Internal Markets –
Emerging Governance Structures for Innovation

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Paper presented at the Strategic Management Society, 21st Annual International Conference, San Francisco, 2001

Selected as one of ten finalists for the fourth annual McKinsey/SMS Best Paper Prize.

[1] We acknowledge Dan Vermeer's contribution to the early conception of this paper.

Introduction

Over the past few decades, Silicon Valley has become the "poster child" of innovation, creating generation after generation of new technologies, products, and services, and inventing whole new industries in the process. Drawn by the lure of success and profit, people and organizations around the world have looked to Silicon Valley as a model of success in the hyper-competitive global economy, and have tried to discover the key elements that make it so economically robust. For example, Saxenian's (1996) study of regional advantage in the technology industry contrasted Silicon Valley's uncanny ability to reconfigure assets and build informal networks to the old workhorse companies like Digital along Boston's Route 128. Seen from a regional perspective, what makes Silicon Valley unique is its dense networks of technical experts and entrepreneurs with access to startup capital who dynamically organize around radical new ideas.

This open market for ideas, capital, and talent is a fertile environment for spawning new businesses and industries and, admittedly, is occasionally susceptible to irrational exuberance (Schiller, 2000). But despite the recent Internet bubble – by no means the first of its kind -- the wealth created in the Valley is enormous. During 2000, $80 billion of share options were exercised in California, amounting to 10% of the state's total wages and salaries. Since 1992, Silicon Valley has experienced a net increase of more than 300,000 jobs[2]. It is one of the top metropolitan export regions, and has grown, on average, by over 4% annually in the 1990s – more than double the U.S. growth rate according to the Regional Financial Review.

For most corporations, the open market for innovations characteristic of Silicon Valley is nothing like how their company operates. While the basic elements of ideas, capital, and talent exist to some degree in organizations, there is typically little of the entrepreneurial activity that has made Silicon Valley famous. Just ask: How many new business ideas does an average vice president see during the course of a budgeting year? Probably two or three at most. A Silicon Valley venture capitalist reviews some 50+ business proposals *a day*. But then, a typical vice president in a Fortune 500 company does not see his or her task as new business creation but running the existing business to meet its annual growth and cost reduction targets. Innovation of the kind we are familiar with in the Silicon Valley is not likely to be on the leadership agenda. When we ask Strategos Institute member companies about innovation, the following barriers are named with remarkable consistency:

- there are few rewards for risk-taking and entrepreneurship;
- resource allocation systems are backward-looking and biased toward legacy rights of existing businesses;
- strategic planning and capital budgeting processes are calendar-driven and do not easily accommodate the pace of emerging opportunities for innovation;
- old mental models about the business dominate and come in the way of new; and
- innovation is often avoided as a competitive threat to the existing business (Strategos Institute, 2000).

[2] Source: 2001 Index of Silicon Valley by Joint Venture Silicon Valley

One interpretation of these views is that managing the legacy business is the thing for a corporation to do. One may well argue that this is what corporate hierarchies are built to do: they perpetuate past success by institutionalizing its form (cf. DiMaggio and Powell, 1983, Scott and Meyer, 1994). Shin and Stulz (1998) found, for example, that corporations tend to allocate assets based on a business unit's past cash flow rather than on any assessment of future growth opportunities. In the short term, this may be an entirely reasonable strategy but in the long term, it is likely to accelerate corporate failure. We believe that hierarchies as corporate governance forms are partly to blame for such an under-investment in the future. In this paper, we will explore hybrid arrangements – we call them internal markets – that offer promise for ameliorating some of the more obvious hierarchical shortcomings in innovation.

How Hierarchies Fail Innovation

Let us be clear: Hierarchies do innovate. As long as the innovation is "sustaining" rather than "disruptive" (Christensen, 1997, Anderson and Tushman, 1991) and as long as the exploratory activities are aligned with and exploit existing competencies and routines. Nelson and Winter (1985) described organizations as routine-makers, and authors such as Sorensen and Stuart (2000) have noted how corporations build innovation routines that focus on their know-how. Yet an innovation that is not aligned with such know-how is likely to be ignored as irrelevant or uninteresting. Dougherty (1996) claims that innovation is often simply ignored as the organization lacks effective means to accommodate novelty. Serving existing customer needs at the expense of emerging new markets is another innovation blinder (see e.g. Christensen 1997). Companies often fear innovations may "cannibalize" current business. For instance, Kodak – probably a representative example of a corporate hierarchy -- delayed its full entry into digital photography due to its fear of forfeiting revenues from analog films (Financial Times, June 19, 2001). Although a comprehensive cataloging seems to be lacking, the innovation failures of corporate hierarchies have been viewed severely systemic to the extent some authors have recommended nurturing innovation outside the company in a separate organization (Christensen, 1997, Christensen and Overdorf, 2000) or at least in a far-away location (Markides, 1999). This view essentially concedes that non-conformist innovation within a corporate hierarchy will inevitably fail.

