

Hybrid Organizations as a Strategy for Supporting New Product Development

by Alison Rieple, Adrian Haberberg, and Jonathan Gander

Alliances between large, well-established corporations and highly creative small companies or consultancies can be an effective method for promoting innovation. Alison Rieple, Adrian Haberberg, and Jon Gander cite examples and analyze circumstances, cultures, and the role of individuals they call “boundary-spanners.”



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In many industries, such as computer hardware, aircraft, and car manufacturing, product innovation is a critical source of competitive advantage. Such industries have seen increasing numbers of alliances in recent years and a fragmentation of their organizational structures, so that they resemble networks or federations. In these types of structures,

firms cut back to their core areas of expertise and obtain whatever additional resources they need from specialists. These developments appear to have come about as a result of the increasing awareness of the knowledge content of innovative products and recognition that management expertise, as well as organizational culture, is specialized and not easily transferred among different product and operational types.

Within this article, we focus on one aspect of this type of structure, in which one firm (normally a large, multi-product corporation) obtains critical product-development resources, such as design or technological know-how, from an independent firm (normally a smaller and more specialized design consultancy or a

technology developer). The two firms develop a fairly close relationship—perhaps only for the period of a specific assignment, but often over a longer period spanning several projects. These hybrid relationships are governed through informal means, such as unwritten agreements between key individuals, as much as through the more usual form of legal contracts.

The new-venture or new-product divisions that are found within many highly innovative companies (Procter & Gamble, Nokia, Lucent, and Sony come to mind; see the box at right) are another version of the hybrid structure.

Resource acquisition and use

There are three principal methods of acquiring the resources needed to achieve successful product innovations: develop them in-house; buy them on the open market; or develop them within strategic alliances or partnerships. Deciding which structural route to follow depends on a number of factors: the risk of opportunistic behavior, the irrevocable commitment of untransferable resources (which may include ideas, knowledge, and other intangibles, as well as tangibles such as customized product components or materials), and the amenability of such resources to hierarchical control. However, there may also be a number of noneconomic influences on such decisions, including trust and affection, reputation, and perception about desirable outcomes.

Crucial to the success of a hybrid are “boundary-spanners.” These are members of the partner organizations who are able to move freely within both, translating the requirements of each into language and behavior that is acceptable to, and understandable by, the other.

Trust between the senior managers who set up a hybrid in the first place, and the boundary-spanners who maintain the relationship subsequently, is a critical factor. Trust lowers cost and raises productivity. Cooperation increases under conditions of trust, because with trust such costly barriers as formal contracts and detailed monitoring can be removed. The resulting less-formal specifications can also allow the parties to respond more rapidly to any changes in circumstances. Trust may initially arise in response to the manufactured image and reputation of a firm and perceptions of its reliability and competence. But it also can develop subsequently

Sony’s innovation structure

Sony is one of the most innovative companies in the world. Many of its product design functions are carried out in its local markets, outside Japan, and in its established business divisions. However, these activities tend to focus on improvements to established product ranges. For more blue-sky developments, Sony has two types of hybrid product development divisions—hybrids because they are neither completely autonomous nor fully governed by the parent. They are mainly located in Japan and report directly to Sony’s corporate headquarters. They focus on areas that are unrelated to current business areas, or on strategic developments of business areas in which the company is already involved, such as display or storage technologies. The more blue-sky the activity, the less control there appears to be from corporate HQ. Sony’s annual reports distinguish R&D units described as “headquarters research laboratories” from those called “independent research laboratories” with a separate legal structure. One of these, Sony Computer Science Laboratories Inc., carries out fundamental research and research into user interfaces; the other, Sony-Kihara Research Center Inc., researches three-dimensional computer graphics and image processing technologies that combine sensing, image processing, and parallel computing. Independent though it may be, the Research Center’s relationship with Sony’s head office is maintained through Nobutoshi Kihara, who was in charge of Sony’s research almost from the beginning. Although he has been retired from Sony since 1988, he is president of the lab that bears his name.

Source: Sony’s 2003 and 2004 annual reports (<http://www.sony-krc.co.jp/en/index.htm> and http://eetimes.com/special/special_issues/millennium/companies/sony.html), both accessed 26/1/05.

with frequency of contact, affection, and social similarity among the people who move between the organizations—the boundary-spanners, who are likely to increase in number as the relationship progresses.

