	0	0	0	0	0
Melbourne	Discontinue	0	0	0	0	0	0
Oslo	Continues	1	1	0	1	1	1
Seattle	Discontinue	0	1	0	0	1	0
Dallas	Spin-in	1	1	1	1	1	1
Riga	Discontinue	0	1	0	0	1	0
Singapore	Discontinue	0	1	0	0	1	0
Munich	Discontinue	0	0	0	0	0	0
Sydney	Launched in a new division	1	1	1	1	1	1
Boston	Launched in a new division	1	1	1	1	1	1
Phoenix	Spin-off	0	0	0	0	0	0

Note. All measure are binary taking the value 1 if the venture building block was recycled elsewhere in the organization and 0 otherwise.

Although this occurred primarily through the processes of spin-in and launch, there was one case in which the team from a discontinued venture (Hollywood) joined an established business group. Although the project they had been working on was no longer ongoing, their knowledge about the new business model it was seeking to develop was deemed potentially important to the core business, and they were transferred there.

Transforming Ideas. Another positive outcome from ALPHA's venturing program was to experiment with many different ideas and applications. Although many did not work out, they often provided learning that led to other group's attempts to bring a similar idea into reality. Thus, the venture Sapporo created a product, several patented inventions, and, in the opinion of the managers who assisted us in coding capability creation, significant organizational capabilities. At the V1 review, however, the venture board decided that its product would not scale up to the size a commercial venture for ALPHA would require. As they observed the venture's efforts, engineers from one of ALPHA's core business units believed that they could come up with a solution that would offer a similar functionality, but with greater ease of manufacturing and more robustness in use. Thus, although the Sapporo innovations were not adopted, their ideas and learning about the market were. Ventures Paris and Berlin, similarly, were short lived and never got past the V0 milestone; however, their ideas were picked up and transferred to other units.

Ideas are also important in the transfer of patents from one group to another. For instance, the venture Oslo had created important intellectual property right (IPR) related to wearable voice recognition devices. This technology was transferred to an existing business unit and commercialized there as part of a product. One venture development manager commented:

> The IPR that gets created in those ventures that are not taken forward . . . is still relevant for the whole of ALPHA, because in many cases our ventures are still fairly close to the businesses of ALPHA . . . . This is definitely something we get out. Then we have such things as [organizational] learning and individual learning for the people involved that is difficult to quantify . . . . Also some of our product creation work, even if not fully completed [is reused] . . . . That work in a way serves as a good stepping stone for future projects. In some cases some of these intermediary results, for instance code that has been written, the initial designs that have been done, can be reused in other parts of ALPHA . . . .

We found evidence of the transfer of ideas in 25 instances, representing a common form of capability transfer.

Transforming Products. Recall that, of our population of ventures, only six had created new products by the time the study ended or they were moved to the next stage of their development. In five of these ventures, the products were transferred to other units for further development. This took place primarily through the spin-in and launch processes. In the case of the four ventures that were combined to form the new division, it was a desire to create critical mass around the suite of products for the new market that spurred the reorganization decision. In the case of the ventures that were spun in to an established unit, the products that they had developed proved to be extremely relevant to the next-generation development of the established business.

Transforming Technological Capability, Personal Capabilities, and Organizational Capability. As with the team, ideas, and products, we also found evidence that capabilities were also transferred from ventures to other locations within the organization. This process highlights the path-dependent and cumulative nature of capability development. The development of such capabilities took place over several consecutive ventures, each of which was discontinued. Finally, a critical mass of sorts developed, to the point in which they were ready to be used on a commercial scale. The knowledge and capabilities originally developed in the venture Tallinn might serve as an example. Tallinn aimed at creating a new product category for mobile Internet access. Although this product category failed, the knowledge created during the venture helped to spawn the venture Bonn, which focused on digital TV on mobile devices.

Nine ventures reported the transfer of technological capabilities, all but two of which were V2 stage ventures. This suggests that, to transfer technological know-how, a venture must have reached a certain level of development both to create the knowledge in the first place and to interest other parts of the organization in adopting it. On the personal capabilities front, these represented occasions in which individuals either transferred to other groups to share what they knew or trained others in the insights they had developed. In these cases, the whole team did not transfer. Personal capabilities were transferred in 19 ventures. Finally, organizational capabilities were also subject to transfer, and 12 ventures reported that they had done so.

