Cracking the Glass Cages? Restructuring and Ascriptive Inequality at Work[1]

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This study shows that the organization of work, particularly the structure of jobs, can sustain or erode gender and racial disadvantage. Restructuring work around team work and weaker job boundaries can improve women's and minorities' visibility and reduce stereotyping and thus should reduce their career disadvantage. Proponents of bureaucratic formalization argue, in contrast, that relaxing formal job definitions and emphasizing social relations at work will deepen ascriptive disadvantage. The reorganization of work in corporate America over the last two decades provides a test case. Using unique data on the life histories of more than 800 organizations, the author examines whether alleviating job segregation leads to better career outcomes for women and minorities. This study finds that when employers adopt popular team and training programs that increase cross-functional collaboration, ascriptive inequality declines. Similar programs that do not transcend job boundaries do not lead to such increases. The results point to different effects at the intersection of gender and race.

INTRODUCTION

Women and minorities have made significant progress in the labor market, yet they continue to be segregated into low-level, undervalued positions.

Early stratification research studied occupational attainment as a function of individual characteristics (Blau and Duncan 1967; Featherman and Hauser 1978). The notion that organizational structures also shape disadvantage emerged in the late 1970s in feminist research on gendered organizations and in sociologists' efforts to bring the organization back in to stratification research (Kanter 1977; Baron and Bielby 1980; Baron 1984; Ferguson 1984; Acker 1990). Researchers have examined how personnel practices channel women and minorities into certain jobs (Anderson and Tomaskovic-Devey 1995; Reskin and McBrier 2000; Kmec 2005) and how these jobs become devalued (Baron and Newman 1990; Steinberg 1992; Tomaskovic-Devey 1993). Little attention has been paid to the impact of job segregation on the structure of opportunities. Yet, since job segregation runs along demographic distinctions, it plays a role in the reproduction of inequality (Kanter 1977; Baron 1984; Smith-Doerr 2004).

The concentration of women and minorities in lower-level and marginalized jobs limits their visibility and strategic networks (Baron and Newman 1990; Steinberg, Haignere, and Chertos 1990; Ibarra 1995; Burt 1998; Petersen, Saporta, and Seidel 1998; Blair-Loy 2001), and it reinforces negative stereotypes about their capabilities and aspirations (Kanter 1977; Ridgeway and Smith-Lovin 1999; Reskin 2003). Segregated jobs can thus be thought of as "glass cages" that institutionalize informal barriers to advancement. Research in sociology, social psychology, and organizational behavior suggests that less segregated job structures that emphasize collaborative work and more porous job boundaries could reduce women's and minorities' disadvantage by giving them more opportunities for visibility, relations, and interactions that contradict stereotypes (Kanter 1977; Kramer 1991; Brickson 2000). An alternative approach argues that increasing reliance on social relations at work and relaxing the rules that govern job assignments would allow gender and racial bias to creep in to personnel decisions (Bielby 2000; Reskin 2000) and deepen women's and minorities' disadvantage (McIlwee and Robinson 1992; Cook and Waters 1998; Baron et al. 2007).

The popularity of cross-functional work programs in American organizations—such as self-directed work teams and cross-training—provides a unique test case. These programs, which were adopted by at least four of every 10 medium or large-size organizations by 2000, undermine job segregation by increasing the contact and collaboration between workers and jobs from different levels and departments. Case studies show that although these programs do not eliminate gender and racial bias, they provide new opportunities for women and minorities to work with a wider range of people, to demonstrate their capabilities, to be treated as peers, and to resist devaluation (Kvande and Rasmussen 1994; Smith 1996; Ollilainen and Rothschild 2001; Daday and Burris 2002; Smith-Doerr

2004). While all workers can benefit from such opportunities, cross-functional programs mark a larger break from women's and minorities' typical experiences. The adoption of self-directed teams and cross-training can thus have the unintended consequence of improving women's and minorities' career outcomes. In this study, I examine whether this is indeed the case.

Teams and training programs, key components of what is often called "high-performance work organization," are more than a passing fad. By 2002, between 40% and 80% of medium and large American workplaces had adopted self-directed work teams, problem-solving teams, cross-training, or job-training programs (Osterman 2000; Black, Lynch, and Krivelyova 2004; Kalleberg et al. 2006). Using unique data on the life histories of more than 800 organizations between 1980 and 2002, I analyze changes in managerial composition following the introduction of two types of team and training programs (see fig. 1). One type has the potential to relax narrow job boundaries. This type includes self-directed work teams and cross-training, both of which increase the exposure of nonmanagerial workers from different levels to other workers, managers, and jobs across the organization. The second type includes two programs that do not have the potential to undermine career barriers caused by job segregation. Problem-solving teams usually involve workers who are already regarded as experts in their jobs. Job-training programs, which were historically promoted as a way to facilitate women's and minorities' movement into management, typically train workers in new skills for their own job or the next job up the ladder. As such, neither of these programs increases collaboration between more- and less-valued jobs and workers.