We focus here on three immediate ways in which corporate hierarchies seem to fall short of their innovation potential. First, in considering investment options, management seems to be generally limited to an option set that is too narrow. Second, corporate resources appear necessarily mis-priced relative to their value creating potential. Third, ingredients important to innovation – creativity and enthusiasm– cannot easily be captured in top-down managerial processes.

Inadequate Option Set

In our experience, most companies are not very effective at surfacing innovative ideas. Processes for engaging people in the search for innovations don't exist or are heavily biased toward existing product-markets. When ideas do surface, they are easily ignored, particularly if they aren't aligned with existing business interests. Hence, the inadequacy of the initial option set for consideration stems from:

- lack of effective discovery processes in place
- lack of sustained attention paid to emerging ideas
- lack of ownership of (particularly, radical) ideas
- inability to uncover and/or act on "white space" ideas that fall between business units (Hamel and Prahalad, 1994)
- non-rigorous experimentation of emerging ideas to assess their potential (i.e. lack of entrepreneurship).

Mis-Priced Resources

In a corporate hierarchy, pricing of assets and skills is difficult, lacking the diversity of competing perspectives that generally exists in an open market. "Transfer pricing" is notoriously flawed as an indication of transactional or asset value (cf. Eccles, 1983). Vested interests and past resource commitments further distort valuations: there is no "equal playing field" for bidding for resources – those in positions of power are there to ensure the interests of the businesses under their stewardship and are well-positioned to do so as incumbents. A hierarchy typically sells capital and talent at a significant discount for those who already have budgeted privileges – a sort of legacy rights over corporate resources. Lacking an internal market, these resources are rarely contested to assess whether more promising investment opportunities exist. The resource allocation is hence a political process and further subject to the deficiencies of financial accounting as a guide to future wealth creation. Such accounting is quite sensitive to "dollars lost" – budget numbers not met – but totally insensitive to "dollars forgone" – missed opportunities in the market place. As a prototypical example, while doing well by traditional financial standards, Coca Cola missed the sports drink market and let Gatorade gain substantial market share, finally acquiring Mad River Traders, another leading player in the alternative beverages market.

Finally, the most up-to-date and in-depth knowledge does not reside necessarily with the decision-maker(s): those closest to the particular project are not those making the allocational decisions nor always carrying their consequences. Given that managers fear visible failures (March and Shapira, 1987), a conservative bias is likely to discourage resource reallocation toward major emerging opportunities. According to Teece (2000:79), "certainty effects" distort such resource allocation: DuPont focused on improving certain yet diminishing returns on its nylon tire cords while Celanese, a competitor, gained significant market share in "riskier" polyester tire cords (Foster 1986). Yet managerial status commonly requires that resource allocation decisions are the domain of management (cf. Gordon 1996). In the top-down decision making process,

there is a chance that top management either (a) taxes a project with an inappropriate risk premium due to ignorance, i.e. top management overestimates the riskiness of the project, or (b) top management over-invests in the project because it has overweighed the opinions of one or two project champions.

Suppressed Creativity

Creativity is a function of enthusiasm and ownership of innovation. Yet in what sense, if any, can a corporation allocate entrepreneurial energy and passion? If creativity is the scarcest resource of all intangible assets that corporations may want to own, top-down allocational processes seem entirely inadequate. Creative passion – a likely necessary ingredient in effective innovation – cannot be allocated or commanded. Hierarchies seem singularly incapable of arousing such passion for the corporate future.

How Markets Remedy Failures

Markets are no panacea: they may be too fickle to support the development of capital-intensive innovation that requires long-term R&D investment. Nor can markets easily build deep competencies that benefit from stable resource constellations and fixed complementary assets – the transaction costs of such an endeavor would probably prove prohibitive in a market-like setting (Williamson, 1975). Markets are also susceptible to hype and may fail – from the Dutch tulip mania to the recent Internet bubble people have taken their cues from other people's behavior and suspended better judgment, or just hoped to exit before the eventual crash.