Venture Management Processes and Capability Transformation

We have so far described the outcomes of ALPHA's venture management system, which is intricately connected to its corporate learning system and to what Burgelman (1991) calls the "internal selection environment," which allocates resources and attention to and away from ventures. Because there is relatively little extant literature that describes how such systems work, let us discuss how ALPHA managed its capability life cycles in the venturing group.

Venture Reviews. An unusual aspect of ALPHA's approach to managing ventures is that its leaders were conscious of the need to look below the level of an individual project to see what else of worth had been created there. Management placed significant emphasis on venture reviews (sometimes called *post mortems* in the case of a discontinued venture) with a strong emphasis on learning what had been created in a venture and what additional insights they yielded. For, instance one venturing manager commented:

> When we screen ideas through venturing, at every stage we have the option to discontinue it for good reasons. Then we try [to] document why the decision was done. Why did we kill it? Was it because it can't be done? Or is the market not there yet? The approach is right but the market is not there yet? This way we can utilize what was created. Or we can could come back and take the venture from the archives.

Note three aspects of this review structure that are different from conventional go/no go reviews: (1) awareness that the project can be stopped "at any time" unlike project funding approaches that assume that a project, once approved, will be funded through commercial launch or at least the next decision point; (2) documentation of the decision taken as an input to future learning; and (3) awareness that the idea might be useful at some point in the future ("we can take the venture from the archives") (see also Garud and Nayyar 1994 for a perspective on recapturing stored knowledge).

ALPHA further facilitated learning and capability transfer through the composition of its venture boards and review teams. As discussed above, ALPHA included business development managers from its operating businesses on boards and as part of the review process. Among the responsibilities of venture boards was strategically and proactively determining where capabilities could be transferred across the corporation. Thus, operating division executives were knowledgeable about venture developments and, upon identifying capabilities that would be useful for their businesses, had a ready mechanism to begin the process of transferring them, should transfer prove the best choice.

Connection to the Broader Learning System. In addition to the executive-level decision-making process, which focused on authorizing and monitoring ventures, ALPHA's broader learning system is a veritable thicket of training and networking events, personnel rotation, documentation of codified knowledge, and temporary assignments. Its environment is intensely collaborative, and networking is seen as key to success. People are expected to take time for formal and informal learning, and the extent to which they do this is monitored (and sanctioned, if employees do not meet minimum thresholds).

The NVD also sponsored a customized internal learning program for high-potential venture staff. The first module focused on learning about taking risks, managing uncertain initiatives, and specific content around venturing. The second module had to do with leadership. A final module involved class participants actually working with an NVD venture to help them think through how it could be launched. The class itself thus became a way for ventures to be connected to other ventures and (through the corporate sponsorship of the projects) to the broader company. Appropriate reaction to disappointment was also a class theme. It was common for the course designers to bring respected leaders in the company to talk to the participants, not about their successes, but about how they failed in an intelligent way. Awareness of ventures, the connections between them, and other variables were thus widely shared.

Human resource practices in ALPHA emphasized the separation of venture continuation decisions from the decisions about venture manager careers. For instance, one venture manager described:

> The venture had been driven by two people who really have pioneered and developed it and have done a great job... [When] we had to make the decision whether to continue or not, it was very difficult decision but in the end we felt that it was not for us and therefore decided to spin it off.

Separating individual success from venture success allowed managers in ALPHA to view ventures as opportunities, a cognitive framing that allows for more flexibility than if ventures are viewed as a response to a threat (Gilbert 2005, 2006). Thus, they laid the groundwork for eventual transfer of know-how, technologies, and people from the core businesses to the NVD and from the NVD to the core businesses.

Venture Redirection. To develop capabilities to the point where they would become visible enough and could be transferred while maintaining relatively tight venture abandonment rules, ALPHA overlaid the traditional go/no go process on the venture level with a second process that we refer to as redirection. This second process was mainly geared toward capability transformation. A redirection represents a significant change in the venture. Commonly, changes would involve a shift in the business model, a change in the target market envisaged, or a change in the technology to be deployed. Redirection was ubiquitous among ALPHA's ventures. This echoes the experiences of independent entrepreneurs, who find that their businesses often change substantially as they develop them (Bhide 2000). Table 7 provides a summary.

All of ALPHA's ventures were substantially redirected at least once, and some as often as four times (on average there were 1.86 redirections per venture). First redirections took place frequently during the first year of a venture (average age 6.5 months, median age 6 months).

