Organizational Blueprints for Success in High-Tech Start-Ups:
LESSONS FROM THE STANFORD PROJECT ON EMERGING COMPANIES

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H ow much does human resource management matter in the "new economy"? Some commentators have recently suggested that the goal of building well-managed enduring companies has fallen out of favor; "built to flip" replaced "built to last," as entrepreneurs and their financial backers raced to cash in on the technology bonanza.[1] Renderings of the new economy have tended to portray organization-building as (at best) irrelevant or (at worst) a source of organizational drag in a world operating "at Internet speed," a useless diversion of leaders' time and energy away from more important and immediate concerns. Furthermore, good human resource management is not likely to seem all that paramount when things are on a roll. As a senior executive of one of the world's premier technology companies put it to us not too long ago, colorfully paraphrasing a Chinese proverb, "during a hurricane, even turkeys can fly."

Over the last eight years, our research group—the Stanford Project on Emerging Companies ("SPEC")—has tracked a large sample of high-technology start-ups in California's Silicon Valley. Our aim has been to examine how the

founders of those enterprises approached key organizational and HR challenges in the early days of building their firms and to learn whether these activities have had enduring effects on the companies. Through interviews with founders, chief executives, and HR directors—supplemented by quantitative information on strategy, HR practices, business partners, financing, and the like, obtained from public and private sources—we constructed a comprehensive record of the evolution of nearly 200 technology start-ups. These companies were concentrated in computer hardware and software, medical devices and biotechnology, semiconductors, telecommunications and networking, and computer-related manufacturing or research. The typical SPEC company was born around 1989 (though the range was from 1980 through 1996). On average, the firms were just over five years old and employed roughly 75 people when we began to study them. Without realizing it when we started our study in 1994–1995, we assembled the most comprehensive database to date on the histories, structures, and HR practices of high-tech companies in Silicon Valley, just as the region was about to witness an economic and technological boom of historic proportions. We returned to the field on several occasions, updating information on how the firms were faring; and in 1997–1998 we supplemented our study by adding a group of "new economy" companies to the sample, founded as part of the dot-com explosion.

Having tracked nearly two hundred companies during the ups and downs of the recent high-technology roller coaster, we are in a unique position to assess which ones actually proved able to endure and prosper and why, particularly now that the ride seems to have become a lot bumpier.

Founders' Blueprints for High-Tech Start-Ups

In the first stage of our research, we sought to understand the *organizational models or blueprints* that entrepreneurs brought to bear, explicitly or implicitly, in launching their new ventures. One of the more intriguing initial findings from our research was that founders embraced very different mental models of the ideal organizational form for a technology start-up. This diversity is rather striking, given that we were looking at companies all concentrated in high-technology industries, located in the same part of the country, and founded by a set of people who are tightly connected by virtue of the labor mobility, dense social networks, and existence of powerful brokers (e.g., venture capitalists, lawyers) that characterize Silicon Valley. Though some observers might think that most start-ups look pretty much the same, or that the appropriate organizational design and culture for a high-tech venture is "obvious," the data suggest otherwise.

We asked founders whether they had a clear idea when they were launching their company about what it would look and feel like organizationally. (The CEO was asked a parallel question about the period corresponding to the date of the interview.) We probed by asking the leaders whether they had a

FIGURE 1. Dimensions of Employment Blueprints

Basis of Attachment & Retention	• Compensation ("money") • Qualities of the work ("work") • Work group as community ("love")
Criterion for Selection	• Skills • Exceptional talent/potential • Fit with the team or organization
Means of Control & Coordination	• Direct monitoring • Peer and/or cultural control • Reliance on professional standards • Formal processes and procedures

specific model in mind that they sought to emulate (or avoid) in building their company. We tried to get at the *premises* that guided their thinking about how to organize employment relations and manage personnel.[2]

In poring over the transcripts of interviews with founders and CEOs, we found that their notions about how work and employment should be organized varied along three main dimensions—*attachment*, *coordination/control*, and *selection*—each characterized by three or four fairly distinct options or approaches from which organizational architects seemed to be selecting. Figure 1 summarizes the three dimensions and the main variants along each dimension, which capture the primary differences we unearthed among founders' notions of how to organize employment relations in high-tech start-ups.

- *Attachment*—Founders articulated three different bases of employee attachment, which we label *love, work*, and *money.* Some founders envisioned creating a strong family-like feeling and an intense emotional bond with the workforce that would inspire superior effort and increase retention of highly sought employees, thereby avoiding the mobility of key technical personnel that frequently plagues Silicon Valley start-ups. What binds the employee to the firm in this model is a sense of personal belonging and identification with the company—in a sense, *love.* Many SPEC firms pursue cutting-edge technology, and the primary motivator for their employees is the desire to work at the technological frontier. Recognizing this, many founders anticipated providing opportunities for *interesting and challenging work* as the basis for attracting, motivating, and (perhaps) retaining employees. Here, employees were not expected to be loyal to the organization, the supervisor, or even co-workers per se, but instead to a project. Finally, other founders stated that they regarded the employment relationship as a simple exchange of labor for *money.*

- *Basis of Coordination and Control*—A second dimension concerned the principal means of coordinating and controlling work. The most common conception involved extensive reliance on *informal control through peers* or *organizational culture.* Other founders intended to rely on *professional control*, even if they did not explicitly use this terminology. They took it for granted that workers were committed to excellence in their work and could perform at high levels because they had been professionally socialized to do so. (Not surprisingly, this approach tends to be accompanied by

FIGURE 2. Typology of Employment Blueprints, Based on Three Dimensions

Employment Blueprint	Dimensions		
	Attachment	Selection	Coordination/ Control
Star	Work	Potential	Professional
Engineering	Work	Skills	Peer/cultural
Commitment	Love	Fit	Peer/cultural
Bureaucracy	Work	Skills	Formal
Autocracy or Direct Control	Money	Skills	Direct

an emphasis on hiring high-potential individuals from elite institutions.) Professional control emphasizes autonomy and independence, rather than enculturation. A third group of founders took a more traditional view of control as embedded in *formal procedures and systems*. Finally, some founders indicated that they planned to control and coordinate work personally, by *direct oversight*.

- *Selection*—The third dimension concerns the primary basis for selecting employees. Some founders' responses suggested that they conceived of the firm as a bundle of tasks, seeking employees to carry out particular tasks effectively. Time and money tended to be the paramount concerns here, so the focus was on selecting employees who could be brought on-board and up-to-speed as quickly and cheaply as possible. In these cases, founders envisioned selecting employees having the *skills and experience needed to accomplish some immediate task(s)*. Other founders focused less on immediate and well-defined tasks than on a series of projects (often not yet even envisioned) through which employees would move over time. Accordingly, these entrepreneurs emphasized *long-term potential*. Finally, some founders focused primarily on *values and cultural fit*, emphasizing how a prospective hire would connect with others in the organization.

- *Relationships Among the Three Dimensions*—These blueprints can be classified into three types of attachment and selection and four types of control, yielding $3 \times 3 \times 4 = 36$ possible combinations. However, the observations cluster into a few cells, which we refer to as five basic model types for employment relations, as summarized in Figure 2.[3]

The *Engineering* model involves attachment through challenging work, peer group control, and selection based on specific task abilities. This model parallels standard descriptions of the default culture among high-tech Silicon Valley start-ups,[4] and it is the modal employment blueprint among founders of SPEC firms. The *Star* model refers to attachment based on challenging work, reliance on autonomy and professional control, and selecting elite personnel based on

long-term potential. The *Commitment* model entails reliance on emotional or familial ties of employees to the organization, selection based on cultural fit, and peer-group control. The *Bureaucracy* model involves attachment based on challenging work and/or opportunities for development, selecting individuals based on their qualifications for a particular role, and formalized control. Finally, the *Autocracy* model refers to employment premised on monetary motivations, control and coordination through close personal oversight, and selection of employees to perform pre-specified tasks.

The labels we have attached to each model are fairly evocative of their character. To provide a bit more of the flavor for each blueprint type, consider these excerpts from our interviews, which illustrate the types of responses that tended to be associated with each blueprint type:

- **Star:** "We recruit only top talent, pay them top wages, and give them the resources and autonomy they need to do their job."
- **Commitment:** "I wanted to build the kind of company where people would only leave when they retire."
- **Bureaucracy:** "We make sure things are documented, have job descriptions for people, project descriptions, and pretty rigorous project management techniques."
- **Engineering:** "We were very committed. It was a skunk-works mentality and the binding energy was very high."
- **Autocracy:** "You work, you get paid."