So what are markets anyway? Economists treat markets as a hypothetical, abstract construct for purposes of theory building (e.g., North 1977, Demsetz, 1982, Coase 1988). Sociologists have studied markets as social structures and have attempted to give empirical content to the ideal of exchange (see Swedberg 1994 for a review). However, economists lack the ability to empirically describe a market and sociologists seem hesitant to distinguish between a market and, say, a social network. Markets, it seems to us, perform at least the following, somewhat overlapping, functions.

- *A forum for exchange*: This is perhaps the most classical definition of a market: It is to enable buyers and sellers to find each other. Town bazaars and stock markets would fall under this label.
- *An arena for competition:* The structure of competition may of course vary depending on the number of buyers and sellers (Chamberlin, 1933) but the primary function of a market appears to be the cultivation of sufficient amount of competition to ensure economic efficiency.
- *An avenue for choice:* Economic efficiency is only meaningful to the extent people can exercise choice – markets allow individuals, at least in theory, to make

the kind of consumption choices they prefer. Prices capture this information and direct the production of goods and services.

- *A process for endorsement/external validation*: Markets are powerful mechanisms for endorsing and validating (or rejecting) product and service offerings. Markets gather information from a number of individuals and aggregate this information (e.g. Spence 1974).
- *A mechanism for resource allocation*: Due to the signaling effects of markets, resources become allocated toward their most efficient use. Although in theory the allocation processes are continuous, in practice corporate strategic planning and capital budgeting cycles render such decision making an annual event hence slowing down resource allocation adjustments in the market place.
- *A kind of social network*: Markets exist within the social context of a particular culture, defined by a set of institutions, and historical evolutions. To function, markets are supported by social networks of brokers, financial and other intermediaries, buyers, and sellers (see Burt 1982, Baker 1981).

To consider how markets in some disguise might remedy some of the innovation handicaps of corporate hierarchies, let us consider the three impediments identified earlier. The overall observation is that markets are an antidote: they don't necessarily have the kind of structures that generate, fund, or otherwise enable innovation, but they do cure hierarchies of some of the most severe impediments to innovation as discussed earlier.

How do Markets Enlarge the Option Set for Innovation?

The ultimate limit to any discovery is imagination. In a market, new ideas surface to the extent they can be imagined and envisioned, and to the extent rewards to these ideas are visible. Markets may not necessarily have any generative mechanisms for discovery per se, but the absence of restraint from existing power structures and vested interests is a clear advantage once an idea has surfaced.[3] The idea can thus be acted on without fear of retribution, if it receives enough traction in the marketplace to attract funding and other resources.

How do Markets Re-price Resources?

By eliminating the corporate discount, resources can more accurately be assessed as to their marginal utility. Future uses of these resources are likely to be important as markets have less commitment to the past than hierarchies. And resources are free to move as they are not "owned" or coerced by particular vested interests. Markets allow experimentation on different combinations of skills and assets to see which ones are viable.

Entrepreneurial flair is still needed, however. Markets offer but the possibility for – and the dream of – economic success. Markets are also good at tapping information from many sources and not just relying on a single decision-maker. Finally, markets are not bounded by strategic considerations so important to many acorporate managements.

[3] There may, of course, be lock-in effects that make it difficult to earn rewards for innovation (Arthur, 1989).

How do Markets Unleash Creativity?
Creativity may come in different forms, and in this context, we focus on the kind of creativity that has economic potential. Markets offer people a chance to reflect on their contribution to the enterprise and search for their strengths and weaknesses. It is likely that an enterprise one has chosen to pursue arouses more passion than the one commanded by a superior.

"Ideal" markets are open to newcomers; they are apolitical, they organize "on demand"; they attract resources rather than allocate or assign them (Hamel, 1999); and they involve participants based on their individual judgment and avocation. Markets also exist within an institutional framework that defines some of the meta-rules such as property rights, contract law, conflict resolution, legitimate business routines – these metarules are critical to the effectiveness of markets as an economic institution (see Yergin and Stanislawski, 1998). To the extent hierarchies wish to create internal markets, a discussion on such meta-rules becomes important. Overall, markets amount to a behavioral logic that is radically different from that of a hierarchy: markets are the result of human actions but not of human design (Hayek 1945). It is this lack of overall integrative and coercive design that we propose will help remedy some of the hierarchical shortcomings in innovation. This is not to claim, surely, that markets alone are the prototype solution to the resource allocation problem between exploitation and exploration (March, 1991). Rather, as discussed in the next chapters, we promote hybrid organizational forms that combine the logics of a hierarchy and a market.