Table 7 Venture Outcomes, Redirections, and Age

Venture	Venture outcome	Number of redirections	Age in months at outcome decision
Zurich	Discontinue	2	11
Paris	Discontinue	1	11
Prague	Launched in a new division	2	16
Bonn	Continues	4	33
Warsaw	Discontinue	1	13
London	Spin-in	2	14
Budapest	Spin-in	2	13
Copenhagen	Spin-in	3	29
Berlin	Discontinue	1	4
New York	Launched in a new division	3	10
Tallinn	Discontinue	2	28
Vienna	Discontinue	1	14
Bratislava	Spin-in	3	24
Hollywood	Discontinue	1	18
Rome	Discontinue	1	17
Helsinki	Continues	2	43
Madrid	Discontinue	1	11
Milan	Discontinue	1	13
Delhi	Spin-in	3	20
Vancouver	Discontinue	1	7
Barcelona	Discontinue	2	37
Tokyo	Discontinue	1	6
Montreal	Spin-off	2	22
Sapporo	Discontinue	2	21
Stockholm	Discontinue	1	18
Atlanta	Spin-off	2	18
Athens	Discontinue	1	17
Melbourne	Discontinue	1	15
Oslo	Continues	2	20
Seattle	Discontinue	1	14
Dallas	Spin-in	2	26
Riga	Discontinue	1	3
Singapore	Discontinue	2	21
Munich	Discontinue	1	4
Sydney	Launched in a new division	4	42
Boston	Launched in a new division	4	42
Phoenix	Spin-off	3	39

Additional redirections took place at the average age of 15 (median 15) and 23 (median 23.5) months.

Redirections sometimes occurred as a consequence of a formal venture review. More often, a redirection resulted from an interim review with vigorous give-and-take between venture staff and the NVD leadership or more senior management. As one participant recalled,

> There was one venture, which was about end-to-end solutions for electronic media. You need [several building blocks]. In one single meeting the top guy of the venture board, one of our top executives, he said lets focus this just on one layer of this business which was [one component]. The venture manager walked out from the meeting, he left behind the whole idea about electronic media and end-to end and focused just on [that component].

Venture managers also changed the course of their ventures when new information became available between decision points.

We found that redirections were central to develop capabilities to the point where they could be transformed for use in other parts of the organization. For instance, the venture Bratislava originally focused on facilitating the distribution of e-books. The product ideas involved content distribution and portable wireless large-screen terminals. However, as these applications were pursued, market feedback made it clear to the venture team that neither of these opportunities would materialize. At the same time, the team learned that Bratislava's technology solved some thorny digital rights management problems that were obstacles to the distribution of copyrighted digital content on mobile devices. The venture was thus redirected to focus on only those technologies and that application. Although this new focus did not suffice to make Bratislava viable as a stand-alone venture, it was eventually spun in to an existing business of ALPHA, and its team has developed a digital rights management solution that has become part of an important industry standard. Redirection appears to be one of the central mechanisms through which capability development is steered and later capability transformation is prepared.

Because capability building is a path-dependent process that requires time, very early stage ventures might create seeds of a capability, but these are not yet developed enough to be recombined, redeployed, or replicated. In some instances during the early development stage a capability's potential value elsewhere might simply not be recognized. For instance, one manager in ALPHA admitted to having missed out on some important developments within ventures when these were closed too early:

> [In some cases], we didn't have a chance to go to the marketplace and get real feedback… [Our] decision to discard the technology was made before the product or service could be launched to the market. We closed the ventures long before that. There was no real market data that we could review to understand what we had created….

Although critics might suggest that redirections were intended to preserve a failing venture from termination, we found no evidence corroborating such an interpretation, given the relatively high proportion of discontinued ventures in our sample. Rather, by redirecting the ventures, ALPHA created a flexible mechanism for learning. For instance, the venture Helsinki was a consumer-oriented service offering. It became increasingly clear as it developed that it would be perceived to compete directly with the customers of one of ALPHA's core business units. Rather than discontinuing the venture, it was redirected to serve a different market that did not create channel conflict problems. In a second case, the venture Tallinn early on aimed at creating a mass

market product for wireless Internet access. Unfortunately, the team learned that complementary technologies necessary to address a mass-market application would not be available for some time. Instead of immediately shutting down the venture, the team narrowed its scope and focused it on serving a few early-adopting customers. The redirection ensured that sufficient technological depth was created to transfer technological capabilities from the venture even though the venture itself was not a business success.