We label the cases that do not fit into any of the five primary categories as Aberrant or Non-Type.[5] In so doing, we do not mean to imply that their models of the employment relation are necessarily incoherent or detrimental. For instance, consider a firm whose founder embraced a model of attachment based on challenging work, selection based on skills, and professional control. This blueprint falls, in a sense, midway between the Star and Bureaucracy models: changing the selection dimension from *skills* to *potential* would place it in the Star category, or changing the coordination dimension to *formal* would place it in the Bureaucracy category. This kind of hybrid blueprint might represent a reasonable "compromise" for firms that anticipate undergoing a transition that necessitates a more rationalized management approach. (However, this conjecture is not borne out by evidence we report below concerning organizational performance).

Picking a Blueprint

Figure 3 diagrams the distribution of companies among the various blueprint types, based on responses provided by founders. Several aspects of Figure 3 are interesting. First, note the diversity of organization-building templates among the SPEC companies. A number of scholarly perspectives on organizations and environments imply that we shouldn't expect to find much diversity

FIGURE 3. Distribution of Founders' HR Blueprints
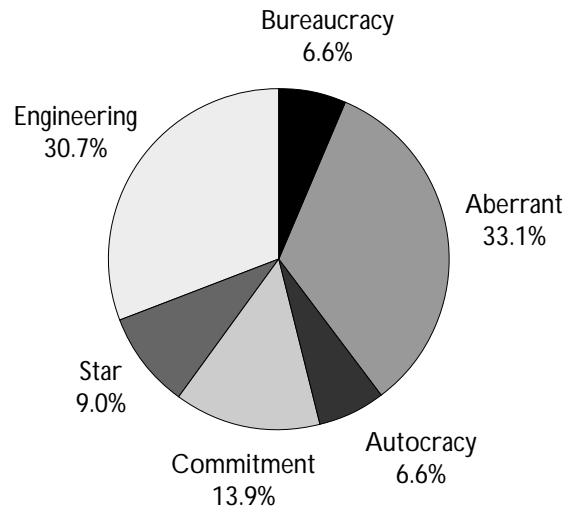
Note: "Near-type cases are grouped with their pure-type counterparts (see Note 5 for explanation).

within this population. After all, the SPEC companies were all young, founded in the same period, quite small, concentrated in a single locale, in a narrow set of technology-based industries, and founded by a set of individuals (e.g., entrepreneurs, venture capitalists) who are tightly connected through social networks, patterns of career mobility, and other ties. To be sure, some of the variation in initial blueprints in Figure 3 reflects industry and strategy differences among the companies in our sample. For instance, the "Star" model predominates among medical and biotechnology firms. However, even *within* industries and among firms whose founders articulated similar competitive strategies, we observe quite striking differences in the organizational blueprints.

These differences within industries also do not jibe with some scholarly accounts of organizational forms. It is sometimes argued, for example, that venture capitalists and high-tech lawyers champion the spread of particular corporate structures and practices.[6] However, although we found a slight tendency for VC-based companies to bureaucratize more and earlier,[7] organizational blueprints vary considerably among venture-backed companies. We attribute this variation, at least in part, to the fact that venture capitalists and law firms, like start-ups, operate in a competitive context that encourages them to differentiate their strategies and structures. Some VC firms, for instance, proudly trumpet their fondness for building enduring companies based on strong, long-lasting emotional ties that transcend money, along the lines of our Commitment model.[8] Others are known for valuing technologies and products largely in isolation from considerations of organizational capability or quality of management.

Still others are attracted to "star" cultures or, in some cases, even known to oppose efforts by founders to create any kind of distinctive culture at all during the start-up phase. Aspiring entrepreneurs in Silicon Valley recognize these differences, which no doubt enables sorting between entrepreneurs and venture capitalists with compatible perspectives and philosophies. We therefore see no reason to expect any simple pattern of imprinting on initial organizational blueprints by VCs, high-tech lawyers, HR professionals, or others.

In the same vein, we do not observe any simple mapping between employment models on the one hand, and founders' background characteristics on the other. One might expect, for instance, that a founder who launched an entrepreneurial ventures after working in older, more bureaucratic organizations would desire to escape what he or she had experienced in the past as dysfunctional bureaucratic pathologies by building a new enterprise with a radically different culture and operating style. However, for every founder in our sample whose thinking (based on interview transcripts) appeared to be consistent with that conjecture, another reported a desire to adopt a bureaucratic template.[9]

One factor *did* seem to bear directly on initial employment blueprints: the founder's intended business strategy. In particular, companies whose founders reported that they had intended to compete principally by superior marketing, service, or customer relationships were significantly more likely to choose the Commitment model at founding.[10] This association reflects a synergy between long-term relationship building with customers and with employees: that is, when enduring relations with customers are vital to the strategy, enduring employment relations become critical because employees represent the ties to key customers.

Implications of Founders' Blueprints for Organization-Building

Not surprisingly, founders' blueprint choices had implications for how they built their nascent enterprises. For instance, the five different blueprints entail quite different notions of the urgency of gaining expertise in human resource management and of the key HR imperatives. Commitment and Star firms tended to be the fastest to bring in HR expertise. For the Star firm, success depends crucially on the ability to recruit and select star talent, which is the urgent HR challenge. For the Commitment-model company, the key HR imperative is fostering a strong culture and ensuring that new hires fit that culture. For firms founded on an Engineering model, a typical activity of HR is to ensure that the hard-working "techies" are plied with enough caffeine and sugar to keep them energized; entrepreneurs in Engineering companies sometimes seemed to view the HR department as the people who buy the beer, chips, and dip for the Friday afternoon festivities. For Bureaucracy-model firms, HR is part of the administrative apparatus intended to promulgate rules and procedures in order to retain control. Autocracy-model firms tend to eschew HR altogether, believing

it is simply a cost item and that control over employees rightfully belongs in the hands of the autocratic entrepreneur anyway. In young Autocracy companies, often the "HR" function is handled by the boss' secretary, who processes payroll.

Founders' HR blueprints were also associated with other differences in how entrepreneurs launched their new ventures. We asked founders about the timing of various key milestone activities in building their companies, such as: drafting a mission or values statement, creating an organization chart, hiring a full-time personnel specialist, preparing a personnel manual, announcing or selling the first product, receiving external financing, writing a business plan, legally incorporating, securing a patent, and first hiring employees.[11] Those entrepreneurs who envisioned the most enduring attachments to their employees—those who chose the Commitment model at founding—were particularly slow to hire their first employees: only 9% of founders whose firms were built on a Commitment model reported hiring their first employee(s) as one of the first two events among the above list of company formation activities, compared to 42% of the remaining founders. Presumably, founders who embraced the Commitment model were more selective and devoted more effort up front to designing their cultures and employment practices.

Not surprisingly, the amount of early attention that entrepreneurs devoted to organizational concerns—drafting a mission or values statement; creating an organization chart; hiring a full-time personnel specialist; or preparing a personnel manual—varied with the initial employment blueprint. Among the firms classified as being founded on the default Engineering model (nearly a third of the sample), *not a single founder* reported that the first activity in launching the company was related to these organizational concerns.[12] In contrast, firms founded along Star, Bureaucracy, or Commitment model lines are over-represented among the companies in which the first event was related to organization building.

Changing the Blueprint

Of course, the organizational model we coded from the interview responses of the CEO when we visited the SPEC companies often differed from what the founder had in mind at the firm's inception, even when the founder and the then-current CEO were the same person. The main difference, not surprisingly, was that the Bureaucratic model was considerably more prevalent among CEOs when we visited companies, with a number of companies founded on Star or Engineering models having transitioned to a Bureaucratic model. Figure 4 summarizes the changes in HR blueprints exhibited by the SPEC firms.

Based on the responses provided to us by the founder and by the CEO at the time of sampling, only 18 of the 165 firms in Figure 4 (10.9%) changed from one pure model type to another; of these, 14 moved between Engineering and Bureaucracy, the two closest pure model types (i.e., they differ only along one of the three dimensions shown in Figure 1). We do not observe firms routinely

FIGURE 4. Changes in HR Blueprints Among SPEC Companies
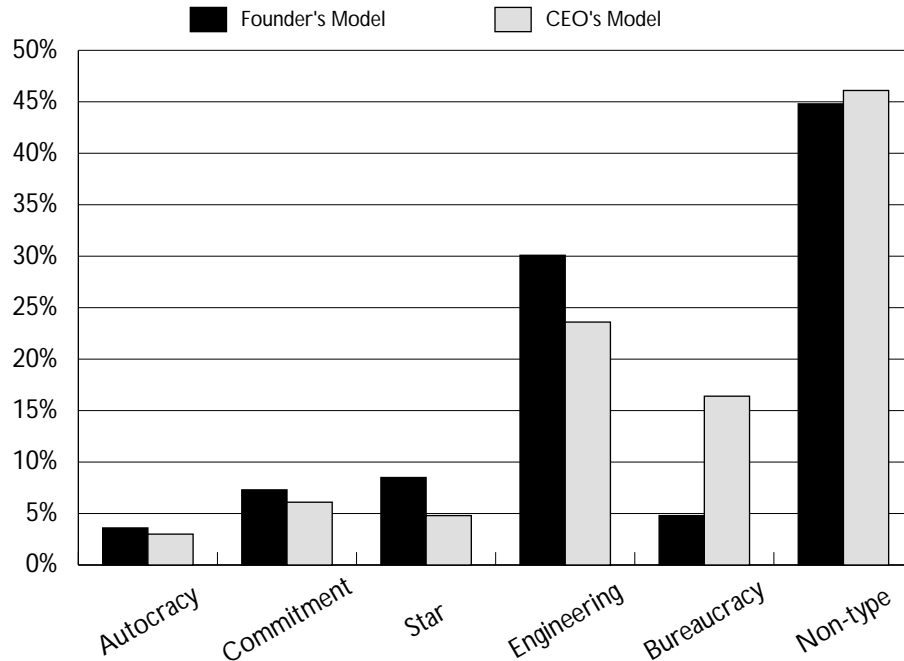
shifting between models that, on their face, appear highly distinctive (e.g., Commitment and Bureaucracy). Moreover, 84 of the 165 companies (50.9%) did not change their blueprint at all,[13] while another 49 (29.7%) changed on only one dimension.[14] The fact that we do not frequently see firms change their blueprints on multiple dimensions or move between very disparate blueprints suggests that the different model types are indeed meaningful and distinct from one another, bolstering our confidence in the validity of our typology.

