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In the Company of Women

Gender Inequality and the Logic of Bureaucracy in Start-Up Firms

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Perspectives on inequality differ greatly regarding whether the logic of bureaucracy undermines sex-based ascription in work organizations by reducing subjectivity in personnel decisions, or instead merely serves to obscure or “scientize” inequality. Past research has tended to operationalize bureaucratization in terms of the adoption of formal procedures and structures; the authors argue instead that disagreements about whether bureaucracy promotes or ameliorates inequality and segregation have less to do with the contours of bureaucracy than with the underlying logic of bureaucratic organization. Accordingly, the authors assess the link between bureaucratic organization and labor-market ascription by characterizing the logics underlying organizational employment systems. Using data on young high-technology companies in California’s Silicon Valley, they find evidence that bureaucratization improves employment prospects for women in core scientific-technical roles within these enterprises. They further explore path dependence in organizational logics and find that such logics, when adopted, have powerful enduring effects on labor-force composition.

Keywords: *bureaucracy; gender segregation; entrepreneurial organizations; scientific and technical roles; women and work*

One perspective on inequality views bureaucracy as a “great leveler,” supplanting ascription and particularism by ensuring that opportunities and rewards in organizations reflect role-specific qualifications and measured performance (Cook & Waters, 1998; Elvira & Graham, 2002; Reskin,

2000). However, neo-Marxist, feminist, and other viewpoints regard formal bureaucratic structures and practices as smokescreens for oppression, legitimating inequality along such lines as gender, class, and race as “scientific” and objective (Acker, 1990; Burriss, 1996; Ferguson, 1984).

Adjudicating between these approaches is important for theories of organizations and inequality and for crafting policies to ameliorate workplace inequities. Intervention strategies that emphasize rules, documents, systems, procedures, and other formal means for ensuring equal access and opportunity for women and men at work presume that bureaucratization helps level ascription. In this article, we test this presumption, taking advantage of some unique data that allow us to characterize the logic underlying employment relationships across a large sample of young, high-technology organizations.

The Logic of Bureaucracy: Great Leveler or Smokescreen?

Bureaucratic personnel practices are often thought to undermine sex-based ascription by reducing subjectivity in personnel decisions (Bielby, 2000; Heilman, 1995; Pfeffer, 1977; Reskin, 2000). Numerous studies have found that bureaucratic rules and procedures governing recruitment, selection, and rewards improve opportunities and attainments for historically disadvantaged groups (Bielby, 2000; Campbell & Rosenfeld, 1985; Elvira & Graham, 2002; Guthrie & Roth, 1999; Reskin & McBrier, 2000).

Ethnographic studies comparing bureaucratic and collegial organizations corroborate these findings. For instance, a study of women working in engineering and law in Australia (Cook & Waters, 1998) attributed the larger representation of women within engineering to the fact that engineering work usually occurs within bureaucratic organizations, whereas

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law is practiced in collegial partnerships within which women face greater subjectivity and exclusion (also see Britton, 2000; McIlwee & Robinson, 1992). Similarly, analyzing four biotechnology firms, Eaton (1999) concluded that a “project management” orientation and large scale—factors typically associated with bureaucracy—were among the key attributes that create opportunities for women in high technology.

These findings can be explained by the theoretical argument that organizational members resort to their (often gender-biased) stereotypes most in the absence of formal rules to guide hiring and promotion decisions (Reskin, 2000). In the same vein, Kanter’s (1977) classic study of a large corporation documented that ambiguity, the importance of personal trust, and the need to fit in favored “homosocial reproduction,” perpetuating male advantage within the company (also see Ely & Meyerson, 2000). When organizations build on a logic of affiliation and emphasize trust embedded in informal relationships, the argument goes, those who are demographically dissimilar will experience the greatest obstacles to inclusion and advancement.

Bureaucracy, in contrast, ostensibly promotes the transcendence of positions over persons. Power, status, and other rewards are allocated according to rights and responsibilities associated with different formal roles or offices, rather than the personal qualities of incumbents. Bureaucratization supposedly depersonalizes interactions, formalizes and standardizes employment practices, and promulgates performance criteria that are objective and verifiable.

Yet not all research on sex segregation supports this argument. For instance, Tomaskovic-Devey and Skaggs (1999) found that departmentalization, a structural aspect of bureaucracies, increased sex segregation through the proliferation of job titles. Along similar lines, Bielby and Baron (1986) documented that sex segregation persists through the assignment of men and women in the same work role to different organization settings and, within the same occupation, to different job titles.

Some radical feminists argue, moreover, that the logic of bureaucracy is at best ineffective at achieving gender integration and, at worst, just exacerbates and legitimates sex-based inequalities. According to this argument, bureaucracy is intrinsically tied to masculinity and patriarchy; sex discrimination is built into the very logic of bureaucracy and shrouds caprice and domination in seemingly neutral and objective garb. In an early exposition of this perspective, Ferguson (1984) asserted that bureaucracy is the “scientific organization of inequality.” Along the same lines, Acker (1990) argued that “rational-technical, ostensibly gender-neutral control systems [in organizations] are built upon and conceal a gendered substructure” (p. 154; also see Burris, 1996; Hartmann, 1976).

Thus, radical feminists regard bureaucratic forms as fundamentally flawed and do not believe that gender equality can be achieved within them. Therefore, an important element in the feminist movement, especially in the second half of the 20th century, tried to create an alternative breed of organizations. Most of these attempts emphasized nonbureaucratic structures and procedures, such as flat hierarchies, decentralization, egalitarianism, and participatory and/or consensual decision making (Ferguson, 1984; Ianello, 1992). Few surviving feminist organizations retain this early form, however. The focus on creating alternative organizations eventually shifted from structure to ideologies, goals, and values (J. Martin, Knopoff, & Beckman, 1998; P. Y. Martin, 1990). Organizational values that promote mutual caring, support, cooperation, personal growth, and interpersonal relationships are seen as the foundation of alternative feminist organizations. In essence, it is a logic of affiliation rather than a logic of bureaucracy that feminists see as the best hope for creating organizations that do not oppress women.

In sum, the two rival perspectives imply competing hypotheses, which we focus specifically on gender representation in core scientific-technical roles. The exclusion of women from the technical “core” is a telling representation of the extent of workplace inequality within high-technology enterprises. We believe the relationship between organizational logics of control and gender inequality within high-technology organizations is most likely to manifest in these key positions. According to the “great leveler” perspective:

Hypothesis 1a: Firms that structure employment relations according to a bureaucratic logic will have a higher proportion of female employees in core scientific-technical roles, all else being equal, than firms that do not.