This does, however, raise the fascinating question of the optimal stopping point for ventures. Shutting down ventures early has the advantage of containing organizational commitment and curbing potential escalation of commitment. It does, however, also decrease the possibility that the ventures will be able to develop capabilities to the point where it is easy to identify their potential and where they could easily be transferred to another part of the organization. It is also possible that some ideas require multiple iterations of effort before enough has been learned and the capabilities are stable enough to transfer (see, for example, Hoetker and Agarwal 2007).[1]

Management Attention. Consistent with the resource-allocation-process view of strategy (Bower 1970) we also found that the allocation of senior management attention greatly facilitated capability transformation. The president of ALPHA was the "godfather" (their words) of the venturing program, ensuring that existing divisions did not compete away its resources. Senior leaders were expected to be sponsors of course projects in the NVD-specific course. Senior leaders were also personally involved with redirecting ventures. We also saw some evidence that ventures that attracted more management attention tended to get redirected, whereas those that did not have the same high profiles were more vulnerable to being discontinued.

Aside from providing them more time for capability development, those ventures that were receiving significant attention from executives of an established division were gradually pulled into closer alignment with overall ALPHA strategy. Through redirecting these ventures to become more related to the corporate strategy and to existing core products, the evolution of capabilities within them and the understanding between venture and division grew. Ventures that had followed such an evolutionary path were frequently either in parts or altogether spun in to existing business units.

Discussion

We have focused in this study on indirect performance effects of corporate ventures, in particular, how internal corporate ventures contribute to the management of firms' capability life cycles. Our analysis suggests the need to revise prevalent ways of thinking about the relationships among ventures, capabilities, and internal selection environments. Of particular importance for future research are judgments of success and failure of ventures, the importance of capability transfer for its appropriate exploitation, and empirical evidence with respect to the evolution of capability life cycles as separate and distinct from the organizational forms within which they are embedded. Our study further suggests that capability life cycles are amenable to proactive management by the way in which a firm's learning environment is structured.

Success and Failure May Not Be What They Seem

Our findings suggest that scholars need to rethink the way in which they evaluate success and failure in corporate ventures. In much previous work, success is operationalized by examining the progress of individual ventures toward becoming large-scale businesses within the parent corporation (e.g., Shortell and Zajac 1988, Thornhill and Amit 2001, Zahra 1996b). If traditional concepts of success such as the number of ventures that survived or that provided significant growth for the corporation were applied, the venturing program at ALPHA could hardly be regarded as having made a significant contribution to ALPHA's performance. Only three ventures were still ongoing at the end of our study (we subsequently learned that they had been spun in to established business units), and a further four were on their way to commercial launch (albeit in a different division than originally housed them). If we count these as "successes," the success rate would be approximately 19%. However, we argue that this figure misrepresents the true impact of ALPHA's venturing program, with significant implications for how venturing benefits should be assessed in future studies.

The bulk of ALPHA's discontinued ventures were small V0 ventures, which were highly experimental, highly uncertain, and low commitment. A well known pathology of venturing is the tendency to continue to invest despite evidence that a project is not meeting expectations (e.g., Adner and Levinthal 2004). ALPHA appears to have been quite disciplined about not allowing commitment to these ventures to escalate. ALPHA's high mortality rate for early-stage ventures could therefore be regarded as a positive signal of a disciplined approach to managing uncertainty rather than a sign of negative performance. One implication is that estimation of the success rate of a venturing program is entirely dependent on where scholars begin to measure venture progress in their samples. In ALPHA, only *one* venture that had reached the V2 stage ended up being discontinued. If we had never sampled the V0 ventures, we would have estimated a far higher success rate for the venturing program than we did. Imagine that we looked only at ventures that had reached the V2 stage. Of these, one was discontinued, with the remainder going on to

launch, being spun off, or being spun in, a success rate of nearly 90%.