We are limited in our ability to analyze the determinants of changes in organizational models, because our study design enables us to determine only *whether* the responses we obtained from founders and from CEOs at the time of sampling reflect different assumptions about employment relations. We do not know *when* the underlying blueprint changed (if it did) or *why*, unless our respondents made some mention of this during our interviews, which they seldom did.

One obvious question to ask is: Do changes in HR blueprints accompany changes in senior management within start-ups? The answer is *yes.* As Figure 5 shows, among firms no longer being led by a founder, 76% had changed the blueprint in some respect (often in the direction of a more bureaucratic model), and 40% had changed it along two or more dimensions. Among companies

FIGURE 5. Change in HR Blueprints in SPEC Companies with
Stable Versus Changed Leadership
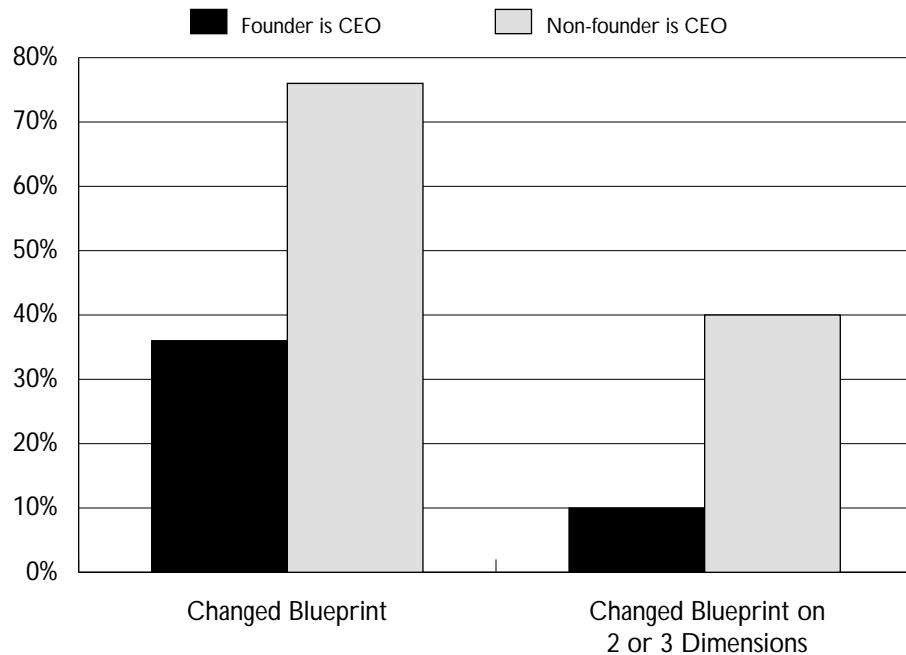
whose CEOs came from the original founding team, 36% had altered their HR blueprint, though less than 10% differed on two or three dimensions. In short, changes in HR blueprints were more likely and more substantial in start-up companies that experienced CEO succession; yet even in start-ups with stable leadership, organizational models appear to undergo considerable transformation in the early years.

Interestingly, those companies that were initially product-driven (i.e., announced or sold a product as one of their first two milestone activities) were especially likely to alter their initial employment model over time.[15] (They were also slightly less likely to exhibit one of the five coherent pure-type HR blueprints at the inception.)[16] This suggests that early-mover advantages that technology-based companies garner by being quick to launch products may be counterbalanced by at least two potential disadvantages: failing to embrace a coherent organizational blueprint initially and having to modify the blueprint significantly at a later date, both of which adversely affect subsequent performance according to the analyses we summarize below. In contrast, companies that focused early on organization-building were more likely to *retain* their initial employment blueprint: among SPEC firms in which the first company-

formation event reported by the founder related to organization-building, 75% did not change the HR blueprint, compared to 47% of the other enterprises.[17]

In statistical analyses predicting whether firms changed their blueprint (and along how many dimensions), we found, not surprisingly, that older companies were more likely to have altered the founder's employment blueprint by the time of our of research team's first visit. Firms that were generating revenues by the time of our first visit were also more likely to have altered their blueprint; presumably these firms were confronting the imperatives of growth and maturation, whereas firms that had not yet produced revenues were still in their "honeymoon" period. Finally, there were some modest industry differences: firms in research and telecommunications were most likely to have retained their blueprint, whereas firms in manufacturing, semiconductors, and computer hardware/software were the least likely to have retained the founder's blueprint.

Organizational Stability and Change: Does It Pay to Stay the Course?

Scholars have recently suggested that organizations evolve in a "path dependent" manner. By this they mean that, wittingly or unwittingly, initial choices made by entrepreneurs become imprinted indelibly on their nascent organizations, determining the developmental path the enterprise is likely to experience down the road.[18] According to this point of view, efforts to alter what might be thought of as a company's genetic material, including its blueprint for employment relations, are destabilizing. Such changes potentially antagonize insiders by eroding skills, altering bases of power and status, and calling cherished belief systems into question; and they potentially confuse outsiders about the organization's reputation and established methods for doing business.

We have already documented some evidence consistent with the path-dependence idea. Initial organizational blueprints affected the sequence in which entrepreneurs undertook milestone activities in launching their new enterprises, whether they retained or changed the blueprint, and, if they altered it, how. Over the last few years, we have been studying how founders' blueprints—as well as changes in those blueprints—have affected other facets of the evolution of the SPEC companies, including the bottom line.

The notion of path dependence implies two simple, yet powerful, predictions about the evolution and performance of young companies:

- *Origins Matter*—Just as some developmental psychologists profess that "biology is destiny," notions of organizational inertia and imprinting imply that a company's early organization-building activities might pre-ordain its destiny.

- *Change is Disruptive*—In their best-selling *Built to Last*,[19] James Collins and Jerry Porras argued that companies that have prospered over the long haul have adhered to enduring values, which have served as guideposts

for strategy and operations over time. Of course, adherence to enduring values can also impede a company's ability to respond effectively to dramatic environmental changes. However, the evolutionary perspective on organizations suggests that the potential benefits of altering a company's deeply held values and longstanding practices have to be traded off against the significant risks that such changes often entail, in terms of undermining internal routines and external relations that help make life predictable and controllable.

On the other hand, it is hard to imagine a context in which constant flux and change is a more routine fact of life than in our research site: the high-technology sector in California's Silicon Valley. After all, the majority of SPEC founders described their business strategies as predicated on breakthrough technological innovation—being the first to generate a new product or service. In such a technological race, fast development of superior technologies and rapid response to changes in technologies and markets might outweigh organizational capabilities in generating success. Furthermore, the geographical proximity, intense labor mobility, and dense network ties among Silicon Valley firms give founders timely information about the activities of other enterprises, which might foster the diffusion of managerial approaches and lower the difficulty and cost of changing organizational blueprints. Finally, the benefits of having a consistent, reproducible organizational structure might not loom as large in Silicon Valley: the fluid labor market; the rapid pace of technical, market, and social change; and the abundance of relative newcomers in the regional economy might make consistency less of a virtue than in some other venues. In short, in many respects it is hard to imagine a setting where companies should be *less* constrained by their origins or *less* destabilized by organizational change than Silicon Valley's high-tech sector in the mid- to late-1990s.

The Evidence

The results of our research program can be stated fairly succinctly. First, even in the fast-paced world of high-tech entrepreneurship in Silicon Valley, founders' employment models exert powerful and enduring effects on how their companies evolve and perform. Indeed, the founder's initial blueprint generally has at least as powerful an impact over the course of our study as does the blueprint articulated by the then-current CEO when we first visited each SPEC firm. The enduring imprint of the founder's blueprint is evident even after taking account of numerous other factors that might be expected to affect the success or failure of young technology ventures, such as company age, size, access to venture capital, changes in senior leadership, and the economic environment. In particular, despite its being widely pronounced dead in Silicon Valley in the mid-1990s, the Commitment model fares very well in our sample.