The null of this hypothesis is argued by the “smokescreen” perspective, which predicts that bureaucratic structures and practices serve to obscure or scientize inequality and segregation. A stronger variant of this perspective, which regards bureaucracies as inherently patriarchal, goes further to argue the opposite of Hypothesis 1a.

A discriminating test of these two arguments requires a comparison of outcomes in firms with a bureaucratic logic versus those with an affiliative logic. Scholars who regard bureaucracy as a weapon against labor-market ascription generally believe the reproduction of advantage is most acute in settings where interpersonal trust and “fitting in” are most critical. This suggests a more specific version of Hypothesis 1a:

Hypothesis 1b: Firms that structure employment relations according to a bureaucratic logic will have a higher proportion of female employees in core scientific-technical roles, all else being equal, than firms that structure employment relations according to a logic of affiliation.

In direct contrast to this, some feminists and other critics of conventional organizational structures have argued that equality and inclusion can only be attained in alternative forms of organization that are humanizing, that place collective welfare ahead of the standing of specific individuals or subgroups, and that actively promote shared values and interpersonal affiliation. This viewpoint implies:

Hypothesis 2a: Firms that structure employment relations according to an affiliative organizational logic will have a higher proportion of female employees in core scientific-technical roles, all else being equal, than firms that do not.

To the extent that the feminist critiques are aimed specifically at bureaucratic forms of organization, a more specific version of the hypothesis is suggested:

Hypothesis 2b: Firms that structure employment relations according to an affiliative organizational logic will have a higher proportion of female employees in core scientific-technical roles, all else being equal, than firms that structure employment relations according to a bureaucratic logic.

Recent work on path dependence in organizational evolution suggests an amendment to these hypotheses. That work builds on Stinchcombe's (1965) classic statement, arguing that organizations are shaped indelibly by conditions present at their founding. The logic of employment relations adopted by a new enterprise is a particularly powerful and inert basis of organizational identity (Baron, 2004). Previous research has documented that the founder's cultural blueprint shapes a variety of organizational outcomes (Baron, Hannan, & Burton, 2001; Hannan, Baron, Hsu, & Koçak, 2006). If this is true with regard to the gender mix as well, then the hypotheses stated above should apply not only to an organization's present-day employment logic but also to its employment logic at founding.

Discriminating Between the Viewpoints

In our view, the ambiguous nature of past findings partly reflects how researchers have operationalized bureaucratization. Past research has

tended to focus on the presence or absence of particular organizational features, practices, or policies that are presumed to advance meritocracy, formalize and standardize employment decisions, and thus reduce ascription. Yet disagreements about whether bureaucracy promotes or ameliorates gender inequality have less to do with the contours of bureaucracy than with the underlying logic of bureaucratic organization. As Adler and Borys (1996) argued, the very same organizational practice or policy can mean radically different things depending on the cultural setting. Hence, the mere presence (or absence) of some observable characteristic is not sufficient to determine whether an organization's underlying logic is bureaucratic. For example, job evaluation, formalized performance appraisals, and the like can be implemented in ways that simply objectify and obscure ascription or in ways that have the opposite effect. The problem might not be bureaucratic rules per se, but that male rules usually dominate because male cultures prevail in most traditional organizations (Due Billing, 1994). To be effective, bureaucracies must actually reflect a bureaucratic logic of universalism and meritocracy; the trappings of bureaucracy alone may not reduce ascription.

Similarly, we suspect that the effects of reliance on informal networks, interpersonal trust, and "fitting in" on opportunities for women and minorities might depend on the culture pervading the organization. In organizations founded on masculinity and patriarchy, these factors will promote the emergence of "old boy" networks that exclude women and minorities from access to critical resources. This is likely to be reflected in differential outcomes, such as the high concentration of network "outsiders" in low-quality nonstandard work arrangements (Kalleberg et al., 1997).

On the other hand, there is also evidence that reliance on informal relations can benefit traditionally disadvantaged groups in some contexts. Kram (1988) demonstrated that women and minorities can use homophilous ties as conduits for advice and support from others who have encountered similar obstacles. Ibarra (1997) found that the possession of same-gender ties improved women's odds of advancing. We believe that cultural fit and reliance on interpersonal relationships will be most beneficial to women within organizations whose cultures espouse values such as mutual caring, support, and personal growth (J. Martin et al., 1998; P. Y. Martin, 1990).

This discussion implies that empirical studies of labor-market ascription should focus on the logics underlying organizational employment systems—the extent to which they are bureaucratic or affiliative—rather than relating measures of inequality to the mere presence or absence of phenotypical organizational features. Yet this strategy poses a significant challenge for

comparative quantitative research. As difficult as it is to gather information on organizational attributes that bear on labor-market processes, it is even more challenging to gather information on the cultural logics that underlie how organizations seek to treat their employees. Although a number of excellent case studies address this topic (Kanter, 1977; McIlwee & Robinson, 1992), research designs enabling large-scale comparisons among organizational logics and their link, if any, to gender inequality are very scarce.

To be sure, employment logics within organizations could be (and have been) differentiated along many different dimensions (e.g., Edwards, 1979; Etzioni, 1969/1975). This article does not seek to add to the enormous conceptual literature that develops typologies of organizational control systems and cultures. Rather, our aim is to explore how labor-market ascription varies among organizations whose employment systems reflect different premises. As a first step in that direction, we rely on the Stanford Project on Emerging Companies (SPEC), a panel study of young, high-technology firms in Silicon Valley. Previous research based on these firms has identified distinct employment logics, which approximate the bureaucratic and affiliative types in which we are particularly interested.

Data

SPEC examined the evolution of business strategies, organizational designs, and employment practices, seeking to understand how human resource (HR) systems get established in nascent enterprises and with what consequences. The focus on firms in a single region and sector of economic activity held constant key labor-market and environmental conditions, as well as some institutional influences on organizational structures and labor-force dynamics.

Previous research using these data has developed and validated a classification scheme for employment blueprints, which provides a means for operationalizing bureaucratic and affiliative logics (e.g., Baron, Hannan, & Burton, 1999; Burton, 1999; Hannan et al., 2006). Data on these logics and sex composition of the labor force are also available at two time points, allowing us to examine changes.