Much previous work on the potential misappropriation of important product development resources has examined resources that are explicitly transferable or have a physical presence, such as copyrighted or patented designs or technologies, or product components that can be bought and sold openly. Less attention has been paid to intangible resources, such as creativity and design knowledge, and less still to resources that are relational and derived from the synergistic interactions between two or more people. With such resources, management styles, systems, and cultural issues are important structural considerations. In relationships between two very different organizational types, as is characteristic of hybrid structures, there is always the possibility of clashes among processes, cultures, and environment.

Entrepreneurial units often resemble those in a craft organization in which each product is comparatively unique and the development process is comparatively random and dependent on intuition and experimentation. Such units are often characterized by informal working practices. This environment is very different from that of the commissioning firm—typically a large organization characterized by clearly

defined hierarchical roles and a preference for planning and rationality in decision making.

Sources of conflict also arise from the nature of some innovative products, such as furniture and fashion, the creation of which can be described as an “expression of difference.” Thus the creative designer/artist’s attempts to distinguish his or her work from others’ can work against a large economically driven firm’s desire to maximize the number of units sold. If, by expressing his or her uniqueness, the artist ends up appealing to minority tastes or fails to be familiar enough to be acceptable to decision makers within the commissioning firm, his or her ideas are rejected. And yet it is this innovative difference that commissioning firms hope to capture.

Such clashes hint at some problematic paradoxes that have to be reconciled, and hybrid organizational forms are a way of solving them. Hybrids protect the smaller firm from the stifling effects of the larger firm, while allowing its creative knowledge to be exploited. This happens through what is, in effect, a “semi-permeable membrane” in which certain features are blocked from movement while others are transferred. In this process, boundary-spanners have an important role in translating the requirements of the two organizational types to each other, and protecting some key resources from the degrading influence of others.

The incompatibility of resources

As suggested earlier in the case of Sony, some hybrids develop *within* organizations. This is also the case for 3M and Xerox, which like Sony have three different types of structures—blue-sky, product development, and product improvement. Each type represents a continuum of incompatibility of resources and ownership/hierarchical control (see Figure 1).

Blue-sky units within a parent organization are likely to have the same problems of coordination and integration faced by inter-organizational hybrids. And they have similar benefits. They enable firms to enjoy economies of specializa-

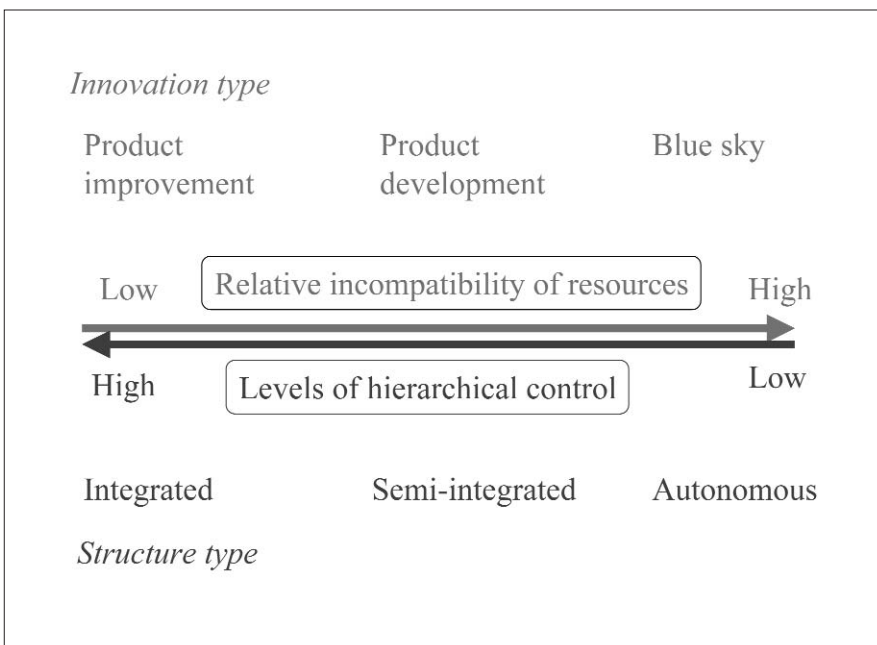


Figure 1. Different types of organizational innovation-development structures based on levels of control/independence needed.

Innovative technology development in the motor industry

The motor industry depends on regular injections of innovation and high-quality design. It is also characterized by a small number of very large consumer-facing firms that typically contract out many of their design and product development functions to smaller specialist suppliers. These companies have often cut their innovation teeth doing technology development work for racing teams.