Second, changes in organizational blueprints are in general very destabilizing to young technology start-ups, adversely affecting employee turnover, bottom-line financial performance, and even mere survival.

TABLE 1. Effect of Founder's Blueprint on Growth in Administrative Overhead*

| Number of Non-Administrative Employees | Founder's Organizational Blueprint | | | |
| | Commitment | | Star | |
	Number of Managers & Administrators	Percent of Total Employment	Number of Managers & Administrators	Percent of Total Employment
50	10.3	17.1%	12.2	19.6%
500	73.3	12.8%	86.3	14.7%
1500	189.3	11.2%	222.8	12.9%

* See Note 22 for details.

Administrative Overhead

Administrative overhead matters for young technology companies, not just because of its obvious financial costs, but also because top-heavy administrative structures can slow decision making and reduce the ability to adapt to rapid technological and market changes. Advocates of high-commitment work systems argue that organizations can economize on formal control by providing long-term employment prospects, relying on peer pressure, encouraging employees to internalize the organization's goals and values, and investing in workers' development.[20]

Our findings suggest that this propensity toward self-management is programmed into (or out of) companies early in the start-up phase.[21] For instance, relative to otherwise comparable companies whose founders embraced other blueprints, firms founded along Commitment model lines were significantly leaner in terms of administrative overhead—measured in terms of the number of full-time administrators and managers for an organization of a given labor force size—when we first visited them. Table 1 shows the predicted differences in administrative overhead among firms—otherwise comparable in size, industry, and the like—that differed only in the founder's initial HR blueprint.[22]

Recall that, on average, the SPEC companies were five or six years old when we first visited them. For these companies, this is generally a long time indeed, often subsuming several generations of products, stages of financing, and executive turnover events. (One SPEC firm, just over eight years old when we visited it in 1995, was on its seventh president and sixth chief executive.) An enduring imprint of founding conditions on administrative structures five to ten years into the lives of technology companies seems to us fairly compelling evidence of path-dependence in the development of organizations. The enduring effect of founding conditions is particularly striking given the frequent changes in leadership and organizational models experienced by these start-ups, who were also confronting many other dramatic events (such as rapid growth, mergers, going public).[23]

TABLE 1. Effect of Founder's Blueprint on Growth in Administrative Overhead *(continued)*

Founder's Organizational Blueprint *(continued)*					
Engineering		Autocracy		Bureaucracy	
Number of Managers & Administrators	Percent of Total Employment	Number of Managers & Administrators	Percent of Total Employment	Number of Managers & Administrators	Percent of Total Employment
13.8	21.7%	18.2	26.7%	27.4	37.5%
98.0	16.4%	129.3	20.5%	194.5	30.0%
253.2	14.4%	334.1	18.2%	502.4	27.1%

Interestingly, the blueprint embraced by the CEO when we visited each firm did not have a strong association with the extent of administrative intensity at that same point in time. Rather, the blueprint articulated by the founder *at the firm's inception* was more important in determining how rapidly the enterprise added overhead as it grew and aged. Put differently, through their initial choice of an HR blueprint, founders appear to have directed whether administrative duties were to be the responsibility of self-managing individuals or teams versus the province of specialists. That early imprint had a more powerful bearing on the present-day administrative burden than did the model of the present-day CEO. This is a compelling example of what we mean by path dependence in the evolution of organizations—the fateful, constraining impact of early choices on how companies develop over time.

Labor Turnover

Few imperatives are more vital to the success of young technology companies than retaining key technical personnel, whose knowledge often represents the firm's most valuable asset. So we examined how founders' HR blueprints, and efforts to alter those blueprints, affected employee turnover among the SPEC companies.[24]

We find compelling evidence that changing the HR model is destabilizing to high-tech start-ups. Changing the blueprint significantly raises turnover, especially among the employees who have been with the enterprise the longest. Not surprisingly, some transitions were more disruptive than others. Although changing the model was generally disruptive, it appeared to be somewhat less so when a firm shifted to one of the five basic model types, suggesting that these basic types represent coherent cultural recipes that might offset some of the disruptive effects of change per se. Indeed, one of the most turnover-prone transitions in our sample of firms involved establishments that changed from one "Aberrant" model to another one. These companies appear to have experienced all the dislocation that accompanies cultural change, without accruing any benefits in terms of increased clarity and consistency in the employment blueprint.

There were two instances in which shifting to one of the five basic types did not appear to be a virtue, however: shifts to Bureaucracy or Autocracy. These models are quite generally loathed by the scientific, technical, and engineering labor force in Silicon Valley. As the old line goes, if the food tastes bad, then large portions are not a virtue. When the HR model does not capture employees' hearts and minds, clarity of the model is not an unqualified virtue either.

Given that changes in organizational blueprints tend to accompany CEO succession, it is reasonable to ask if the increased turnover we observe when blueprints change merely reflects the dislocation that occurs in start-ups when the CEO leaves. It turns out that CEO succession does have a strong effect on turnover. However, this effect appears to be due entirely to the tendency for CEO succession to be accompanied by changes in HR blueprints.[25] In other words, changes in the nature of employment relationships wrought by new CEOs—not the entry of new leadership *per se*—drive up turnover in high-tech start-ups. In fact, changing the blueprint appears to be most disruptive when the company's first CEO implements the change and then stays on. We speculate that this result reflects the nature of implicit contracts. Founders generally establish the implicit contracts with employees that get embedded in an organizational blueprint. Consequently, it might be more contentious for a founder–CEO to alter that blueprint and to then remain at the helm, as a continuing reminder to employees of how the enterprise has strayed from its initial model, than for a newcomer CEO to implement the same change. Put differently, wiping the slate clean by bringing in new leadership can dampen the dislocation that start-ups experience when they change their underlying HR model. This is likely to be most true for companies founded on Commitment or Star models, where early employees tend to feel the strongest personal bond to the founder (the spokesperson for the culture in Commitment firms, and often the person whose Rolodex enabled the recruitment of the initial hires in Star companies).

Shifts to or from the Engineering model—the Silicon Valley default—seemed to be somewhat less turnover-prone than other kinds of changes. Indeed, the relative ease of transitioning to and from the Engineering model might help to explain its prevalence in Silicon Valley.

Labor force turnover is, of course, an inherently important organizational outcome. Two otherwise identical organizations with persistent differences in turnover rates will evolve very different tenure distributions, with implications for stability and change in organizational culture. However, employee turnover matters critically for the success of technology start-ups as well, because the primary asset of most young technology companies is the knowledge of its core scientific and technical personnel. We found that companies in our sample that confronted higher turnover in a given period experienced significantly slower revenue growth in the ensuing two years, even after taking account of numerous other factors that might be expected to affect revenue growth, such as past performance, employment growth, access to venture capital, company age,

public versus private status, leadership changes, and the fraction of the firm's workforce in sales occupations. In short, the turnover wrought by changes in HR blueprints had a direct and powerful effect on revenue generation among young technology companies during the period in which it is often crucial for them to demonstrate their financial viability.

Organizational Performance

This brings us to the bottom line. Do founders' early organization-building choices, or subsequent changes in organizational blueprints, have any demonstrable enduring effects on companies? Many observers would suspect not, particularly in the fast-paced high-technology arena of Silicon Valley. Indeed, some might be inclined to agree with a founder whom we interviewed as part of our study, a prominent and highly successful Silicon Valley entrepreneur, who argued that it is a grave error for founders to articulate a particular model of organizing in the early days of a new enterprise:

> "Organization models and culture are a source of failure for start-ups. . . . In order to have a successful company organization, one must first have a successful company. Companies that strive to put in place organizational norms and models, cultures from the outset are working on the wrong thing. [Hewlett–Packard's] written document of seven corporate objectives got written almost 20 years after the company was started, after more than 20 years of practice building a successful company to develop its norms and culture. We in Silicon Valley have forgotten this and have become too enamored with 'Gosh, I've started a company, now I have to have a culture.' One of the first mistakes I made when I got involved with [prior company] was at one company meeting I got up and outlined what the company culture was. . . . After the meeting one of the other founders came up to me and said 'You've only been here 3 months, the company is only a year old. . . . Why don't we come back in five years and do this.' "

Having tracked the SPEC companies since the mid-1990s, our research team has recently examined how founders' HR blueprints, and efforts to change those blueprints, have influenced subsequent organizational performance along three dimensions: the likelihood and speed of going public; the likelihood of surviving versus failing;[26] and, for companies that went public, growth or decline in market capitalization following the IPO.[27] We followed firms until the end of June 2001. Thus, we examine both the boom of the late-1990s and the bust that began around March 2000.