The Setting

SPEC focused on industries in Silicon Valley that contained sufficient numbers of comparable firms to permit quantitative comparisons—specifically, firms in computer hardware and/or software, telecommunications and

networking, medical and biological technologies, and semiconductors. SPEC's emphasis on how founding conditions and early decisions affect subsequent organizational evolution necessitated information about the earliest days of the organization. Assuming that individuals could only reliably recall fairly recent information, the researchers limited the sample to firms that had grown to at least 10 employees and were no more than 10 years old when first visited.¹

The SPEC researchers conducted semistructured interviews with the then-current CEO, who also identified the founder (or member of the founding team) best equipped to describe the firm's history and the person best informed about HR practices in the organization. SPEC researchers followed up with these informants about company history and HR (respectively) and asked them to return completed surveys prior to being interviewed. The company history survey solicited details about the firm's founding and subsequent milestone events; the HR survey sought information about workforce demographics and a variety of employment policies and practices. Additional details of the sample and data collection procedures are provided in published papers from the SPEC project cited herein.

The SPEC data set has four particular virtues in examining how organizational logics of control affect gender integration. First, we can build on prior research that has analyzed these data and developed what appears to be a powerful and robust typology of employment logics, which we briefly summarize in the following section. Second, the data describe the organizational blueprints envisioned at founding and by the CEO later in the firm's evolution. This enables us to examine whether path-dependent trajectories govern women's opportunities—for instance, whether any effects of a bureaucratic logic depend on whether it was adopted from the outset versus having supplanted some other logic. Third, these data enable us to analyze determinants of the gender mix within core scientific, technical, and engineering roles in these enterprises. Fourth, the data describe an interesting and important sector of economic activity, high technology, where women are notoriously underrepresented, especially in scientific and engineering occupations (e.g., Hanson, Schaub, & Baker, 1996; National Science Foundation [NSF], 1996; Preston, 2004; Wootton, 1997).

Conceptions of Control in High-Tech Firms

As noted above, contemporary organization theory frequently invokes the notion of culturally based templates or logics of control. Yet researchers

have seldom tried to operationalize such blueprints directly, tending instead to infer their existence from other sources of information. Using open-ended interviews, the SPEC study gathered information about how founders and CEOs conceptualized employment relations, asking each founder whether he or she had “an organizational model or blueprint in mind when [you] founded the company.” (The CEO was asked a parallel question about the period corresponding to the date of the interview—hereafter, t_2 .)

Inductive analyses of interview transcripts suggested that founders’ and CEOs’ templates for employment relations varied along three main dimensions—attachment, coordination and/or control, and selection—each characterized by a few distinct options from which organizational architects seemed to be selecting (for details and illustrative quotes from interview transcripts, see Burton, 1999.)

Founders articulated three different bases of employee attachment: love, work, and money. Founders’ views of the primary means of coordinating and controlling work typically fell into one of four categories: informal control through peers or culture, professional control (i.e., assuming that employees hired from elite sources had been professionally socialized to adhere to the highest standards), formal procedures and systems, or direct oversight. Finally, founders’ notions regarding selection clustered into three categories: a focus on selecting employees with the skills and experience needed to accomplish some immediate task(s), an emphasis on long-term potential, and a cultural conception of the firm stressing values and attitudinal fit. The SPEC research team coded founders’ and CEOs’ interview responses on these three dimensions, unless missing data precluded this. Coders were instructed to classify firms based on the premises espoused, rather than the specific HR practices evident in the firm.

Previous research analyzing the SPEC data has documented that these three dimensions cohere and can be used to characterize the implicit organizational blueprints of founders at the firm’s inception and of CEOs when first visited by the SPEC team (for additional details, see Baron, Hannan, & Burton, 1999, 2001; Baron & Kreps, 1999, chap. 19; Burton, 1995, 1999). 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, firms tended to cluster into five cells, representing distinct logics or blueprints. These categories are shown in Table 1.

In this article, we contrast the effects of the two blueprints that best capture the bureaucratic–affiliative logic dichotomy: bureaucracy and commitment. The *bureaucracy blueprint* involves attachment based on challenging work and/or opportunities for development, selection based on qualifications

Table 1
Five Basic Employment Logics, Based on Three Dimensions

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

for specific roles, and formalized control. The *commitment model* relies on emotional–familial attachments between employees and the organization, selection based on cultural fit, and peer-group control.² For purposes of comparison, we also examined how gender integration is related to each of the three constituent dimensions of control, attachment, and selection (see appendix).

In examining whether a logic of bureaucracy affects ascription, it is important to control for the effects of bureaucratic procedures. We measured the presence of formalized employment practices with a dichotomy coded 1 if the firm had a full-time HR employee as of t_2 , 0 otherwise. Hiring a full-time HR professional signals a commitment to elaborating and formalizing employment practices. Note that this variable does not correlate significantly with any of the employment blueprints; nor are firms founded along bureaucratic lines more likely to have hired full-time HR staff by t_2 than firms that later adopted a bureaucratic logic. This suggests that employment logics and formalization of employment practices are independent dimensions of organizations. Large complex organizations, and nascent firms, can function with bureaucratic or commitment principles. Organizational values and practices are by no means unrelated (see Baron, Hannan, & Burton, 1999). However, our approach avoids the conflation of bureaucratic values and practices apparent in most of the literature.

We include a dummy variable distinguishing public from private firms. Public firms are generally more visible and accountable and therefore perhaps more likely to pursue gender equity. We also control for whether firms have an innovation-oriented business strategy. Finally, in modeling the number of women in core scientific roles when the firm was first visited, we control for: the number of men in those same roles at t_2 and at t_1 (the firm's

first year of operations); the number of employees in all other occupational groups at t_1 and t_2 ; and women's presence in core scientific positions at t_1 .³ In supplementary analyses, we also controlled for firm age, venture capital financing, industry, and the presence of women in senior management roles; however, their net effects were negligible.

Results

Descriptive Statistics

Table 2 provides descriptive information on selected characteristics of the SPEC firms.⁴ Women's representation in core positions increased somewhat over time. In its first year of operations, the typical firm had 10.4 full-time employees (FTEs) in scientific-engineering jobs (median = 5), of whom 11.3% were female; by t_2 , 49 FTEs were employed in core roles (median = 20), 16.9% of whom were female. Female representation in senior management roles also increased moderately, from 10.8% to 13.7% on average. It is not surprising to note that female representation was greatest among administrators and clerical workers, with women on average constituting the majority of these two occupational groups.