One of the best known and most respected technology suppliers is Ricardo, an independent British firm that has operations around the world and that works (often secretly) with many major European and US automobile manufacturers on long-term new product development projects. Recent examples include hybrid diesel/electric and advanced fuel cell engines, and the new Mini for BMW. More than 50 engineers who had been employed at Rover, the creator of the original Mini, were recruited into Ricardo to work on the Mini project after BMW acquired the British car manufacturer (although it subsequently sold it), allowing valuable knowledge to be transferred from one firm to the other. In fact, they are still working for Ricardo.

Some of Ricardo's clients are happy to remain relatively hands-off; others are much more specific in terms of outcomes and timescales. Many are long-term clients who have engaged the company to work on a number of initiatives.

Ricardo has considerable expertise in certain types of technology. The question is, why have none of its partners either attempted to develop this technology in-house, or tried (as far as one knows) to acquire it? We would argue that resource immiscibility (that is, its nonmixability—think of oil and water) is at least partly the reason.

tion, without the cultural clashes characteristic of integrated development. In fact, each partner has organization-specific resources the other lacks and needs. The larger or parent firm has the finances, marketing skills, and promotional reach to bring a product innovation to market. Experimentation and market forces over time make the larger firm an expert at managing its current customers and operations. For its part, the smaller firm offers creativity and a knowledge of trends that is critical to the process of new product development.

We contend that these two types of resources are complementary and vital to the successful development of innovative products, but are essentially incompatible. The smaller firm's resources are not easily managed in a hierarchy without destroying its creative value, and the possibility of the commissioning firm learning how to replicate them is forestalled by a number of culturally embedded factors.

First, new product development is generally unpredictable and depends on outcomes that cannot be planned in advance. Hierarchy works best when the factors to be controlled *can* be predicted in advance, usually based on what has happened in the past.

Second, nonfinancial aims, such as the pursuit of a reputation for nonconformity, can be a major part of a small firm's *raison d'être*. This may be in conflict with the larger firm's focus on providing risk-free returns to shareholders. Its reward and control systems, and its employees' behaviors, will reflect these priorities.

Third, and linked to the previous point, are the creative tendencies of innovators. Such individuals typically have a need to challenge the status quo; their behavior is not particularly adaptive. They are driven by intrinsic rather than extrinsic motivators and do not welcome being controlled through bureaucratic means. In order to bring about frame-breaking change, they have to remain outside existing paradigms and resist corruption by established interests. This implies the need for a structural middle ground, where some protection can be offered to the creation of difference, while allowing necessary knowledge to be shared.

The culture of the partners in hybrid structures is thus an important issue, and bringing those cultures together represents a particularly potent form of risk. The more homogeneous a group is, the less risk it undertakes in terms of coordination, conflict, goal congruence, and

information flow. But by definition, the ideal partners in a hybrid will subscribe to different paradigms and have different experiences, assumptions, and beliefs. They may even have different expectations of the relationship. Bringing two such cultures together in any sort of tight arrangement is apt to lead to conflict, misunderstandings, and a swift end to the interaction. Key staff from the smaller company might leave or be less effective as a result of discomfort from working in a more formal environment. Structures in such circumstances are therefore likely to be more effective when they are semi-permeable, allowing the *selective* adoption of practices, beliefs, or other organizational elements.

For example, one of the most common activities of a bureaucratic firm is to measure profits. Innovation units cannot easily do that, because their activities are unpredictable, and time-spans over which costs and income can be allocated are nonstandard. If these activities were to be imposed on the innovation unit, it would probably wither and die. So there has to be some way

of stopping a parent company, for example, or an ally (probably a larger company) from imposing these practices on its partner. The membrane in this case may be physical (geographical distance, or separate buildings), metaphorical (disparate cultures kept apart by little commonality between members), or contractual (legal definitions of who should do what). In each case, it is possible for some elements of various practices to be exchanged or shared—that is, to be semi-permeable—perhaps by stipulating some exceptions to normal practices within a contract, or by the occasional meeting of people from the two groups.

Other ways of conceptualizing such semi-permeable structures include the idea of allowing “looseness” at one level of the organization—perhaps the project or the team—to coexist with stronger bonds at other levels, such as senior management. Another way might be to allow autonomy of local operations, such as the design process or product prototyping, to be coupled with strongly defined organizational objectives or project goals. These structures allow independence, yet mandate mutual influence. Figure 2, on the next page, identifies eight of these loosening/tightening mechanisms.