In looking at how the companies have fared over time, we have been careful to take account statistically of other internal and external factors that could influence firm performance, such as age, industry, and strategy; changes in revenues and employment levels; VC financing; macroeconomic conditions; the volume of IPO activity in each industry; historical trends; and changes in the level of the NASDAQ index.[28]

Our first main finding is that organization-building and high-commitment HRM seems to pay, even in the turbulent "built to flip" environment of Silicon

FIGURE 6. Percentage Differences in Likelihood of Failure,
By Founder's Employment Blueprint*
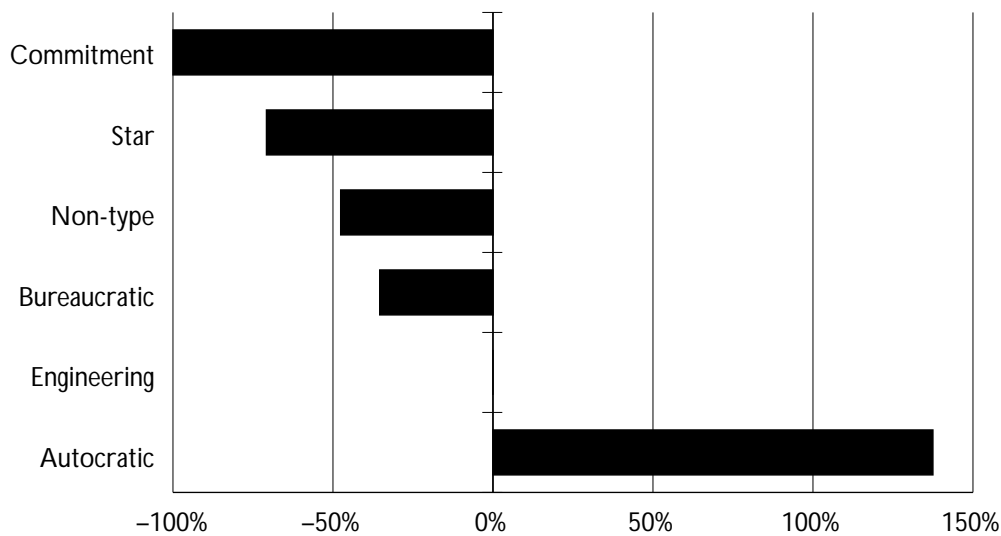
* Engineering Blueprint set to 0 as reference point.

Valley. In particular, firms founded with Commitment models were the fastest to go public, relative to otherwise comparable companies whose founders embraced a different model. Companies with Non-type founder blueprints were the least likely to go public, all else being equal. Consider two companies that were identical in every respect except that Firm A was founded along Commitment model lines and Firm B's founder espoused a Non-type blueprint. Firm B's probability of going public was only 16% of that of Firm A. Firms with Commitment-model founders were also the least likely to fail, whereas firms founded along Autocracy lines were the most likely to perish.

These differences are summarized in Figures 6 and 7. For companies that were otherwise comparable in terms of the many organizational and environmental factors for which our statistical analyses control, Figures 6 and 7 show the predicted differences across founders' blueprints in the likelihood of failure and of going public (respectively), relative to the Engineering model.

Figure 8 summarizes the net differences in post-IPO stock performance as a function of the founder's blueprint. Companies founded on a Star model fared the best in terms of growth in market capitalization following the IPO; the worst performers were companies founded on Autocracy lines. For instance, for a company with an Autocracy-model founder, the predicted rate of monthly growth in market capitalization following the IPO is about 12% lower than for a comparable company whose founder embraced the Star model. Our results

FIGURE 7. Percentage Differences in Likelihood of Initial Public Offering,
By Founder's Blueprint*
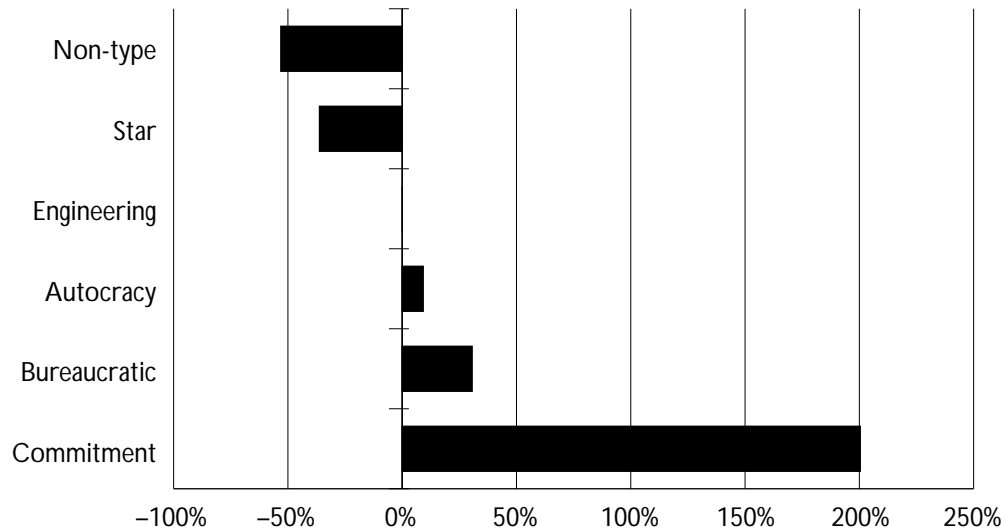
* Engineering Blueprint set to 0 as reference point.

FIGURE 8. Percentage Differences in Annual Growth in Market Capitalization,
By Founder's Blueprint**
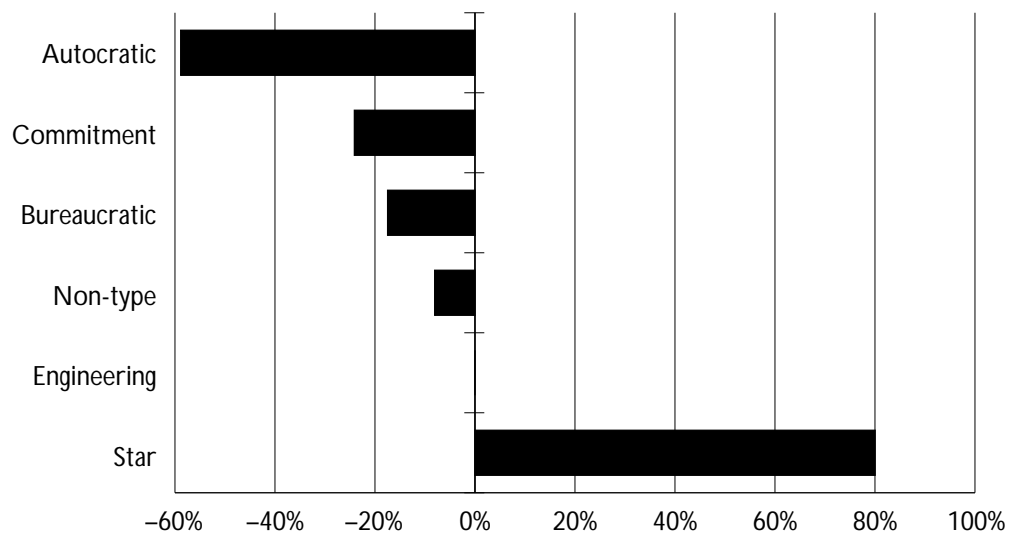
** Growth Rate for Engineering Blueprint set to 0 as reference point.

do not seem to jibe with the viewpoint of the entrepreneur whom we quoted above, because neither adoption of the Engineering model (the Silicon Valley default) nor avoidance of all five primary blueprints (i.e., the Non-type category) has proven especially beneficial in the years spanned by our study. Nor do our findings support the viewpoint some veteran entrepreneurs express: namely, that given the inevitable need for a more "bureaucratic" managerial approach as start-ups grow and mature, it's best to embrace such an approach from the outset.

A number of venture capitalists with whom we have shared our findings tell us that the resilience of the Commitment model resonates with their experience. They note that the technological and economic uncertainties inherent in high-tech entrepreneurship, combined with the interpersonal stresses involved, put a premium on employees and organizational designs that can cope and adapt. In their judgment, blueprints that manage to capture the hearts and minds of employees up front can better achieve this adaptation.

Furthermore, it is not just coping with failure that is a challenge. Success also challenges many technology start-ups, as one founder whom we interviewed explained:

> "We worried about the IPO a lot because from the earliest days that was a clear corporate focal point. Get to the IPO point, get the company public. It's the big payoff for people who have stock. Every person in our company is a stockholder. We grant them options when they join. Everyone worked very hard for six years to get to that point. Our concern was, after the IPO and after the lockups expire [so that] people have the ability to sell stock, we were concerned what the motivation levels in the company would look like [and] what we could do to influence that motivation level. One thing we are working very diligently on right now is identifying what the next corporate milestone will be. 25–30% growth isn't the kind of corporate objective or singularity of purpose that gets people riled up. We are looking for something a little more specific, like that $100 million benchmark. We're in the process of making a final decision of what that overall, superordinate goal is going to be."