If the share of white women, black women, or black men among managers increases only after the adoption of the two programs that transcend job boundaries (self-directed teams and cross-training), this will support a relational theory of inequality (Tilly 1998) that looks at the relations between jobs as a mechanism of ascriptive stratification and a locus of remediation, a largely unexplored area in both sociology and organization research. A changing division of labor does not necessarily change the gender and racial definition of jobs (Ollilainen and Rothschild 2001; Planskey Videla 2006),[2] but by providing opportunities for greater stereotype-negating exposure it could lessen the devaluation of women's and minorities' abilities and work.

Below I discuss the barriers for women's and minorities' advancement imposed by job segregation and explain why cross-functional work programs are expected to modify these disadvantages. I then present a dissenting view that emphasizes the importance of formalized job structures.

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[2] I thank an *AJS* reviewer for this point.

		TEAMS	TRAINING
RESTRUCTURING OF WORK?	YES	Self-directed work teams	Cross-training
	NO	Problem-solving teams	Job training

FIG. 1.—Types of organizational change

After describing the team and training programs I study and exploring evidence from case studies, I present the data and methods I use and the results.

"GLASS CAGES" AND THE REORGANIZATION OF WORK

Job Segregation as Scaffold of Ascriptive Disadvantage

Visibility with high-status workers can increase women's and minorities' access to career opportunities (Kanter 1977; Ibarra and Andrews 1993), improve managers' information about their potential (Thomas 2004; Hewlett, Luce, and West 2005), and reduce the perception of risk associated with promoting workers from different demographic groups (Kanter 1977; Thomas and Gabbaro 1999). Women executives often cite lack of visibility as a significant barrier to their advancement (Wellington, Knopf, and Gerkovich 2003). For the women interviewed by Bell and Nkomo (2001), the opportunity to prove themselves in a prestigious task and build credibility was a key career resource: "They were surprised that I was smart, competent and capable because they didn't expect that," recalled one black female manager (Bell and Nkomo 2001, p. 145). Due to their segregation into lower-level positions at every rank, however, women and minorities are less likely to get such a break. Their jobs usually do not involve communication with people outside their work group, high-profile assignments, or training eligibility (Kanter 1977; Knoke and Ishio 1998; McGuire 2000), and their networks are often composed of similarly situated workers (Kanter 1977; Miller 1986; Ibarra 1992; Burt 1998; McGuire 2000; Meyerson and Fletcher 2000).

Segregation not only limits visibility, but it also perpetuates negative stereotypes about women's and minorities' competence (Ridgeway 1997). According to expectation states theory, when men and women interact within a structurally unequal context, status beliefs are perpetuated, leading them to recreate the gender system in everyday interaction (Ridgeway and Smith-Lovin 1999, p. 191). When structural inequality is less pronounced, interactions among men and women are less likely to evoke

stereotypes (Ridgeway and Smith-Lovin 1999; Bunderson 2003). Other research by social psychologists supports this notion. Research on the "contact hypothesis" (Allport 1954) shows that contact between racial groups is more likely to reduce prejudice when participants are of peer status (Pettigrew and Tropp 2006). Social identity theory (Tajfel and Turner 1979), self-categorization theory (Turner 1987), and small-groups research (Sherif et al. 1961) suggest that demographic group boundaries should be less salient in the context of cooperative interdependence that fosters a common identity (Gaertner et al. 1990; Kramer 1991; Gaertner and Dovidio 2000; see also Reskin 2000, p. 324). Based on these insights, organizational behavior scholars have found that when organizations emphasize collaboration and common goals rather than individualism and distinctiveness, demographic differences become less salient (Chatman et al. 1998) and supportive intergroup relations develop (Bacharach, Bamberger, and Vashdi 2005).

Taken together, sociological, social psychological, and organizational research suggest that organizational structures that create new opportunities for peerlike collaborative relations between workers from more- and less-valued jobs can increase visibility and reduce the stereotyping of women and minorities. The adoption of such work structures is thus likely to result in lower levels of ascriptive inequality. This proposition echoes feminist and postcolonial scholarship on organizations, which views the bureaucratic division of labor as reproducing white masculinity (Kanter 1977; Ferguson 1984; Acker 1990; Nkomo 1992; Britton 2000; Frenkel and Shenhav 2006) and emphasizes collaborative structures as a means of increasing the perceived value of all workers' contributions (Meyerson and Fletcher 2000; Ely and Padavic 2007). To date we have little evidence of the tangible benefits of such organizational structures for diversity.