Setting up this type of permeable membrane as part of the hybrid structure offers many benefits. The innovators at the smaller firm need to be allowed to feel they are not selling out or risking losing their independence because they are offering their ideas to the larger firm for commercial gain. For its part, the larger firm has to allow its partner greater freedom and flexibility than it is used to, and reduce its tendency to control and measure while simultaneously setting the sorts of output targets that please senior managers. Semi-permeable membranes preserve the idiosyncrasies of each partner and maintain their separate identities.

Such factors are particularly relevant to an understanding of the role of culturally specific tacit and explicit knowledge in the management of the hybrid. For example, process, social, and experiential knowledge are especially important in new product development, yet these often cannot be costed or valued so that they can be exchanged for resources the commissioning firm has—cash, for example, or knowledge of market developments.

Such semi-permeable arrangements have other benefits besides protecting key resources from degradation. They serve to buffer aware-

Categories of Loosening and Coupling Mechanisms

Project-Strategy Connections

1. Widely held understandings about what the organization does: strategy, mandate for innovation, risk climate
2. Technological compatibility
3. Established markets

Project-Organization Connections

4. Funding
5. Senior management attention
6. Structural location
7. Standard operating procedures
8. Human resource deployments

Figure 2. Each of these is “a two-edged sword, bringing needed resources and legitimacy to the projects and, at the same time, exposing the activities of innovators to scrutiny, intervention, and possible sanctions.” (From Trudy Heller, “Loosely Coupled Systems for Corporate Entrepreneurship: Imagining and Managing the Innovation Project/Host Organisation Interface,” from *Entrepreneurship Theory and Practice*, vol. 24, no. 2 (1999), p. 25-31.)

ness of problems. If a prototype in a market test fails, for instance, the more risk-averse partner may unfairly perceive the smaller firm as incompetent. Such arrangements also allow boundary-spanners to mediate cultural or strategic misunderstandings.

There appears to be a straightforward relationship between the codification of knowledge and the costs of its transfer: The more an item of knowledge or experience can be codified, the more economically it can be transferred—and, paradoxically, the less valuable it is. In other words, tacit, implicit, and socially contextualized and embedded knowledge is more valuable, but it is also much harder to transfer and, in fact, is most easily transferred in a tightly coupled setting. But there is a dilemma here—tight coupling will expose creative staff from the smaller firm to cultural or operational contamination. We argue that boundary-spanners have an important role in solving this problem.

The role of boundary-spanners

Boundary-spanners, or bridgers, as they are sometimes described, are people who move between both organizations, translating the norms of each into language and behavior that are acceptable to, and understandable by, the other. There is almost no research on the role that boundary-spanners have in hybrid organizational structures, and yet they are likely to be one of the most important factors in the success of those structures. After all, new product development is a social-, collaborative-, and interaction-intensive process involving experimentation and negotiation over the lifecycle of the new product's evolving form, bringing together knowledge, expertise, and technologies from different sources into a whole. Learning involves the negotiated resolution of constraints and generates new knowledge, which may then be embedded in the design of new technologies, products, or processes. Thus boundary-spanners need to be skilled first of all in the nuances of creating a new product.

Individuals with little experience of working in a larger company are likely to be unsuitable as boundary-spanners. They may never have seen corporate overhead charges, annual plans, safety rules, or other corporate policy and personnel regulations. On the other hand, a representative from the commissioning firm who has never worked anywhere other than a major corporation is likely to have little tolerance or under-

standing of the chaotic creativity of small entrepreneurial units. The most effective boundary-spanners appear likely to be those who have worked in small entrepreneurial units, as well as larger, more bureaucratic firms, though this has yet to be researched.

Boundary-spanners, particularly in an international context, need to be able to understand and transcend the cultural and linguistic norms of the partners. They need to be able to talk intelligently about, for example, the psychological impact of a product's color, trends in new music, or the physiological risks of a new drug, and translate that understanding into the language of discounted cash flows, return on investment, and net present values. Boundary-spanners from the smaller, more creative unit must be able to convince their colleagues from the larger partner of the value (economic and strategic) of the project they are undertaking. They may need to report on the costs involved in the product development process, or to assess and forecast the time a particular initiative might take to reach positive profitability—using, perhaps, comparisons gleaned from research carried out in other firms. Similarly, boundary-spanners from the commissioning firm must be able to reassure the smaller partner that their intentions are hands-off and worthy of trust; at the same time, they must be able to clearly articulate the deliverables to which their firm will contribute—design briefs, performance specifications, and the like.