Introducing Markets Inside Corporate Hierarchies: Examples

Introducing markets inside hierarchies is no small task. Combining hierarchies and markets is bound to create tensions on the boundary, yet offer insight into a hybrid organizational form that may have a deeper capability to innovate than a market or a hierarchy alone. It is at this level of governance structures, we believe, that the innovation capability of an organization can best be enhanced. This is because innovation is often a challenge to the hierarchical organization at its core, and hence difficult to address without impacting corporate governance. Creating hybrid structures in our view is the first step toward such enhanced innovation capabilities.

To explore the issue, we have studied during the past two years a number of different cases of corporations that have created functioning markets inside their otherwise hierarchical organizations. We call such markets within hierarchies 'internal markets' for the purposes of this article. The example internal markets differ in their nestedness or integration within a hierarchy: in the first case -- a public, world-renowned financial organization-- the "market" is an open but separate event that radically differs from traditional strategy making processes typical to the organization. This "market" significantly increased the availability of options for the organization to consider in its mission toward eradicating poverty. In the second case observed, the company's core processes are organized around market principles, and have a dramatic impact on the

operational rules and norms the company uses to do its business. These operational reforms amount to a continuous re-pricing of corporate resources in the search for most innovative uses. This is a corporation in the utility industry. The two other examples – a "fast-track" process that invites the development of radical new ideas otherwise ignored by the operating companies in a global oil company—and an extended network to connect a leading computer firm with the software developer -- illuminate other interesting dimensions of markets. Namely, such markets help existing businesses absorb new innovation and reap additional benefits from R&D activity. In the process, they release creativity and invite a contribution that makes a difference for the corporate future.

World Bank Development Market Place

The World Bank Development Marketplace is an example of an "event-based market" for matching international aid resources to grassroots development efforts around the world. The Marketplace was created to bypass the traditional centralized decision making channels in the Bank, and to open the door for anyone with an idea to compete for funding of development initiatives. At the 2-day event, some 270 teams of innovators staffed booths in the atrium of the Bank's Washington, D.C., headquarters, February 8-9, 2000, to promote their proposals for addressing some of the most difficult development problems. The Marketplace had a fund of $3 million to allocate amongst some 300 projects, and received 1200 ideas from all over the world.

Though the World Bank is infamous for its heavy bureaucratic ways of working, the Marketplace created –literally-- an open market for ideas. It significantly enriched the number of visible ideas for development and increased competition for development aid. For the first time, the organization was able to assess a much larger set of options for development and benefited from local knowledge brought to bear by the people present. Despite being an isolated instance of entrepreneurship on the part of the Bank's Corporate Strategy Group, the event (and follow-up activities) had a dramatic impact on World Bank Strategy – of the 9 current strategic initiatives of the Bank, 4 originally were proposed in the Marketplace. Without the mechanism of the Marketplace, few if any of these projects would have gotten the attention and resources they required.

The World Bank story is an instructive case of bringing a market – even if temporarily - inside a hierarchy. An organization whose mission it is to "eradicate poverty" is in dire need of new, powerful ideas to make progress. Access to such ideas was effectively provided in the Development Marketplace. Clearly, a lot of ideas are needed to find a few promising ones. But at the same time, there probably are no single solutions to the world-wide eradication of poverty, and hence funding multiple small ideas may be necessary. Says James Wolfenson, World Bank President: "We need ever more effective, innovative solutions to meet this challenge. The Development Marketplace can help bring our collective experience, knowledge, and passion to bear in the search for solutions" (World Bank Development Marketplace 2001 Calls for Proposals). The Development Marketplace moved development aid from the domain of experts in a bureaucracy to the

reach of laypeople whose lives the aid will (or will not) eventually touch. Instead of the World Bank Pakistani expert owning a regional decision, say, anyone could compete for a solution. Anyone who cared.

Enron Corporation

Enron Corporation offers a unique opportunity for studying pervasive internal markets, embedded deeply in the way the company operates. Over the last several years, Enron has become famous for its ability to create new global markets for energy products. One of the first to understand the opportunities for deregulation, Enron has moved aggressively to build platforms for trading commodities (such as Enron Online).