More importantly, our findings show that the failed ventures, meaning those that were discontinued, created important capabilities that were subsequently transferred to other parts of the organization. The conclusion that the early-stage V0 and V1 ventures were fruitful for the launch of important capabilities has a further implication: To the extent that studies omit such early-stage ventures from consideration, it is easy for them to miss the origins of capabilities that might be important later on. Of course, there is also a danger that early-stage ventures get terminated too early, thus crippling their ability to negotiate the founding stage for capabilities. Scholars would miss such indirect performance effects if they use traditional success measures. Our findings, thus, suggest the need to revise our conceptualization of success in corporate venturing as a commercial launch. Our work suggests that, to properly estimate the true impact of investments in venturing, researchers need to look at the entire population of a firm's venturing activities, need to start examining ventures at their earliest stages, and need to measure capability building and capability transformation activities. Absent this information, coming to erroneous conclusions about key venturing success factors and the relationship between venturing and performance is almost unavoidable.

A Different Metaphor for Corporate Ventures

Our study further suggests that researchers should conceptualize early-stage corporate ventures differently than the common view that they are analogous to entrepreneurial startups. The need for a different metaphor for corporate ventures was triggered by two somewhat surprising patterns we observed in our study. The first was the extent to which redirection featured prominently in the development paths of corporate ventures. The second was the importance of capability transfer—and by extension of the relationship between ventures and the core businesses of the company—to the organization's ability to capitalize on its discoveries. Conventionally, ventures are thought of as the corporate equivalent of forming a new business (hence the common characterization of the process as "corporate entrepreneurship"). By implication, the path they follow should go through the stages of startup, launch, growth, and, eventually, maturity. Our findings show a far more fluid, recursive pattern in which not only ventures were redefined and redirected, but the capabilities enmeshed within them were as well.

Rather than being thought of as analogous to a launch pad for a new business that will go through a more or less orderly development process (Block and MacMillan 1993, Burgelman 1983), our work suggests that, at least at the earliest stages, ventures could better be characterized as experiments, embedded within deliberately temporary structures. The purpose of these temporary structures, we discovered, is to provide a home for the founding stage of a capability life cycle. Once the capability is formed, the structure in which it was started may not be where it can add the greatest value for the parent firm. Although we are loath to generalize, in ALPHA the structures in which capabilities began were virtually never the structures in which they were developed or transformed.

Reconceiving of early-stage ventures in this way suggests a different way of conceptualizing venture progress, success, and failure. If ventures were to be explicitly recognized as incubators for capabilities that will ultimately be useful elsewhere in the firm, then an assessment of their value depends on the worth of the underlying capabilities they hosted. Furthermore, ending a venture once it has done this incubation job may well be cause for celebration, not despair. If early-stage ventures are regarded as temporary, it becomes much easier to recombine, recycle, and reuse underlying capabilities than if doing so forces an admission of "failure" on the part of the leadership team.

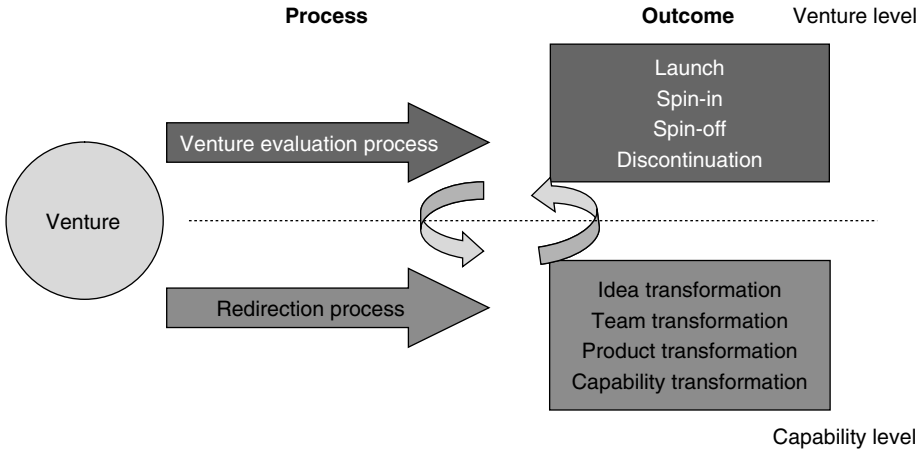
Furthermore, the linked process of capability transfer also calls into question how scholars assess venture progress. Rather than looking at ventures or projects one by one cross-sectionally, our study suggests that it is important to also gain insight into the portfolio of activities taking place both within new venture groups and within the parent corporation to understand how capabilities are actually used over time in a commercial sense. The value of a given capability may not be apparent until it has found an appropriate organizational home; likewise, a venture that is missing a critical capability may not be able to progress until it gains access to it. Thus, the transformational activity of capability movement (or "branching") is at least as important to understanding outcomes as the measurement of more conventional venture benchmarks is.