In addition to being “bilingual,” boundary-spanners must remain mindful of the partners' respective cultures, and manage potentially conflicting cultural forces—especially relevant nowadays because of the global nature of NPD networks. International hybrids may enable a commissioning firm to respond to local market needs. However, two groups separated by a wide cultural divide may find it hard to verify each other's credibility, a potentially important factor in the development

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and retention of trust and affection. Boundary-spanners may need to learn to behave in different ways in the two partner environments—to use a particular body language or wear particular clothes. Acceptance and trust is more likely to develop between people who are socially similar in terms of educational levels, appearance, and experience. Given the likely cultural distance between our prototypical creative firm and the larger commissioning firm, these may be important considerations in the choice of boundary-spanners.

The bridging role is important not only between organizations but also between the boundary-spanner and his or her own organization's power-holders. Boundary-spanners are often called upon to negotiate solutions when

problems arise that are (inevitably) not covered by the original agreement. They are also needed to get past organizational road blocks in the partner organizations. Being trusted, influential, and credible are important factors here. Success is likely to be based on the same attributes needed by inter-organizational boundary-spanners, but in this case it also includes organization-specific factors, such as

having a successful track record, relationships with powerful managers, unfulfilled reciprocal obligations, and access to important information.

A perfect example of successful boundary-spanners can be found in an article in *Design Management Journal* written by Tom Mulhern and Dave Lathrop, of Conifer Research and Steelcase Inc., respectively. Their article, "Building and Tending Bridges: Rethinking How Consultants Support Change," which appeared in the Summer 2003 edition of the *Journal*, detailed the way in which design consultant Conifer Research used its methodological expertise in furniture and workspace design to improve Steelcase's product innovation and organizational performance. Although Mulhern and Lathrop had not worked together before, they had "worked around each other" and knew a lot of the same people. They were both part of

an established network of relationships and reputation, and this is likely to have facilitated the development of trust between the two organizational boundary-spanners.

But Mulhern and Lathrop also epitomize the internal boundary-spanner role. Steelcase had previously gone out of its way to seek external perspectives from a "host of brilliant, innovative, but generally *outside* resources, with the outcome generally packaged as a 'deliverable.'" But in order to achieve the impact they sought, Mulhern and Lathrop recognized that their job would be to inspire *insiders* to take up the cause. They described this process as developing "experience bridges." To do this, they identified three key "insider" groups at Steelcase whose engagement would be critical, and they deliberately focused on involving them in the developing project. The bridges they established linked people, information, and process and thereby "dramatically accelerated" progress through the development of shared *understanding*.

In any hybrid, there is likely to be a range of individuals with roles that span boundaries. Some will be assigned to the relationship for as long as it lasts; others will be temporary. However, there is a dilemma here again in that frequency of contact between key players is important. It aids the formation of the types of attachments that minimize opportunistic behavior and facilitate sharing tacit knowledge.

Proprietary knowledge is often a source of considerable competitive advantage. As we have argued throughout this paper, bringing together different types of knowledge is the best way in which to achieve innovation. However, knowledge has the potential to be misused or leaked to a third party unless the boundary-spanners are trustworthy. When there are high levels of turnover in those who would be boundary-spanners, or when those who entered the relationship in the first place are not the same people who manage it subsequently, trust needs to be negotiated again and again. Tenure is very relevant. A high turnover of boundary-spanners means the discontinuity of specific relationships and a loss of what is, in effect, relationship-specific knowledge capital. Yet transferring people into the hybrid on a short-term basis is a potentially useful method for ensuring that ideas do not become stale, or that the benefits of an outsider perspective, which the smaller unit brings, do not get lost through over-socialization and identification.

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Conclusion

In this paper, we have discussed several factors that appear material to the success of hybrid organizational structures formed to develop new products. In these structures, larger firms generally seek services from smaller independent units, which develop close relationships with their partners—sometimes only for the duration of a specific project, but often over a longer period spanning several projects. We have highlighted some issues that are currently under-researched and that we believe deserve more attention—for example, the need to protect specialist resources from contamination and the role of boundary-spanners in dealing with this problem. We have also identified a number of circumstances in which it is necessary to bring together incompatible resources. By bringing these issues to the surface, we hope to improve understanding of some of the tensions hybrid managers are likely to encounter when smaller, more creative firms associate with larger, more bureaucratic organizations. ■

Reprint #05161REI48

Note

An earlier version of this paper was presented at the 2002 British Academy of Management conference and appears in their proceedings.

Suggested Reading

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