Multivariate Analyses

Personnel counts in specific occupational categories tend to be small in these organizations; consequently, measures of the proportion of females can be strongly affected by a few entries or exits. Therefore, we chose to model the counts themselves. We relate the count of women in core scientific-technical roles to the count of men in those same roles, to other personnel counts, and to other relevant covariates. Because of overdispersion, we used the negative binomial model, a generalized case of the Poisson appropriate for overdispersed data (Barron, 1992). We use Y to denote a random variable representing the count to be modeled, y to denote a realization of that random variable, and \mathbf{x} to represent a vector of covariates. The negative binomial regression model has the form:

$$\Pr\{Y = y\} = \frac{e^{-\lambda} \lambda^y}{y!},$$

$$\lambda = \exp(\mathbf{x}' \boldsymbol{\beta}) \times \varepsilon,$$

where the disturbance term ε has a gamma distribution. The software package we used, NBREG in Stata 8.0 (StataCorp, 2003), assumes that this distribution

Table 2
Descriptive Statistics: Selected Characteristics of SPEC Companies (N = 75)

Variable	First Year of Operations			Time of First Interview				
	<i>M</i>	<i>SD</i> ^c	Minimum, Maximum	<i>M</i>	<i>SD</i> ^c	Minimum, Maximum		
Organizational demographics								
Organizational age at t_2						1.75, 14.25		
Public firm by t_2 (1 = yes)				.21		0, 1		
Hired full-time HR personnel by t_2 (1 = yes)				.57		0, 1		
Founder strategy: technical innovation (1 = yes)				.56		0, 1		
Functional and gender distribution of labor								
Number of full-time employees (FTEs)	29.33	14.00	66.18	1, 440	131.27	58.00	240.07	6, 1895
FTEs in scientific-engineering roles	10.41	5.00	26.89	0, 226	49.03	20.00	138.90	0, 1185
FTEs in senior management roles	3.76	3.00	4.06	0, 33	7.05	6.00	5.39	2, 38
FTEs in sales and marketing roles	2.07	1.00	4.21	0, 30	17.73	8.00	27.61	0, 176
FTEs in administrative roles	3.78	1.00	10.96	0, 86	19.53	6.00	40.72	0, 300
FTEs in clerical roles	1.80	0.00	5.70	0, 38	7.93	2.00	16.16	0, 118
Percentage FTEs in scientific-engineering roles	38.26	42.62	23.00	0, 78	37.79	39.13	19.66	0, 76
Percentage FTEs in senior management roles	28.20	25.00	22.34	0, 100	11.58	10.00	8.81	1, 56
Percentage FTEs in sales and marketing roles	7.85	5.26	10.09	0, 43	15.36	13.89	11.82	0, 52
Percentage FTEs in administrative roles	11.25	10.00	10.29	0, 50	12.35	10.61	7.56	0, 33
Percentage FTEs in clerical roles	3.70	.00	5.72	0, 29	4.84	4.35	4.74	0, 25
Female FTEs in scientific-engineering roles	1.29	.00	4.83	0, 41	9.64	2.00	36.46	0, 314
Female FTEs in senior management roles	.49	.00	1.20	0, 9	0.91	1.00	1.14	0, 5
Female FTEs in sales and marketing roles	.58	.00	1.63	0, 12	4.44	2.00	6.39	0, 38
Female FTEs in administrative roles	1.63	1.00	3.79	0, 23	7.21	3.00	11.35	0, 66
Female FTEs in clerical roles	1.53	.00	4.57	0, 29	6.73	2.00	12.74	0, 89

Percentage female among scientists-engineers ^a	11.26	.00	20.18	0, 100	16.94	11.76	16.57	0, 100
Percentage female among senior management ^a	10.78	.00	19.62	0, 100	13.70	7.69	18.03	0, 100
Percentage female among sales and marketing ^a	26.41	.00	35.48	0, 100	28.35	25.00	26.06	0, 100
Percentage female among administrators ^a	63.46	66.67	37.64	0, 100	53.69	50.00	28.37	0, 100
Percentage female among clerical employees ^a	87.54	1.00	27.28	0, 100	91.49	1.00	13.28	0, 100
Percentage female (all employees)	22.00	.20	15.65	0, 64	31.11	30.43	13.35	0, 77

Founder's employment blueprint^b

Commitment (%)	13.33
Autocracy (%)	5.33
Star (%)	9.33
Engineering (%)	33.33
Bureaucracy (%)	5.33
Nontype (%)	33.33

CEO's employment blueprint^b

Commitment (%)	13.33
Autocracy (%)	4.00
Star (%)	5.33
Engineering (%)	25.33
Bureaucracy (%)	20.00
Nontype (%)	32.00

a. Only for firms having one or more FTE in the specific occupational category (e.g., scientist-engineer).

has a gamma distribution, $\Gamma(1/\alpha, 1/\alpha)$, which makes α the overdispersion parameter.

Table 3 reports estimates of effects of covariates on the number of women in core roles at t_2 . Model 1 reports the effects of control variables. Models 2a and 2b include indicator variables for the CEO's employment blueprint (focusing on the contrasts among commitment, bureaucracy, and all other blueprints), and the lagged dependent variable. In Model 2, the omitted category is the commitment (affiliative) blueprint, whereas bureaucracy is omitted in Model 2. Each model also controls for firm size, occupational mix at t_1 and t_2 , public and/or private status, and CEO strategy.⁵

Having hired a full-time HR employee is associated with significantly more female scientists–engineers at t_2 , net of all other variables, including the employment blueprint. Thus, independent of an organization's underlying cultural logic, the formalization of employment practices associated with the advent of a HR function promotes gender integration.

Women's representation within core occupations grew significantly faster in firms with a bureaucratic logic, especially compared to firms with an affiliative logic (Model 2b). These results support Hypotheses 1a and 1b. The results are similar, though less pronounced, if firms are characterized in terms of their founders' logics, rather than the CEO's at t_2 .⁶ Firms that conceptualize employment relations in affiliative terms are least likely to make progress toward gender integration, though the contrast is much more pronounced between affiliative and bureaucratic logics (Model 2a).

Women were more highly represented in core roles within firms that had gone public by t_2 , even controlling for employment growth. This suggests that public companies might be more proactive in implementing employment policies and practices aimed at diversity.

The current results suggest that bureaucracy decreases ascription by virtue of the formalized employment practices it occasions and the distinctive culture or employment logic that it embraces. Specifically, firms whose CEO espoused a bureaucratic employment logic were faster to integrate core roles, even after controlling for the presence of professional HR staff in the company (Table 3, Models 2a and 2b). These findings are consistent with the notion that affiliative cultures can impede integration of disadvantaged groups due to the high premium placed on trust and fitting in.