By articulating enduring overarching goals from the outset and by creating a powerful sense of belonging, the Commitment model can help companies avoid or minimize the "post-partum depression" syndrome that sometimes accompanies an IPO, release of the first product, or achievement of other key corporate milestones. To paraphrase what one prominent venture capitalist told us, "I automatically ding anyone who comes in here pitching their business plan if they tell me that their *goal* is the IPO. If that's their goal, there are going to be huge organizational problems down the line. An IPO might be a means to an end, but it shouldn't be an end in itself."

Our second main finding is that *changing HR blueprints* adversely affects organizational performance. For various organizational outcomes, Figure 9 summarizes the net impact of altering the organizational blueprint for the employment relation. Specifically, we found:

FIGURE 9. Predicted Percentage Change in Organizational Outcomes Associated with a Change in the Founder's Blueprint
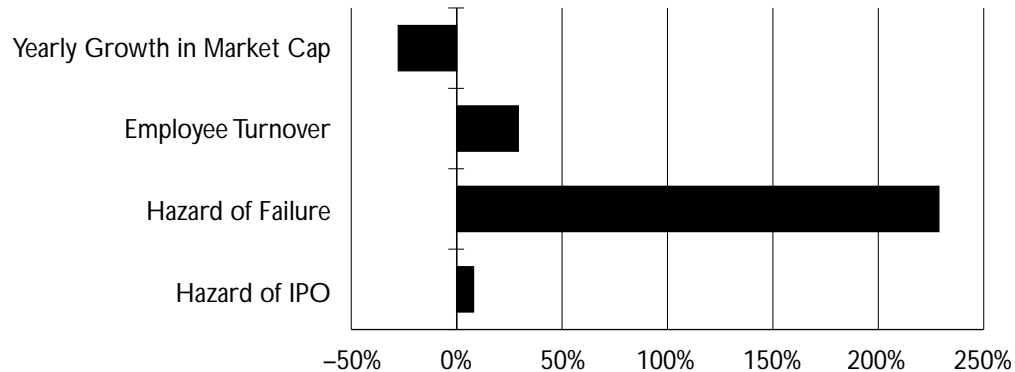
- As noted above, changing the blueprint is associated with markedly higher employee turnover.

- Enterprises in which the blueprint changed were roughly 2.3 times as likely to fail subsequently as similar firms that had retained a stable blueprint.

- Changing the blueprint along any dimension reduces subsequent growth in market capitalization after the IPO by about 3% per month.[29] Bear in mind that this effect is compounded, so the cumulative effect is huge. For instance, for the average SPEC company that went public after our first research visit, we were able to track post-IPO stock performance for approximately 40 months. Our analysis implies that over a three-year period, firms with unchanged blueprints grew at nearly *triple* the rate of firms that had previously altered their blueprint.

- Although changing the blueprint does not strongly affect the overall probability of subsequently going public, a more refined look at the data suggests that the effects of change on the odds of an IPO vary considerably among the different blueprints.[30] (In contrast, we found no evidence that the effects of blueprint change on failure or growth in market capitalization varied significantly among the blueprint types.)

In short, even after going public, technology companies apparently pay a significant and enduring price for having altered the HR blueprint at an earlier point in time. On balance, "staying the course" seems to be a winning HR strategy for technology start-ups, particularly for firms founded along Commitment model lines.

To what extent do our conclusions apply to the fortunes of the SPEC companies since the technology sector began its meltdown early in 2000? To be

sure, we observe more failures, fewer IPOs, and much weaker stock market performance compared to the preceding period. However, we find no evidence to alter our conclusions about firms' relative performance as a function of their founding blueprint or of changing the blueprint. Put differently, it appears that the same factors that promoted relative success during the technology boom have caused firms to experience relatively less turmoil during the recent technology bust.

Some Lessons for Entrepreneurs and Managers

In many contexts, the costs and risks of transitioning to a new organizational model might outweigh the advantages. Therefore, selecting an initial blueprint that adequately suits the present *and* anticipated future strategy and environment might be better than selecting one that is ideally suited to the current milieu but likely to be dramatically mismatched in the future and to therefore necessitate disruptive changes.

This observation highlights an important implication of our findings for entrepreneurs: there might be a powerful tradeoff between risk and reward in selecting an HR blueprint for new enterprises. Our longitudinal study suggests that when companies that embraced a Commitment or Star blueprint managed to weather the inevitable crises and challenges of a young technology venture and then avoided the need to recraft the blueprint at a later date on average, they tended to survive and prosper. Recall that firms founded with Star models were among the least likely to go public (Figure 7). Yet if they surpassed that milestone, they garnered the greatest financial rewards (Figure 9). The performance of the Star model among SPEC firms reminds us of the baseball legend Reggie Jackson, who is currently ranked eighth in career home runs among major leaguers and is also (by a wide margin) the batter who struck out the most times during his career. Players who "swing for the fences" tend to strike out often, and companies founded on a Star model seem to be the organizational analogue. To push the analogy, Commitment firms seem more reminiscent of players like Ted Williams, with a high "on-base percentage" or "slugging percentage": they may not be the best bet to hit the ball out of the park, but they are very likely to get on base and help the team score some runs.

Although the Commitment and Star models might have a higher upside, they are also, in some respects, more fragile, unstable, and difficult to manage. For example, when firms founded on Commitment or Star models *did* change their HR blueprints, they were more likely to implement more pronounced changes. As noted above, they were also more likely to witness the departure of the founder-CEO, an additional source of dislocation and disruption for a young start-up company.

Commitment and Star model firms are also harder to scale in some respects. For instance, we have studied how the demographic composition of the SPEC firms changed over time. We discovered that firms founded along

Commitment lines were significantly less likely to bring women into core scientific and technical positions, relative to otherwise comparable companies founded according to other blueprints.[31] The strong emphasis on "fitting in" that accompanies the Commitment model seems to represent a barrier to the inclusion of women in technical roles as companies grow. Insofar as Commitment firms have greater difficulty attracting, retaining, or integrating a diverse workforce, this obviously represents a potentially significant constraint on the ability of such enterprises to scale.

Star model firms face their own sources of fragility and problems of scalability. In particular, they are highly prone to employee turnover for several reasons:

- The need to screen out the non-stars builds in some turnover by design.

- Star model companies rely most heavily on stock options, which typically do one of two things as technology companies evolve: stock options become worth a great deal of money, in which case employees are prone to depart; or stock options become worthless, in which case employees are prone to depart.

- The original roster of stars sometimes become disillusioned as technology start-ups grow and mature, due to the rise in bureaucracy, a perceived decline in the technical challenge, changes in top management, and the like.

- Relatedly, sometimes the star technical employees (and the privileged status they occupy) become a source of resentment as technology ventures mature and broaden their occupational mix. For instance, production, sales, and marketing often become more critical as technology ventures move out of the initial R&D phase, and personnel in those areas might feel undervalued for their contributions and grow increasingly frustrated with the treatment accorded to the technical "prima donnas."

The point here is that entrepreneurs might face a fundamental choice in building a company: selecting an HR blueprint that is *distinctive* (such as Commitment or Star) but potentially quite fragile and harder to scale; versus one that is more *robust and scalable* (such as Engineering or Bureaucracy) and therefore perhaps better able to weather unforeseen growth spurts and changes in the external environment. Our impression—from the SPEC companies, from reading business plans, and from conversations with past, present, and prospective entrepreneurs—is that issues of organizational scalability capture remarkably little mind-share among people who are thinking about starting new enterprises. It is by no means uncommon to see a founder spend more time and energy fretting about the scalability of the phone system or IT platform than about the scalability of the culture and practices for managing employees, even in cases where that same founder would declare with great passion and sincerity that "people are the ultimate source of competitive advantage in my business."

It's impossible to imagine a serious business plan failing to be specific about the marketing or manufacturing or financial requirements that the enterprise will face if it achieves various targets or milestones during its first eighteen to twenty-four months. However, remarkably few business plans that we have seen give equal thought to the organizational and HR requirements that will be faced if the organization meets its business targets (or does not). This is true even among high-technology ventures, like the ones we have been studying, which depend more profoundly on human resources than most other kinds of businesses do. The implicit belief seems to be that it's best to "stick to your knitting" up front and unwise to squander scarce time and resources on such organizational concerns. However, the experience of nearly 200 SPEC companies suggests otherwise. Any plan for launching a new enterprise should include a road map for evolving the organizational structure and HR system, which parallels the timeline for financial, technological, and growth milestones. We have yet to meet an entrepreneur who told us that, on reflection, he or she believes they spent *too much* time worrying about people issues in the early days of their venture.