In terms of its internal organization, Enron frequently operates more like a market than a traditional hierarchy. Employees are encouraged to pursue opportunities, and new business creation is rewarded handsomely. Each opportunity attracts its own team of people that is loosely structured and "deal-driven". As an example, take the genesis of Enron Online. In the spring of 1999, Louise Kitchen, 29-year old head gas trader at Enron's Europe desk, had the idea that online gas trading was inevitable, and resolved to take action. Kitchen bypassed the company hierarchy and went directly to the resources and experts she wanted to engage. A formal managerial decision was never made to start a project. Most of Kitchen's co-conspirators continued to do their "day jobs" as well. Four months after formulating her idea, Kitchen had 250 Enron employees working on the new concept. Incredibly, the project operated without a budget. Seven months later, Enron Online was not only in business, but was the highest-volume Internet site. 10 months from its conception, Enron Online was processing 1,000 orders totaling $450 million – per day. Says CEO Jeff Skilling**:** "If anyone had said that we would do $100 billion of transactions per year online within five years, I wouldn't have believed it. To do it in five months is incredible."

An orientation to the market has shaped Enron's corporate strategy in profound ways; for example, Skilling has argued that top management should let employees explore opportunities they deem most promising, rather than make large scale investment decisions based on centralized intelligence. "The culture here is that if someone wants to move to a new job, the burden of proof is on their former boss" (interview quote). Enron has a talent market where all employees can be recruited anywhere in the corporation but the offer for the first six months cannot promise a higher salary nor a higher organizational position. In such a mobile organization, the function of strategy is to recognize emerging patterns and quickly re-align around the biggest opportunities. Skilling's strategic initiatives are deeply rooted in his convictions about the role of markets in organizations and in society: "We believe that markets are the best way to order or organize an industrial enterprise. You are going to see the de-integration of the business systems we have all grown up with." (Skilling quoted in Financial Times, June 26, 2000.) Enron is a leader in unleashing the power of markets inside a corporation.

Shell GameChanger[tm]

GameChanger is an innovation process developed by Royal Dutch/Shell's Exploration and Production (E&P) division. Its mission is to deliver new business opportunities — specifically, breakthrough or "game-changing" opportunities — to Royal Dutch/Shell. Introduced in 1996, GameChanger solicits ideas from any member of Shell's staff as well as from selected universities and other partners. In this way, GameChanger trades in a market for ideas, rewarding innovators with a variety of remuneration schemes, should their idea become a basis for a commercial venture. However, the GameChanger experience also strongly suggests that people compete for a chance to have their personal vision impact the corporate future.

Unlike conventional new-business-venture groups, GameChanger is not responsible for commercializing ideas. Instead, it facilitates commercialization by providing seed capital and support to those innovators with the most promising ideas, thereby helping them demonstrate proof of concept for their ideas. Once proof of concept is established, GameChanger again looks to the market – the federation of Shell operating companies – for commercialization of the idea. This is the second market in which GameChanger operates. The by now more mature value propositions for innovations need to be 'sold' to one of the Shell operating companies.

To understand why GameChanger operates in a market and not in a hierarchical environment, it is important to note the governance position of GameChanger and the particular nature of the company. The Royal Dutch/Shell Group of Companies is a federation. Indeed, Shell is a minority shareholder in many of its operating companies. Within E&P, GameChanger does not enjoy an elevated status in the organizational structure. It does not, for example, report directly to the Executive Committee, which runs the E&P division. In this environment, GameChanger lacks a governance position from which to influence people. Instead, it must rely on persuasion and the maintenance of good relations with the subsequent business development teams and the many E&P operating companies around the globe.

Operating on a budget of just 0.1% of E&P's earnings in 2000 and staffed with a small team of scientists and engineers, GameChanger has been remarkably successful in bringing breakthrough innovation to the fore. Indeed, in one recent year, four of Shell's five largest growth opportunities derived from GameChanger. GameChanger has received hundreds of ideas, several of which have made an impact in an operating company or have been adopted by the much larger Evolutionary Technology Development Program or Shell's "business accelerator". In some cases, however, innovations have been spun out. For example, a series of GameChanger projects in the area of smart wells during the past several years has culminated in the formation of the new company WellDynamics.