However, it would be premature to conclude from the current results that "high commitment" systems per se exclude or repel women. Rather, it might be the specific types and foci of commitment in the SPEC companies that resisted the inclusion of women.⁷ Previous studies suggest that the

Table 3
Coefficient Estimates from Count Models Predicting (Log) Number of
Female Scientists-Engineers at Time 2 (N = 75)

Variable	Model 1			Model 2a			Model 2b		
	Coefficient	Z	Probability > Z	Coefficient	Z	Probability > Z	Coefficient	Z	Probability > Z
CEO's human resource (HR) model									
Commitment				1.648	3.92	.000	-1.648	-3.92	.000
Bureaucracy				.497	1.45	.147	-1.151	-3.73	.000
All other employment models									
Number of males in engineering by end of year 1 (ln)	-.008	-.15	.883	-.085	-1.50	.135	-.085	-1.50	.135
Number of employees in nonengineering by end of year 1 (ln)	-.374	-2.39	.017	-.342	-2.25	.024	-.342	-2.25	.024
Number of females in engineering by end of year 1 (ln)	.207	3.93	.000	.168	3.31	.001	.168	3.31	.001
Number of males in engineering at t ₂	.164	1.45	.148	.066	1.65	.517	.066	1.65	.517

(continued)

Table 3 (continued)

Variable	Model 1			Model 2a			Model 2b		
	Coefficient	Z	Probability > Z	Coefficient	Z	Probability > Z	Coefficient	Z	Probability > Z
Number of employees in nonengineering positions at t_2	.191	1.18	.236	.124	.76	.445	.124	.76	.445
Firm had gone public by t_2	.845	3.22	.001	.046	3.93	.000	.046	3.93	.000
CEO strategy: technical innovation	.196	.82	.415	.337	1.52	.129	.337	1.52	.129
Firm had hired full-time HR employee by t_2	1.035	3.27	.001	1.677	4.69	.000	1.677	4.69	.000
Constant	.545	1.11	.265	-.248	-.45	.652	1.400	2.83	.005
Overdispersion (α)		.471				.375			
χ^2		97.02 (8);				115.88 (10);			
Log likelihood		$p < .001$				$p < .001$			
Pseudo R^2		183.038				-173.608			
		.210				.250			

emphasis on fitting in and peer control might be especially detrimental to women in high-technology settings, where culture is mostly defined by displays of masculinity and technical prowess (Hacker, 1981; McIlwee & Robinson, 1992). This effect might be particularly pronounced in nascent high-commitment firms like those in the SPEC sample, which for the most part have yet to develop either a formal apparatus or informal reputation that might allay concerns about inclusiveness and equity among diverse segments of the labor force. For instance, the CEO of a semiconductor company who espoused a commitment blueprint stated, "I [still] do [performance evaluations for] all the sales, engineering, technical, and supervisory people . . . and I still interview all the people we hire in technical and supervisory positions. I have a very good sense of what the team spirit is like and if this person will fit." Processes of evaluation and hiring this subjective could be detrimental to female employees, especially if a CEO's conception of team spirit is gender biased.

Supplementary Analyses

Employment Blueprints versus Employment Dimensions

The appendix reports supplementary analyses that replaced the blueprint types analyzed in Table 3 with seven dummy variables denoting possible values along each of the three constituent dimensions (i.e., attachment, selection, and control). Consistent with our main results, we found that employment premises corresponding to the bureaucratic logic (formal control, skill-based selection, and attachment via work) have positive effects, relative to the omitted dimensions (which correspond to the commitment logic). However, none of these effects is statistically significant. Moreover, as a group, the variables representing firms' values along the separate dimensions do not improve over the model with only control variables. The distinct employment blueprints, by contrast, are more powerful and parsimonious predictors of the gender mix.⁸ Consistent with findings from previous SPEC studies, interactions among dimensions of a firm's employment logic appear more decisive than positioning along any specific dimension.

Paths to Bureaucracy: Effects of Persistence and Change in Employment Logics on Sex Composition

Women's employment in core scientific roles was greatest in those high-tech firms whose leadership articulated a bureaucratic logic. However, the

cultural templates embraced by senior leaders within these firms did not necessarily remain constant over time. In some firms, new CEOs espousing logics that differed from those of the founders were recruited. Even in companies that had not experienced a change in top leadership, founder-CEOs sometimes altered their thinking about which employment logics were appropriate for their firms.⁹ Especially pertinent to the current research, most firms that experienced a change in the employment blueprint switched toward a bureaucratic logic (see Baron & Kreps, 1999).

Inertia and path dependence, which have been documented for numerous features of organizations and organizational evolution (Barnett & Carroll, 1995), are likely to be equally important in shaping the contours and magnitude of gender inequality in the workplace (Baron & Newman, 1990; Kim, 1989, 1999). The fact that firms arrived at their current logics via different transition paths suggests that labor-market ascription is affected not only by an organization's present-day employment logic but also by its cultural blueprint at founding. Previous studies of SPEC firms have reported that founders' initial employment blueprints had path-dependent effects on bureaucratization and formalization, development of the HR function, CEO succession, employee turnover, the rate of going public, and the hazard of failure (Baron, Burton, & Hannan, 1999; Baron, Hannan, & Burton, 1999, 2001; Hannan et al., 2005).

Lacking strong theoretical or empirical bases for specific hypotheses, we simply offer several speculative predictions about how the effects of bureaucracy on gender integration may depend on when that logic was adopted and what prior logic, if any, it supplanted.

We summarized arguments above alleging that "engineering culture" is especially inhospitable to women. To the extent that bureaucracy institutionalizes ascription, transitioning to a bureaucratic logic should promote gender integration less among firms initially founded along engineering lines than among firms with less overtly masculine blueprints. Stated differently, bureaucratization may be a universalizing force, but less so when it supplants the traditional male-dominated culture of engineering. Thus,

Prediction 1: Among firms that switch to a bureaucratic logic, firms founded with an engineering logic integrate core scientific positions by gender less, all else being equal, than firms that originated with other logics.

Path dependence implies that initial employment logics have lasting effects on organizations, even when firms subsequently adopt a different blueprint.

If bureaucracy promotes universalism, firms founded with bureaucratic logics should experience an enduring effect of this early imprinting, achieving more gender integration over time, even if they later abandoned the bureaucratic blueprint.