Another lesson from our study concerns the payoff from high-commitment systems. Interestingly, "commitment" was widely pronounced dead in Silicon Valley not long after we completed our first visits to the SPEC companies in the mid-1990s. Loyalty, long-term employment, well-defined careers, and similar notions were generally viewed as quaint and outdated constructs for a new economy that thrives on constant mobility, "employability," flexibility, and a new generation of employees with shorter attention spans and heartier appetites for personal fulfillment outside of work. At the first conference we organized for the CEOs and HR executives of the SPEC companies in March of 1995, almost everyone in the audience professed unabashed support for the Commitment model.[32] A little over a year later, at our follow-on conference, virtually nobody in the room wanted to be associated with that label.

Ironically, the minority of firms whose founders embraced the Commitment model have actually tended to perform well over the ensuing years, relative to ventures founded according to other blueprints. The field of competitive strategy teaches that for something to be a source of competitive advantage, it must be relatively scarce and difficult for competitors to emulate. This appears to be just as true in the arena of *human resources strategy*. Perhaps one reason for the relatively good performance of our Commitment model firms is precisely that it is a blueprint that runs counter to the conventional wisdom, which pronounced it unworkable in Silicon Valley in the late-1990s. The signals a company sends by championing the Commitment blueprint are especially powerful in a world in which relatively few companies are sending those signals.

More broadly, the powerful effect of HR models or blueprints on the performance of technology ventures suggests that all managers—in established concerns, as well as new enterprises—should devote careful thought and attention to their HR blueprint. Can you articulate it succinctly and clearly? Could

current and prospective employees articulate it and understand it? Would senior management agree about the blueprint? Are multiple blueprints being applied in different parts of the organization? If so, is this intended or not, appropriate or dysfunctional?

When executives in established companies learn of our SPEC research findings, they often find that the lexicon of blueprints provides a useful basis for beginning a much-needed conversation about their culture and their "brand" in the labor market. To be sure, the specific blueprints in evidence among the SPEC companies might not be applicable in all settings; nor do the five types we identified exhaust the range of possible blueprints being used in practice. However, those five types have at least three properties that make them powerful in the Silicon Valley setting and that seem to be desirable for any company's HR blueprint:

- Each blueprint exhibits a high degree of *coherence* or *internal consistency* among the three dimensions, suggesting that they complement one another to form an overarching system. For instance, consider a founder intending to emphasize control and coordination through organizational norms and seeking emotional bonds to the company itself (rather than attachment based on the specific work assignment), perhaps to create overarching goals among differentiated subunits. Here there would be a clear synergy with selection that screens for fit on values and culture, as with the Commitment model.

- These types also are *resonant and salient* within this population and its setting. When we've described these archetypes to Silicon Valley employers, employees, and other knowledgeable parties, they understand the distinctions and frequently begin classifying organizations with which they have experience in these terms.

- Relatedly, the five basic types reflect *different logics of organizing within other institutions* that participants in Silicon Valley entrepreneurship have experienced. For instance, the Star model—particularly prevalent among firms developing medical technology or pursuing research—resonates closely with the model that underlies academic science, from which many founders and key scientific personnel sought for these start-ups are recruited. The Commitment model draws instead on familial imagery and the revered legend of Hewlett–Packard within Silicon Valley. The Engineering model resonates with the socialization that engineers receive in professional school and suits the Valley's highly mobile labor force. The Bureaucratic model is readily familiar from encounters with bureaucracies in numerous contexts. Finally, the austere, no-nonsense Autocracy model communicates a powerful and consistent message that employees certainly have encountered elsewhere before: "You work (for me, the boss), you get paid (by me, the boss)—nothing more, nothing less."

As companies of all stripes fight the "war for talent," they would be well advised to devote as much careful thought to building a brand in the labor market as they do in the product market.[33] A prominent global technology company, for instance, recently commissioned a huge comprehensive personnel study by a major consulting company. The study was designed to identify the factors that distinguish the client company from competitors in the minds of its past, present, and prospective employees. After analyzing reams of data, including benchmark information on other competing employers, the consultants came back with a very clear answer: *absolutely nothing*. They couldn't identify any dimension on which the client firm was perceived as distinctive and superior to the competition. As a result of this exercise, the head of HR at this company began crafting what we would call a new organizational blueprint for the firm and selling this to the CEO. Interestingly, the new blueprint seeks to brand the company as the "career employer of choice," a company that takes long-term development of its people seriously in a world in which that is increasingly rare.

For managers in established companies, being clearer and more explicit about the HR blueprint can also be enormously useful in dealing with two challenges facing most large organizations: balancing the need for global consistency against the need for local flexibility; and managing mergers and acquisitions. The SPEC founders generally had little difficulty in articulating a primary blueprint for their core scientific and technical personnel. In contrast, larger, older, and more diversified companies commonly display multiple, distinctive subcultures and HR subsystems. All too often, this diversity results from happenstance or historical accident, rather than from careful thought and design. Managers sometimes view the existence of distinctive HR subsystems as inevitable or even desirable, while at the same time lamenting the lack of cooperation, coordination, and consistency among the different parts of the organization being managed differently.

A useful diagnostic exercise is to ask a group of managers in an organization to identify the different blueprints being applied within their respective units (e.g., across functions, divisions, geographies) and then to map out the interdependencies and resource flows that occur across those units. Do they frequently exchange personnel? Do they (or should they) share knowledge, innovations, or other resources? Do they need to cooperate closely on teams, task forces, and projects? When very different and distinctive blueprints are applied across units, it will generally be much tougher to achieve cooperation, lateral movement, and healthy interdependence. Conversely, when an organization seeks to foster multiple blueprints within a single organization, it is often helpful to reinforce the distinctions through formal and informal organization, physical separation, and symbolic distinctions, such as labels and dress. (The color-coded factory apparel in Japanese manufacturing plants comes to mind as an example.)

Another useful diagnostic is to ask the same group of managers to identify the overarching corporate HR blueprint. We have found, even for companies

whose senior management is passionate about imparting a common vision and set of values, that groups of managers often cannot articulate a clear coherent HR blueprint for their company as a whole, or else they voice quite disparate views of what it is. Psychologists have used what is called a Q-sort methodology—in which subjects are given numerous value statements and asked to array them in terms of how representative or characteristic they are of the organization's culture—to assess the degree of consensus around organizational culture and the extent of person–organization fit.[34] Similar methods could be used to assess the extent of management consensus on the underlying HR blueprint and the extent to which that blueprint gets internalized among lower levels of the organization.

We suspect that by being clearer and more explicit about their HR blueprint, companies could do a better job of targeting acquisition and alliance partners and managing those relations. It has become a truism that cultural issues are central to the success or failure of mergers, acquisitions, and alliances. Yet, corporate HR staff often are uninvolved in the negotiation process leading up to the acquisition or alliance; instead, they are brought in afterwards and told to "handle" the integration issues. Differences in HR blueprints between a target and acquirer or among alliance partners can have profound implications for whether a transaction makes sense in the first place, and, if it does make sense, for how to structure relations between the two entities. Clear and explicit representations of the HR blueprints for each of the organizational units involved could be a powerful tool for anticipating and managing the cultural issues that appear to be so crucial to the success of mergers, acquisitions, and alliances.

New Economy Redux

As the "new economy" calms down a bit, we are coming to learn that there might have been less that is new about it than we first thought. Even before the dot-com meltdown, entrepreneurs and venture capitalists were coming to recognize that the "built to flip" regime was not sustainable. As the number of get-rich ventures in search of deep pockets acquirers grew and the number of potential suitors with uncommitted cash declined, all the players involved started to recognize that building sustainable organizations with coherent HR systems makes a crucial difference. Venture capitalists, with their time highly leveraged, found themselves struggling mightily to solve the myriad personnel-related problems caused by wild growth and success, or by equally wild decline, among the companies in their portfolios. In response, they have scrambled recently to provide diverse forms of consulting and services for their portfolio companies in the arenas of human resource management, culture, senior management team development, and organizational design, as they have long done for other kinds of professional services (e.g., legal and financial services). In the new economy, as in the old one, it turns out that organization building is not a secondary diversion from the "real" work of launching a high-tech

start-up. Rather, as the findings from our ongoing research program suggest, it might well prove to be the main event.