GameChanger's success is in marked contrast to the attempts of many large corporations to support radical innovation through new organizational processes. Since the 1970s,

most of these attempts — new-venture divisions, incubators, corporate venture funds, or so-called skunk works — have failed (cf. Chesbrough and Socolof, 2000). They typically failed because they were organizationally isolated, provided limited access to experienced management, and, perhaps most importantly, were hostage to the vicissitudes of the corporate budgeting and strategic planning cycles. GameChanger's independence and its connections with the rest of the corporation combine in a market-like environment to give it the nodal position in the corporate hierarchy without being a corporate subject. GameChanger relies on its ability to make compelling value propositions to operating companies, attract ideas that have future commercial potential, and build credibility to gain access in the organization – access that it cannot mandate but needs to negotiate.

IBM alphaWorks

IBM has never lacked commitment to R&D, and hence, presumably, to innovation. Indeed, last year, IBM invested $6 billion in R&D and filed more U.S. patents than any other company. However, IBM's R&D often takes place in a vacuum. The emerging solution in the domain of software, alphaWorks, represents a substantial reworking of IBM's relationship with the developer community. Moreover, the alphaWorks initiative has transformed IBM's ponderous and process-driven approach to innovation into an approach that is dynamic and market driven.

Since the initiative's 1996 launch, the mission of alphaWorks has remained unchanged: to accelerate the transfer of so-called alpha code (software in its earliest stage of development) from IBM Research into new products. The mission is fulfilled by the alphaWorks Web site, which currently attracts some 400,000 unique visitors per day. It appeals directly to software developers, inviting them to download and tinker with alpha code and then to offer feedback on applications, potential enhancements, licensing requirements, and so on via e-mail, Web-based evaluation forms, and electronic bulletin boards. The bulletin boards are especially important because they enable developers to share tips, fix bugs collaboratively, and exchange ideas as part of the evaluation process.

The exchange between IBM researchers and the wider developer community benefits both camps. Developers gain early access to cutting-edge technology. The alphaWorks site allows the downloading of alpha code free of charge during a 90-day evaluation period. During this time, developers can expand on the code and use it to create technology solutions. This new licensing method, itself the result of developer feedback through alphaWorks, gives developers an option for obtaining leading-edge technologies. And, more significantly, early access can sometimes give them a head start on competitors when exploiting technologies that will quickly become commercially important. By engaging developers early on, alphaWorks secures loyalty among software developers. For IBM, alphaWorks provides critical developer feedback to guide product-development decisions. The alphaWorks team receives about 150 alpha technologies from IBM Research each year, of which some 100 are suitable for posting to the alphaWorks Web site. In a typical year, 46 of these alpha

technologies will migrate into new products. Several technologies that first surfaced on the alphaWorks Web site have since undergone commercialization including WebSphere (the best-selling Java application server), XML Parser (an important translation program), and PanoramIX (a 360º viewer for video and multimedia). And alphaWorks is accelerating the time to market of these technologies. Before alphaWorks, IBM would require two or three years to transfer an emerging technology into a commercial product. Today, that delay is down to six months.

alphaWorks is an example of using unmediated market pull to direct technology development. Technologies that might have been ignored can now gain support of the developer community and hence lobby for funding. Technologies that lack the attraction on the market place can be screened out earlier. alphaWorks hence acts as a market barometer for emerging technologies, aggregating feedback from the developers and gaining their eventual commitment to support the technology. Such developer support is valuable currency in a corporate fight for resources.

Some Emerging Conclusions: The Need for a Hybrid Organization?

The above examples start painting pictures of emerging hybrid organizations that combine elements of a hierarchy and a market toward innovative ends. These examples illustrate the need for new organizational forms to solve corporate innovation problems (cf. Powell, 2000). The cases highlight how the World Bank Development Marketplace was able to enlarge its set of options for development aid; how Shell GameChanger enabled the search for white space ideas that no particular business unit was initially interested in; how IBM alphaWorks used market pull to evaluate the commercial potential of its intellectual property; and how Enron let the internal market for ideas, people, and capital do the searching for new business opportunities. By the time an idea has attracted tens or even hundreds of colleagues – some 250 as in the case of Enron Online--to devote some of their time and energy, it is unlikely to be just another bad idea. And it is likely to arouse a lot of passion on the part of those in the project.