Prediction 2: Firms founded according to a bureaucratic logic will achieve more gender integration in core occupations, even if they later altered the employment blueprint.

Finally, to the extent that affiliative cultures in high technology exclude and marginalize women, we would predict an enduring imprint on enterprises launched according to a commitment logic, even if they subsequently embraced a different blueprint:

Prediction 3: Firms founded according to a commitment logic will achieve less gender integration in core occupations, even if they later altered the employment blueprint.

As a proxy for a dominant engineering culture, we use the engineering blueprint identified by Baron, Burton, and Hannan (1999). This blueprint involves attachment through challenging work, peer group control, and selection based on specific task abilities; it parallels standard descriptions of Silicon Valley high-tech culture (Saxenian, 1994), and it is the modal employment blueprint among SPEC founders (see Table 2). Another meaningful contrast is with firms that initially were not committed to any of the five distinct blueprints. These firms, called “hybrid” by Baron, Burton, and Hannan (1999), differ from the five models along one or two dimensions. These firms might later have found it easier to adopt a bureaucratic logic, with less “cultural baggage” from the initial founding period.

Table 4 reports regression analyses examining these predictions. Models 1a and 1b report the effects of founders’ logics, and the impact of changing to a bureaucratic logic.¹⁰ Of the 12 firms that switched to a bureaucratic logic, seven started with an engineering blueprint, and five started as “hybrids.” We include indicators for these two paths to bureaucracy, and a dummy variable to control for any other change in employment logic from t_1 to t_2 . Table 4 reports two different specifications: Model 1a omits firms with commitment-blueprint founders; Model 1b omits firms with bureaucracy-blueprint founders. These results suggest that firms that persisted with a commitment logic from the outset were significantly less gender integrated within core occupations at t_2 , compared to firms that adhered from the

outset to some logic other than bureaucracy or commitment. Adherence to a commitment blueprint thus appears to have had enduring negative effects, stifling gender integration; adherence to bureaucracy from the outset, however, appears to have no lasting effect on sex composition.

However, changing to a bureaucratic logic is positively associated with female representation in core occupations (Models 1a and 1b). Transitioning from either engineering or a hybrid blueprint to bureaucracy significantly increased women's presence in core occupations at t_2 . Firms changing to a bureaucratic logic from a hybrid blueprint, for instance, added twice as many women in core roles as otherwise comparable firms that originally embraced an engineering blueprint ($p < .05$, two-tailed). Other transitions among employment blueprints, in contrast, had no significant net impact on the gender mix at t_2 .

Model 2 compares firms founded with a bureaucratic blueprint to those that later adopted that logic (i.e., the 12 firms that were founded with a non-bureaucratic logic and later switched to bureaucracy constitute the omitted category).¹¹ Firms founded along bureaucratic lines experienced less gender integration by t_2 than otherwise comparable firms that embraced a bureaucratic logic after founding (though the difference is only marginally significant). This result suggests that bureaucratization may be a stronger catalyst for gender integration when it supplants some preexisting organizational logic. Perhaps there is a tendency for firms founded as bureaucracies to institutionalize gender stereotypes in their early evolution. Nonetheless, according to Model 2 of Table 4, firms that embraced a bureaucratic logic at some point between t_1 and t_2 achieved significantly greater gender integration in core roles than otherwise comparable firms never having adopted a bureaucratic logic.

Table 5 reports finer grained analyses of women's representation in core occupations as a function of stability and change in employment blueprints. We examine different combinations of origin and destination states involving commitment and bureaucracy logics.¹² A vector of dummy variables represents specific combinations of founder and CEO blueprints. The same covariates as in Model 2 of Table 4 are also included in this specification, although we do not report their results here. The coefficients in this table represent predicted differences in gender mix at t_2 between firms that experienced a given transition versus the reference category: "hybrids" at founding that later switched to bureaucracy.

The results in Table 5 again indicate that firms that switched to bureaucracy were generally most welcoming to women. Firms that transitioned from "hybrid" to bureaucracy compared favorably to all other types of

Table 4
Coefficient Estimates from Count Models Predicting (Log) Number
of Female Scientists-Engineers at Time 2 ($N = 75$)

Variable	Model 1a			Model 1b			Model 2		
	Coefficient	Z	Probability > Z	Coefficient	Z	Probability > Z	Coefficient	Z	Probability > Z
History with bureaucratic logic (omitted category represents firms that switched to a bureaucratic logic)									
Founded with bureaucratic logic									
Never had bureaucratic logic									
Founder's HR model									
Commitment									
Bureaucracy	1.311	2.32	.020	-1.311	-2.32	.020			
All other employment models	1.063	2.73	0.006	-248	-57	.569			
Change in HR model									
Change from engineering to bureaucracy	0.679	1.98	.048	.679	1.98	.048			
Change from hybrid to bureaucracy	1.494	3.76	.000	1.494	3.76	.000			
Change to nonbureaucratic model	-.112	-.48	0.631	-1.12	-.48	.631			
Firm had full-time HR employee by t_2	1.714	5.54	.000	1.714	5.54	.000	1.687	4.92	.000

(continued)

Table 4 (continued)

Variable	Model 1a			Model 1b			Model 2		
	Coefficient	Z	Probability > Z	Coefficient	Z	Probability > Z	Coefficient	Z	Probability > Z
Number of males in engineering by end of year 1 (ln)	-.082	-1.56	.119	-.082	-1.56	.119	-.080	-1.45	.146
Number of employees in non-engineering positions by end of year 1 (ln)	-.296	-2.20	.028	-.296	-2.20	.028	-.314	-2.12	.034
Number of females in engineering by end of year 1 (ln)	.120	2.63	.009	.120	2.63	.009	.152	3.06	.002
Number of males in engineering at t_2	.090	1.01	.313	0.090	1.01	.313	.092	.93	.351
Number of employees in nonengineering positions at t_2	.093	.66	.511	.093	.66	.511	.045	.30	.094
Firm had gone public by t_2	.802	3.64	.000	.802	3.64	.000	.988	4.12	.000
Founder strategy: technical innovation	.541	2.54	.011	.541	2.54	.011	.357	1.64	.102
Constant	-1.023	-1.82	.069	.288	.50	.617	1.602	3.23	.001
Overdispersion (α)			0.223					0.353	
χ^2			132.65 (13);					116.02 (10);	
Log likelihood			p < .001					p < .001	
Pseudo R^2			-.165, .223					-.173, .537	
			.286					.251	

Table 5
Effects of Stability and Change in Employment Models
on Women's Representation in Core Occupations