Capability Life Cycles, Intraorganizational Ecology, and Managing the Venture Process

Our study contributes to the emerging literature on capability life cycles. The seminal study by Helfat and Peteraf (2003) has provided an important conceptualization of the paths through which capabilities are created and transformed. However, the conceptualization of capability life cycles as being independent of the life cycle of organizations and their activity sets raises the question how the management of capability creation and transformation is linked to the management of activity systems such as the process of venture development.

Prior research on intraorganizational ecology lends a framework that is suitable to address this question. Whereas prior research has focused on selection processes on the venture level (Burgelman 1991) or has speculated about selection processes on the capability level (Helfat and Peteraf 2003, Winter 1990), our study

Figure 1 Process and Outcomes on Venture and Capability Level



develops a nested model of simultaneous selection on the venture and the capability level that is depicted in Figure 1. While an internal selection environment at the venture level was evident within ALPHA, we found a second simultaneously operating selection environment that operated at the level of individual capabilities. Ventures and the emerging capabilities encapsulated in them evolved in response to the selection forces of both selection environments. For instance, the pressures from the venture level selection process clearly guided the evolutionary path of capabilities. However, at the same time, decisions regarding capabilities that were of broader interest to ALPHA shaped the evolutionary path of ventures, for instance, by pulling the scope of some ventures closer to the scope of ALPHA's core business. Our finding of a nested two-level selection environment extends both evolutionary models of venture development (Burgelman 1991) and lends support to the critical importance of resource-allocation policies to successful value creation (Bower 1970, Noda and Bower 1996). Our findings further suggest that studies of capability life cycles should employ coevolutionary frameworks (e.g., Helfat and Raubitschek 2000, Volberda and Lewin 2003) to capture the coevolutionary dynamics of these nested selection environments.

The presence of two selection levels suggests an important insight into the management of the venturing process. Prior literature has emphasized managing the process for venture success in the form of venture growth. Our findings that the venture's contribution to the corporation lies often more in acting as a conduit for capability development suggests that effectively managing value creation in the venture process goes well beyond go/no go decision making. In fact, it suggests paradoxical tensions in pursuing the dual goals of growing new business and developing capabilities that can be redeployed. Further research might shed greater light on the boundary conditions for what are currently contradictory conclusions regarding the optimal timing for launching and stopping ventures.

Real options analysis, for example, tends to prioritize early, frequent shutdowns of ventures so as to avoid downside exposure and avoid escalation of commitment (McGrath 1999). This approach, taken to an extreme, risks failing to allow ventures enough time to develop transferable capabilities. It also encourages selecting at the level of the venture, rather than at the capability level. Other frameworks, such as stage/gate, place a priority on the venture being able to meet predetermined goals, which can lead them to be shut down without consideration of value that might be gained apart from the preplanned objectives of the venture. On the other hand, less structured venture management processes such as skunkworks (Kanter 1988), "probe and learn" (Lynn et al. 1996), or "innovation journeys" (Cheng and Van de Ven 1996) that might provide the venture with sufficient time to develop capabilities might also lead to problems of creeping commitment, social obligation, fear of failure, and so on, thereby risking escalation of commitment (Staw and Ross 1987). Furthermore, without proactive management of capability transfer, the capabilities created by these processes might be marooned there. Our findings suggest that achieving a balance between the risks of stopping too early and the risk of escalation of commitment is potentially crucial for managing the venturing process. Further research could usefully explore how companies develop mechanisms for establishing such a balance.

Does Venturing Create an Advantage for Corporate Ventures Over Start-Ups?

A final point worth noting from our analysis concerns the differences between corporate entrepreneurship (venturing, in our language) and independent entrepreneurship. As Hoetker and Agarwal discovered, failed entrepreneurial ventures frequently create knowledge and capabilities that benefit other industry players, even if the focal organization no longer exists (2007). We have posited a similar outcome for corporate ventures—even if the ventures no longer exist, the knowledge

and capabilities they create can endure. An intriguing issue, however, is whether this process of knowledge transfer can yield a competitive advantage for corporations over independent entrepreneurs. Within an organization, executives have the opportunity to structure an internal ecology to maximize the private gains to entrepreneurial activities within the boundaries of the firm. Whether such structures can overcome the well documented inability of organizations to innovate in new areas consistently is an open question (Christensen 1997).