An alternative view heralds the impersonality of bureaucratic rules and employment relations as an effective means for reducing nepotism and the ascriptive allocation of resources (Weber 1968; Bielby 2000; Reskin 2000). The guiding assumption here is that formalization limits implicit biases and unconscious stereotypes in decision making. Researchers find ascriptive inequality to be lower where personnel decisions are more formalized (Reskin and McBrier 2000; Elvira and Zatzick 2002) and in workplaces with bureaucratic employment logics (Baron et al. 2007) and higher in workplaces where social relations and collegiality are emphasized as part of the organization of work (McIlwee and Robinson 1992; Cook and Waters 1998). Others find that, regardless of their positions at work, women's and minorities' social networks remain less useful because of stereotypes and devaluation (McGuire 2002). According to this view, blurring job boundaries and emphasizing cross-functional collaboration will at best have no effect on gender and racial disadvantage and at worst

deepen it, as the deterioration of formal rules governing jobs and assignments unleashes bias and discrimination.

Changes at Work

The diffusion of cross-functional teams and training programs provides a unique opportunity for examining the relationship between the structure of work and the ascriptive structure of opportunities. The ideas of teams and job enrichment have been around at least since the 1930s, with Elton Mayo's human relations theory and, later, Douglas McGregor's humanistic management. The contemporary surge of these programs is usually associated with technological changes and accelerating international competition in the early 1980s. Inspired by Japanese and Western European experiences, managers and scholars viewed moving away from the Fordist model of production toward team structures and skill-development programs as an effective way to improve quality and competitiveness (Piore and Sabel 1984). Research on these transformations has mostly focused on their implications for labor control and firm performance (Barker 1993; Appelbaum et al. 2000; Osterman 2000; Handel and Levine 2004). Yet scholarship on the implications of restructuring for gender and racial inequality has developed as well, particularly around case studies illustrating the new opportunities these programs can provide disadvantaged workers (Kvande and Rasmussen 1994; Smith 1996; Ollilainen and Rothschild 2001; Daday and Burris 2002; Smith-Doerr 2004). Given that cross-functional programs modify the segregated structure of jobs, and given the documented role of segregation in perpetuating disadvantage, it is likely that such restructuring of work will have unintended consequences on women's and minorities' positions. Below I discuss evidence on the effects of these programs in more detail.

Team-Based Organization of Work

Few dispute the popularity of team-based work structures in American workplaces. Figure 2 shows the proportion of workplaces with self-directed work teams or problem-solving teams from 1980 to 2002, based on a 2002 retrospective survey of a stratified random sample of 810 medium and large American establishments. The proportions are based on the number of surveyed workplaces that existed in each year. The sample represents older and more stable work establishments, and the findings might be more pronounced in a sample of younger firms. Self-directed work teams were adopted by about 7% of the organizations that existed in the early 1980s, compared to roughly 35% of the organizations existing in 2002. In the median organization, 75% of core-job workers
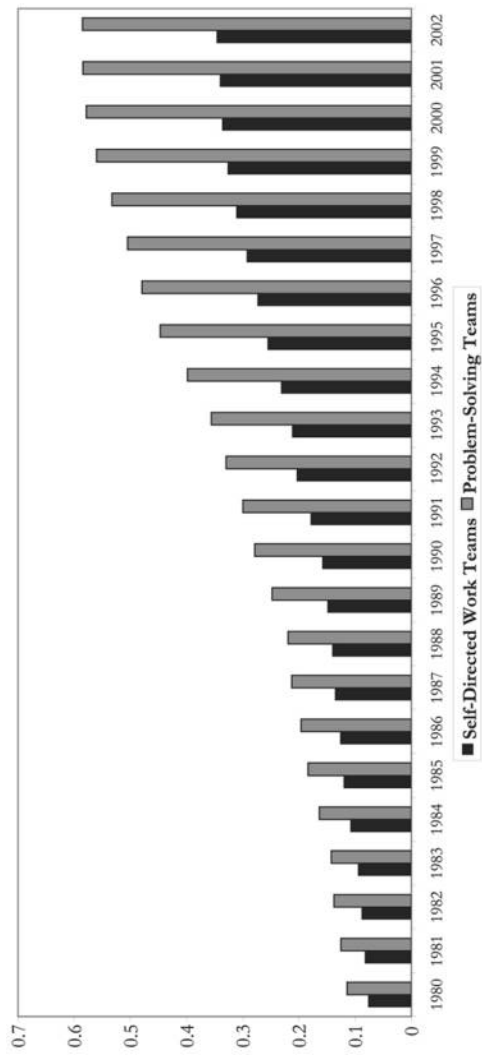
FIG. 2.—Proportion of workplaces with self-directed work teams and problem-solving teams, 1980–2002. Source: 2002 Princeton University Human Resources Survey. Max. $N = 810$.

participated in such teams in 2002 (*core job* is defined as the largest job category in the establishment). Problem-solving teams, a more modest transformation of work arrangements, were adopted by about 11% of existing workplaces in the early 1980s, compared to 60% in 2002, with a median of 50% of core-job workers participating. Similar figures are found in other national surveys (Lawler, Mohrman, and Ledford 1992; Kelly 2000; Osterman 2000; Kalleberg et al. 2006).