Notes

1. For instance, see Jim Collins, "Built to Flip," *Fast Company*, 32 (March 2000): 131–143.
2. For details, see M. Diane Burton, "The Evolution of Employment Systems in High Technology Firms," unpublished Ph.D. dissertation, Stanford University, 1995; M. Diane Burton, "The Company They Keep: Founders' Models for Organizing High-technology Firms," in C. Kaye Schoonhoven and Elaine Romanelli, eds., *The Entrepreneurship Dynamic* (Stanford, CA: Stanford University Press, 2001), pp. 13–39.
3. It is important to emphasize that these model types, and the dimensions underlying them, are *our* construction, based on distinctive patterns we encountered in the open-ended responses of founders and CEOs. Hence, when we refer below to a founder "choosing" or "embracing" a particular model, or when we describe a firm as having been founded along the lines of a specific employment blueprint, we do not mean to imply that this was explicit to the founder.
4. See, for example, AnnaLee Saxenian, *Regional Advantage: Culture and Competition in Silicon Valley and Route 128* (Cambridge, MA: Harvard University Press, 1994).
5. A significant number of companies differed from one (and only one) of the basic model types on only one dimension. We refer to these as *near-model* types. For instance, about 3% of founders envisioned basing attachment on love, selecting based on fit, and utilizing direct control. This combination represents a near-Commitment blueprint: it differs from the basic Commitment model firm in terms of control (only), and differs substantially (i.e., on two or more dimensions) from the other four model types. Such an organization suggests an autocratic cult variant on the Commitment model. We use the terms *aberrant* or *non-type* to refer to all other blueprints—firms in which the blueprint either differs from two or more basic model types on one dimension (and doesn't fall into any of the basic types) or differs along two or more dimensions from every basic model type.
6. Mark R. Suchman, "On Advice of Counsel: Law Firms and Venture Capital Funds as Information Intermediaries in the Structuration of Silicon Valley," unpublished doctoral dissertation, Department of Sociology, Stanford University, 1994; "Dealmakers and Counselors: Law Firms as Intermediaries in the Development of Silicon Valley," in Martin Kenney, ed., *Understanding Silicon Valley: The Anatomy of an Entrepreneurial Region* (Stanford, CA: Stanford University Press, 2000), pp. 71–97.
7. James N. Baron, M. Diane Burton, and Michael T. Hannan, "Engineering Bureaucracy: The Genesis of Formal Policies, Positions, and Structures in High-Technology Firms," *Journal of Law, Economics, and Organization*, 15 (1999): 1–41. Also, see Thomas Hellmann and Manju Puri, "Venture Capital and the Professionalization of Start-Up Firms: Empirical Evidence," *Journal of Finance*, 57 (February 2002): 169–197.
8. For examples, see discussions by two prominent venture capitalists: Kathryn Gould of Foundation Capital and Dave Marquardt of August Capital (see <http://www.forbes.com/asap/2001/0528/057.html> and <http://www.siimage.com/press/06_19_00_chip-friendlyVCs.asp>).
9. For examples, see James N. Baron and Michael T. Hannan, "The Economic Sociology of Organizational Entrepreneurship: Lessons from the Stanford Project on Emerging Companies," in Victor Nee and Richard Swedberg, eds., *Economic Sociology of Capitalist Institution* (New York, NY: Russell Sage, in press).

10. Among the 166 companies in Figure 3, 34.8% of firms that intended to compete principally through marketing or customer relations adopted a Commitment or near-Commitment blueprint at their inception, compared to 10.5% of firms pursuing other strategies (technological innovation, technological enhancement, and/or low cost), a highly significant difference.

11. For additional details, see Baron and Hannan, op. cit.

12. Nor did any of the 10 companies classified as Autocracies or near-Autocracies report an organization-building activity as their first milestone event.

13. Of the companies that were classified as "Non-type" at both time points, 29.4% had changed the blueprint in some respect.

14. As one might imagine, the control–coordination dimension was the likeliest to have changed: 35.8% of the companies in Figure 4 modified their HR blueprint along that dimension, compared to 18.8% and 17.6% on the attachment and selection dimensions, respectively.

15. Among the product-driven companies, 35.5% retained their founder's model and 19.4% changed on all three dimensions, whereas corresponding percentages for the rest of the sample were 52.7% and 0.9%, respectively.

16. Among firms in which a product-related event occurred first on our list of company-launching activities, 38.5% displayed one of our five pure employment model types; among the rest of the sample, the fraction was 60.0%.

17. The results are very similar if we use a measure of whether either of the *first two* milestone activities in launching the company was related to organization- or identity-building.

18. See Michael T. Hannan and John Freeman, "The Population Ecology of Organizations," *American Journal of Sociology*, 82 (March 1977): 929-964; Michael T. Hannan and John Freeman, "Structural Inertia and Organizational Change," *American Sociological Review*, 49/2 (April 1984): 149–164.

19. James C. Collins and Jerry I. Porras, *Built to Last: Successful Habits of Visionary Companies* (New York, NY: HarperCollins, 1994).

20. Richard E. Walton, "From Control to Commitment in the Workplace," *Harvard Business Review*, 63/2 (March/April 1985): 76–84; Charles A. O'Reilly and Jeffrey Pfeffer, *Hidden Value: How Great Companies Achieve Extraordinary Results with Ordinary People* (Boston, MA: Harvard Business School Press, 2000).

21. For a full report of findings, see James N. Baron, Michael T. Hannan, and M. Diane Burton, "Building the Iron Cage: Determinants of Managerial Intensity in the Early Years of Organizations," *American Sociological Review*, 64/4 (August 1999): 527–547.

22. For companies having 50, 500, or 1500 non-administrative employees, Table 1 reports predicted differences in the level of managerial and administrative overhead (FTEs) in 1994–1995 as a function of the founder's employment blueprint (combining pure- and near-type cases). The Non-type category (not shown in Table 1) is intermediate between the Engineering and Autocracy blueprints. The statistical model used to compute these values includes controls for firm age, industry, strategy, gender and occupational composition, and public versus private status, and the estimates shown in Table 1 are for firms that were "typical" of the SPEC sample as a whole on these attributes [see Baron, Hannan, and Burton, op. cit., Table 3]. The pattern in Table 1 is unchanged if one focuses on the *growth* in overhead by 1994–1995 (by controlling for administrative overhead during the firm's first year of operations).

23. For instance, roughly 40% of the companies had already replaced their original founder with a new CEO by 1994–1995.

24. For a full report of results, see James N. Baron, Michael T. Hannan, and M. Diane Burton, "Labor Pains: Organizational Change and Employee Turnover in Young, High-tech Firms," *American Journal of Sociology*, 106/4 (January 2001): 960–1012.

25. Ibid., p. 998.

26. We defined failure as: bankruptcy, a liquidation event, a merger that was described in the business press (or by industry insiders) as a financial or technological failure, or the disappearance of a company (not accepting mail, no telephone, no web site, and so forth).

27. For a full report of results, see Michael T. Hannan, James N. Baron, Greta Hsu, and Ozgecan Kocak, "Staying The Course: Early Organization-Building and the Success of High-Technology Firms," unpublished manuscript, Stanford Graduate School of Business, 2002.

28. We have also been careful to examine organizational performance only during the time period *after* we had gathered our data about founder and CEO blueprints, to ensure that any changes in HR blueprints occurred prior to the performance outcome.

29. This result is based on analyses of the 42 firms that went public after being added to the SPEC sample and our initial interviews and observations were completed.

30. Altering the blueprint decreased the hazard of IPO for firms founded along Commitment model lines or with the default Engineering blueprint. Change improved the chances of IPO substantially (and significantly) for firms launched with Star blueprints. Indeed, the positive effect of change more than offsets the negative effect of having begun with a Star blueprint. This latter result seems quite plausible, given the institutional pressures on firms in the public capital markets and the very high employee turnover typically experienced by firms with Star model founders, which could necessitate and/or facilitate efforts to alter the blueprint. Changing the employment blueprint also improved somewhat the odds of an IPO for firms that at founding were classified into any of the other three specific blueprint categories—Autocracy, Bureaucracy, and Non-type. This result jibes with what we found in analyzing employee turnover: changes from these configurations tended to be somewhat less disruptive (in terms of inducing employee turnover), whereas shifts *into* these categories tended to be especially disruptive. This suggests that Silicon Valley scientific and technical personnel find these particular blueprints especially undesirable, which may be why the likelihood of an IPO increased for firms that abandoned them.

31. Baron, Hannan, Hsu, and Kocak, op. cit.

32. As noted above, we coded blueprints from the three underlying dimensions, based on how founders and CEOs talked about their companies, not from choices among a menu of alternative labels. There was often little relationship between the model that a given founder or CEO publicly endorsed at one of our conferences and the interview responses that we coded for their firm. In hindsight, it was a very good design decision not to provide our respondents with a checklist of blueprints from which to choose.

33. As an anonymous reviewer noted, cultivating an HR "brand" may be just as important when the economy is imperiled: "The war for talent metaphor seems more closely associated with a booming economy, but even under tough economic conditions each new hire is highly leveraged. With the increasing pressure on high-tech firms in particular to be very careful with cash, it is critical that each (new) member contribute effectively to the organization. Thus, it is still important to hire the very best people even if fewer are being hired."

34. Charles A. O'Reilly, Jennifer Chatman, and David Caldwell, "People and Organizational Culture: A Profile Comparison Approach to Assessing Person-Organization Fit," *Academy of Management Journal*, 34/3 (September 1991): 487–516.