Limitations

This study has benefited from our access to rich, qualitative sources of data through which we were able to uncover patterns that challenge the assumptions prevalent in the corporate venturing literature. Although particularly suited to the managerial questions we sought to address, such a research strategy has its limitations. Our theorizing is based on a limited number of ventures within a single organization. Although this has allowed us to collect rich, in-depth data on this specific firm, it limits generalizability to theoretical generalization rather than statistical generalization. Because the data we relied upon were collected by doing primary, on-site research, replication of our results would require a similarly effortful endeavor by other researchers in other settings.

Related to this is the narrower question of the generalizability of the processes and practices we encountered. Although we found that the management practices in ALPHA appeared to allow it to capture far more value from its venturing program than a calculation of successful launches might suggest, we would be reluctant to assert that the process adopted in ALPHA represents best practice for all types of firms. For one thing, ALPHA's context—which rewards innovation and is technology intensive—may be intrinsically more suitable for benefiting from capability transfer than other industry contexts. For another, ALPHA's corporate culture is tolerant of failure and highly focused on learning. Firms with different orientations may meet with success using its practices.

Suggestions for Further Research

As we have noted in our discussion above, our study suggests that scholars consider a rather substantial departure from the way in which corporate venturing research (and, to some extent, research on dynamic capabilities) has often (though not always) been conducted. Our study suggests that capabilities originate far earlier than most data sets can capture and that their evolution follows coevolutionary and nonlinear paths that would be difficult to measure with secondary, quantitative sources. Nonetheless, we have shown that it is possible to detect patterns in their development using a standardized approach across ventures. It may be possible to extend this approach across multiple ventures in multiple firms, which would be a logical next step. Indeed, it may also be possible to infer the operation of some of the patterns we discovered by examining practices such as patenting and new product introductions, although we believe that by the time ventures have progressed to the point at which such outcomes are visible, scholars run the risk of seeing only a partial story.

The reason this matters is that our results suggest that important downstream capabilities have their origins in very early-stage "founding" efforts. In our study, somewhat contrary to previous research, we found that nascent capabilities, not just those that had passed the development stage, also went through substantial branching transformations and recombination. In fact, such primitive capabilities do not necessarily "work in a reliable manner" (Helfat and Peteraf 2003, p. 999), but, unless they were developed first, the capabilities that do deliver reliable performance could not have come later. A challenge for researchers will be capturing evidence of the existence of such primitive nascent capabilities to better understand the fully developed capabilities that follow them.

We found that many of the benefits of investing in corporate venturing were found in the renewal effects on ALPHA's core businesses and technologies. A nice opportunity for future research would be to investigate in more detail how other business development processes such as acquisitions, alliances, or divestments contribute to corporate renewal, and whether similar capability branching takes place in such activities. One interesting hypothesis to test is whether firms that are skilled at redirecting ventures translate such skills into better capitalizing on investments in acquisitions or better deriving benefits from alliances. Alternatively, it may well be that firms follow a preferred path to capability development, with some favoring acquisition and others favoring internal development. We know of no research that has currently considered this question.

Because we find strong evidence for multiperiod, sequential creation of knowledge and capabilities, a final theoretical implication is that scholars and managers will want to be quite careful in defining constructs representing success and attributing their causes to specific managerial actions. It could well be, for instance, that an executive managing a venture could simply be in the right place when a critical mass of knowledge resulting from many previous failed attempts came together. To attribute success to his or her actions alone is to significantly misunderstand the nature of the process.

Conclusion

Our study of internal corporate venturing in ALPHA was motivated by the desire to better understand the relationship between investments in venturing and outcomes

for the parent firm. We were surprised at the extent to which the initiation of new capability lifestyles was an important driver of value creation from venturing, independent of the outcomes of the ventures in which the capabilities were initiated. A major conclusion of this research therefore is that actions taken by managers at the venture level of analysis need to take into account capability considerations, and *vice versa*.

Acknowledgments

The authors would like to thank the acting editors Constance Helfat and Rajshree Agarwal as well as Ron Adner, Ellen Auster, Oana Branzei, Yuval Deutsch, Eero Eloranta, Mikko Kosonen, Tomi Laamanen, Anoop Madhok, and participants at seminars at York University and the Strategic Renewal Conference in Chicago for useful comments.

Endnote

[1]We appreciate the suggestion of one of our reviewers to include this discussion

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