(Founder's Model) → (CEO's Model)	<i>N</i> of Firms	Coefficient	Z	Probability > Z
Stable Commitment	7	-2.365	-4.71	.000
Stable Bureaucracy	3	-1.587	-2.44	.015
Engineering → Bureaucracy	7	-.960	-2.40	.017
Hybrid → Commitment	2	-1.636	-3.16	.002
Autocracy → Commitment	1	-21.109	.00	.999
Commitment → (basic model other than Commitment)	3	-21.393	.00	.997
Bureaucracy → (basic model other than Bureaucracy)	1	-1.279	-2.09	.037
Stable Hybrid	24	-1.737	-4.29	.000
Hybrid → (other Hybrid or basic model other than Commitment or Bureaucracy)	22	-1.620	-4.65	.000

Note: Omitted category represents transitions from Hybrid → Bureaucracy.

employment model transitions.¹³ Firms that shifted from an engineering blueprint to a bureaucratic logic had the next highest rate of gender integration. Compared to stable commitment, stable bureaucracy, and stable hybrid firms, these firms were expected to have significantly more women in technical occupations at t_2 ($p < .05$). It is interesting to note that the contrast between hybrid→bureaucracy and engineering→bureaucracy is significant ($p < .025$), suggesting that bureaucratic logic retards ascription more when it supplants an unclear logic than when it replaces an engineering culture.

On the opposite end of the spectrum, stable commitment firms were the least inviting to female core employees. Stable commitment firms had significantly fewer women in core jobs at t_2 than firms with any bureaucratic history,¹⁴ firms that changed from a commitment logic to a different logic, or firms that adopted a commitment logic after having initially embraced a different blueprint.

Discussion

Neo-institutional and ecological scholars have recently emphasized cultural blueprints that shape organization building. Our findings are consistent

with that point of view, extending it to the domain of sex segregation at work. Founders' initial conceptions of employment relations shaped their firms' trajectories regarding women's presence in core scientific, technical, and engineering roles. In particular, firms founded along commitment lines were significantly less likely to add (or retain) women in those roles, relative to firms founded according to other logics.

We cannot determine conclusively whether firms founded along commitment lines had a relative paucity of women in core roles at t_2 because of lower rates of hiring women or higher rates of attrition among women. However, one piece of indirect evidence suggests the former over the latter. Baron et al. (2001) found that changes in organizational blueprints destabilized the SPEC companies by increasing turnover, which in turn slowed revenue growth.¹⁵ In supplementary analyses of the same data, we included controls for initial gender mix (in the firm overall and within the technical core) and an interaction between gender mix and having a commitment blueprint (at t_1 and/or t_2). Although the firm's initial percentage of females has a modest positive net effect on subsequent turnover in some specifications, there was not a significant interaction effect (indeed, the coefficients were moderately negative). Thus, the scarcity of women in firms founded along commitment lines does not appear to reflect unusually high attrition due to difficulties fitting into a masculine culture. Rather, the effect seems more likely to reflect the consequences of selection based on fit: "homosocial reproduction," an aversion among technical women to entering such cultures, or both.

Firms launched with a bureaucratic blueprint were faster to hire women in core technological roles. Transitioning to a bureaucratic logic also significantly increased female representation in the scientific-technical core, regardless of the founder's original blueprint, though the effect was somewhat muted for companies that at the outset embraced Silicon Valley's quintessentially male engineering culture. These findings indicate that bureaucratization can help improve employment prospects for women in technology-based firms.

Yet leaders do appear to face constraints in altering the organizational logics they initially sought to instill in their firms. Almost all firms that switched to a bureaucratic logic either originated with an engineering blueprint or lacked a clear employment blueprint at founding. None of the firms that began with a commitment blueprint subsequently adopted a bureaucratic blueprint. The employment logic in place when an enterprise is founded thus exerts lasting impact on organizational evolution, constraining the subsequent directions that firm can pursue. The prevalence of "hybrid" firms among those that eventually switched to bureaucracy suggests

that eschewing a distinct blueprint in the early days may allow organizations greater flexibility for subsequent change. As the default model for Silicon Valley, the engineering logic might also impose fewer constraints on future choices. By contrast, firms launched along commitment lines may find it more difficult to switch to bureaucracy because of implicit or explicit contracts with employees.

Conclusion

Organizational scholars have focused increasing attention on how founding conditions, cultural templates for organizing, and early structures and practices shape the evolution of nascent enterprises (Carroll & Hannan, 2000). The initial sexual division of labor within firms may represent one of the most influential organizational founding conditions and serve as a mechanism by which cultural blueprints and early structures and practices shape subsequent organizational development. Technologically inclined theories of organization presume that formal structure and technology determine the labor-force requirements and attributes of enterprises, and that internal arrangements and staffing patterns change over time in response to changes in organizational environments, strategies, and technologies. Some evidence on the early years of start-up companies suggests the limitations of such conceptions. Although the gender mix in core positions when firms are first launched does reflect industry and occupational factors (see Baron, Hannan, Hsu, & Koçak, 2002), employment blueprints, once adopted, have powerful enduring effects on subsequent labor-force composition. Far from observing convergence in staffing patterns as these start-up companies evolved, initial differences in founding blueprints shaped the extent to which women were integrated into core technical roles as the firms evolved.

This imprinting has potentially profound implications for research on organizational inequality. Previous studies have documented that women fare better in firms in which their relative numbers are greater. Our preliminary findings suggest, however, that women might have entered the technical core within SPEC firms through quite disparate paths, depending on the organizational blueprint with which their enterprise was launched. This leads us to speculate that the current extent of gender inequality in an organization might reflect not only the current sex composition but also *the developmental path* by which the enterprise achieved that demographic mix. In the same vein, Sørensen (2000, 2004) demonstrated that the effects of race and tenure composition on turnover depend on the entire demographic

history that employees experienced, including enduring effects of the racial and tenure mix when they were first hired. Paying closer attention to path dependence is likely to improve markedly our ability to predict and understand the distribution of opportunities and attainment within organizations.

Bureaucracy is a prevalent evolutionary direction toward which nascent firms generally migrate and the employment logic that appears most welcoming to women in our sample of firms. The move toward bureaucracy may result from several different effects that accompany organizational growth. External constituents such as venture capitalists, investment bankers, and stock analysts may look favorably on firms that adopt formalized policies and procedures that are generally thought to enhance reliability and accountability (Hannan & Freeman, 1989). Growing firms may also be pressured to hire CEOs with greater business experience who are more likely to favor formalized rules. Apart from these considerations, a growing workforce may create difficulties in organizational coordination and control that prompt organizational architects to move toward a more bureaucratic logic. A related alternative hypothesis is that firms hire women as they grow and then adopt bureaucratic employment relationships to manage the increasingly integrated workforce.