A number of authors have contrasted markets and hierarchies as organizational forms since Coase (1937) and Williamson (1975). Powell (1990), for example, introduces the network form of organizing as something that is neither a market nor a hierarchy but a set of ongoing relationships. In Powell, Koput, and Smith-Doerr (1996), the authors conclude that the motive for biotechnology firms in their transactions with each other was not to minimize such costs but to learn as effectively as possible over time. Indeed, the locus of innovation was frequently found in inter-company alliances rather than within a particular firm. Such findings point to the inadequacy of transaction cost theory to explain innovative behaviors: while hierarchies may excel in exploiting complex, integrated skill sets and strategic assets, they are likely to fail in ensuring the continuing exploration of new combinations of skills and assets for reasons stated earlier. Heterarchy (e.g. Hedlund, 1986) is a form of a hybrid organization: with multiple "buyers" or sponsors for new ideas, a heterarchy escapes the typical monopsony of the purely hierarchical organization. However, while various hybrids –horizontal organizations,

project-based firms, keiretsus, and "quasi-firms" (Eccles, 1981) -- may address some of the failings of a hierarchy yet perpetuate others, it seems to us we still need a focus on the consequences of organizing for the innovation capacity of a firm.

Hierarchies are organizational solutions to the industrial age: they economize on transaction costs by building scale; they made quality - i.e. basic safety and mass production of exchangeable objects - something that customers take for granted today; and they gave a group of professional managers control of economic resources at a scale unforeseen in the history. As Powell (1990:299) states: "…hierarchies do not represent an evolutionary end-point of economic development". It is likely, therefore, that hierarchies as a form of organizational governance are coming to the end of their marginal benefit, and new organizational forms need to be explored in an era where transaction costs may matter less than the ability to innovate an industry or offering (Powell, Koput and Smith-Doerr, 1996). To do it consistently, companies are likely to need to tap the imagination and creativity of all their employees rather than allocate such privileges to the few on the top or to those whose "job" it is to be innovative (and who will, eventually and inevitably, run out of new ideas) (see Hamel, 2001). Markets are an attractive complementary form of organizing, precisely because they offer the promise of disrupting the rigidities that hamper the creation and development of radical innovations (Hamel, 1999).

Toward a Post-Industrial Organization: Implications for Organizational Design and Management

In this paper, we have begun to explore how markets might remedy some of the hierarchical failures in innovation. Our conclusion, overall, is that hierarchies alone are inappropriate governance structures for innovation because they exhibit a systemic bias against the exploration of the new. Failure of a hierarchy is one reason to consider hybrid organizational forms. Another reason is to understand what logics of organizing are best suited to value creation conditional not just on knowledge but on passion. Such passionate organizations can categorically be called "post-industrial". Hierarchical instincts will inform their design in creating routines that exploit incumbency. Markets need to inform the organizational design so that such incumbency becomes continuously challenged – not just in the external market place but inside the organization itself. This dialogue about the use of corporate resources needs rebalancing through mechanisms that raise the creative energy of an enterprise to much higher levels than is possible in a command-and-control organization. Only then can emerging opportunities be explored for their true worth. And, as part of the market-driven exploration, people will learn entrepreneurship – a skill that most large organizations lack today. Testing one's ideas on the corporate marketplace, learning one's strengths and weaknesses through one's ability to attract peers and colleagues and have them follow on an innovation journey, is likely to be more effective and more immediate than any feedback from an annual performance review.

Such entrepreneurship solves one of the managerial headaches: shifting through ideas and deciding which to invest in. It is likely that 100 people collectively will know more than one manager, and make a more informed decision. Faced with this possibility, managers, now fearing they are out of a job, typically protest that such a revolution might result into a chaos. But honestly, do you believe that 100 people with $1000 to invest independently would go more astray than a manager with a million dollar budget and an onetime decision to make? The further objection that corporate strategy does not become executed is a red herring. Many corporate strategies are empty visions with not much to show for in terms of future growth opportunities. A much more interesting question is: where are the opportunities the employees are already exploring? What kind of business plans are they writing in their spare time? Where would they invest their time, enthusiasm, and attention should they have a chance? Markets –whether they result in a corporate democracy or not –offer a chance to create another information system to complement the hierarchical opinioning: hierarchies, simply, give an arbitrary and presumptive overweighting on the hurried statements of senior management. Such statements gain their credibility from past success. But the same people are unlikely to have it right the second time in a row. Particularly as far as the future is concerned.

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