Although this general trend toward bureaucratization may appear to be favorable to women in scientific and technical roles, there is a potential downside to this pattern. Women were underrepresented most within the SPEC ventures that appear poised for subsequent success. Recent work analyzing performance among SPEC companies after t_2 documents that enterprises founded along commitment lines were faster to go public, less likely to fail, and (along with star model firms) experienced the largest increases in market capitalization after going public (Hannan et al., 2007). Those same enterprises were least likely to include women within core occupations at t_2 . Hence, we observe the fewest technical women within those high-tech companies whose organizational blueprints apparently entail the greatest prospects for subsequent success.

Some recent depictions of the “free agent” economy suggest that organizational affiliation may become less significant for careers, liberating disadvantaged segments of the labor force from potential landmines embedded in strong organizational cultures. Yet the same groups that fare poorly in conventional employment relationships are generally concentrated in the least lucrative nonstandard arrangements (e.g., Kalleberg et al., 1997). Clearly, scholars and policymakers interested in socioeconomic inequality within labor markets will benefit greatly from additional research examining the evolution of employment logics and HR practices, in the high technology sector and beyond.

Appendix Coefficient Estimates from Count Models Predicting (Log) Number of Female “Core” Employees (Scientists, Engineers, Technicians) at Time 2 (N = 75)

Variable	Model 1		Model 2a		Model 2b	
	Coefficient	Z	Coefficient	Z	Coefficient	Z
CEO's human resource (HR) model (omitted = Commitment)						
Bureaucracy			1.648	3.92		
All other employment models			.497	1.45		
CEO's HR model dimensions: (omitted = Commitment dimensions)						
Control: professional					-.119	-.29
Control: formal					.457	1.52
Control: direct					.474	1.13
Selection: skills					.138	.35
Selection: talent					-.103	-.22
Attachment: work					.615	1.44
Attachment: money					-.069	-.12
Males in core roles by end of year 1 (ln)	-.008	-.15	-.085	-1.50	-.064	-1.07
Employees in noncore roles by end of year 1 (ln)	-.374	-2.39	-.342	-2.25	-.307	-1.82
						.069

(continued)

Appendix (continued)

Variable	Model 1		Model 2a		Model 2b				
	Coefficient	Z	Probability > Z	Coefficient	Z	Probability > Z	Coefficient	Z	Probability > Z
Females in core roles by end of year 1 (ln)	.207	3.93	.000	.168	3.31	.001	.180	2.86	.004
Males in core roles at t_2	.164	1.45	.148	.066	1.65	.517	.093	.82	.414
Employees in noncore roles at t_2	.191	1.18	.236	.124	.76	.445	.183	1.02	.308
Firm had gone public by t_2	.845	3.22	.001	.046	3.93	.000	.914	3.31	.001
CEO strategy: technical innovation	.196	.82	.415	.337	1.52	.129	.251	1.04	.298
Firm had full-time HR employee by t_2	1.035	3.27	.001	1.677	4.69	.000	1.422	3.71	.000
Constant	.545	1.11	.265	-.248	-.45	.652	-.388	-.58	.561
Overdispersion (α)		.471			.375			.408	
χ^2		97.02 (8);			115.88 (10);			106.95(15);	
Log likelihood		$p < .001$			$p < .001$			$p < .001$	
Likelihood Ratio test over Model 1		-183.038			-173.608			-178.071	
Pseudo R^2		—			18.86(2);			9.94(7);	
		.210			$p < .001$			$p = .192$	
					.250			.231	

Notes

1. For details regarding the SPEC study design and sample, see Baron, Hannan, and Burton (1999).

2. In categorizing firms' blueprints, cases that differed on one dimension from one (and only one) of the five types in Table 1 were combined with their "pure type" counterparts. However, the results do not change markedly if the blueprint categories include only the "pure type" cases (supplementary results available on request).

3. The occupational counts that appear in Tables 3 and 4 were all logged; observed values of zero were recoded to 0.01 before taking logs.

4. The (unweighted) descriptive statistics in Table 2 characterize the subset of SPEC companies having complete data on the variables used to estimate the regression models reported in Table 3. Baron, Hannan, and Burton (1999, appendix) reported that the contrasts among blueprints are less pronounced and less significant when missing data are imputed.

5. Industry effects were insignificant and hence omitted from these analyses. CEO strategy is represented as a dichotomy (one if the firm's strategy is primarily one of technological innovation, zero otherwise).

6. In specifications based on the founder's blueprint, the effect of the contrast between bureaucracy and commitment equals 1.039 ($p = .097$, two-tailed); the contrast between bureaucracy and all other blueprints equals 1.175 ($p = .004$, two-tailed).

7. In additional analyses, we interacted having a commitment blueprint at founding with men's share of core jobs at t_1 . The coefficient estimates were not significant; however, there was little variance in the gender mix of commitment logic firms, and therefore these results are by no means conclusive.

8. For all analyses reported in this article, whenever founder blueprints had significant effects, the dimensions did worse than blueprint types in explaining variation in the gender mix of core occupations (details available on request).

9. Among SPEC companies that had replaced their initial leader by the time of our first interview, 76% had changed the blueprint in some respect and 40% had changed it along two or more dimensions. Among companies in which the CEO at the time of our first visit was from the original founding team, 36% had altered their HR blueprint, though less than 10% differed on two or three dimensions (Baron & Kreps, 1999; Baron & Hannan, 2002).

10. Analyses not reported here examined other types of changes; we unearthed no significant findings.

11. Only one firm switched from a bureaucratic to nonbureaucratic logic, so we grouped that observation with companies that maintained a bureaucratic logic throughout.

12. Given the small number of cases for several transitions estimated, these detailed results are intended merely to be suggestive.

13. Shifts from autocracy to commitment and from commitment to another basic model did not differ significantly from the omitted category, however.

14. That is, stable bureaucracies, shifts from bureaucracy to another basic model, and transitions from engineering or hybrid blueprints to bureaucracy.

15. Data on turnover were available only for each firm's labor force as a whole, for up to four annual spells ending in the year in which the firm was interviewed (for details, see Baron, Hannan, & Burton, 2001).

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