Self-directed work teams.—Self-directed work teams are considered the most far-reaching effort to transform the organization of work (Cappelli et al. 1997; Osterman 2000; Appelbaum and Berg 2001). These teams typically bring together workers from different jobs to hold frequent meetings, assume joint responsibilities on work tasks, share knowledge, and participate in decision making. For example, in a high-tech company, engineers, technicians, and administrative assistants are members of self-directed work teams. They meet a few times a week to design and create new technologies (Daday and Burris 2002, p. 12). In a bank, team members are jointly responsible for phone service and technical tasks (Ollilainen and Rothschild 2001, p. 153), and workers in a paper mill plan key activities and tasks collectively, assign and rotate jobs among themselves, and assume greater responsibility for production, quality, and safety (Vallas 2003*c*, p. 230).

Some work teams might do little more than impose production quotas on workers, with no real changes in the work routine (Taplin 1995; Smith 1997). Yet case studies point to several ways in which self-directed work teams can enhance women's and minorities' career opportunities: they enable workers to perform tasks beyond their traditional job boundaries and demonstrate hitherto unobserved capabilities (Smith 1996; Berg, Frost, and Preuss 2001; Smith-Doerr 2004); to be treated with more respect by their co-workers (Kvande and Rasmussen 1994; Daday and Burris 2002; Smith-Doerr 2004); and to resist subordination (Ollilainen and Rothschild 2001; Planskey Videla 2006). Below I detail some of this evidence.

Analyzing data on more than two thousand life scientists, Smith-Doerr (2004) finds that women are significantly more likely to be in supervisory positions when they work in biotech firms that are organized around project-based teams than in hierarchical organizations. The female scientists Smith-Doerr interviewed attributed this difference to the flexibility to collaborate with more people in a peerlike fashion and to the higher visibility of their skills and contributions in a team environment. In another context, a similar account was given by a human resources manager at a large auto-manufacturing firm:[3]

[3] Personal communication, June 15, 2001.

> I started as a security guard and climbed my way up to being a secretary, and then to a higher secretary, and in the last three years I am in this position in HR, EEO representative, and an administrator of salaried personnel. It wasn't easy. . . . I had to work hard to prove my talent. To make people see my talent. Because my job didn't provide such opportunities, joining work teams was the best way for me to do that. . . . In general, I think that it's a good opportunity to interact with people, and with people in management, and to show that you can do things.

The visibility granted by the teaming structure is often absent in women's and minorities' segregated jobs.

Researchers find that status differences are less pronounced when work is structured in cross-functional teams (Kvande and Rasmussen 1994; Smith-Doerr 2004). Studying a high-tech company, for example, Daday and Burris (2002) argue that the teaming environment mitigates the exempt/nonexempt divide (which, for the most part, is also a gender and racial divide). As one of their interviewees, an administrative assistant, attests, "Nonexempt can now feel like they are not demeaned; they are treated as an equal part of the team" (Daday and Burris 2002, p. 17). Gender and racial biases do not stop at the team's doorstep. Researchers find that men and whites in teams continue to erect boundaries that exclude women and minorities (Ollilainen and Rothschild 2001; Daday and Burris 2002; Vallas 2003*a*, p. 235). But because job boundaries and status differences are more lax and are not reinforced by the formal structure of work, stereotypes are less likely to be reinforced in the team context (Ridgeway and Smith-Lovin 1999; Pettigrew and Tropp 2006), and high-quality relations between workers from diverse groups are likely to evolve (Phillips, Rothbard, and Dumas, in press).

The adoption of self-directed work teams may also open new avenues for women and minorities to resist stereotypes and ascription—first, simply by demonstrating their capabilities, as previous examples have shown, and second, by using the team rhetoric to claim their rights. For example, Ollilainen and Rothschild (2001, p. 154) report that while men continued to treat the women in their team as secretaries, these women resisted their degradation as team members, and their concerns were openly discussed in team meetings. Their grievances would have had no legitimacy absent the team context. In another example, Planskey Videla (2006, p. 108) shows how, despite the gender subordination in their teams, women used the team's autonomy to further their interests, such as favoring mothers in granting permission for time off.

These new opportunities presented by the team structure to become visible in stereotype-negating contexts, to network, to be treated with respect, and to resist devaluation can translate into better career opportunities for women and minorities (Smith 1996, p. 178; Ollilainen and

Rothschild 2001, p. 161; Smith-Doerr 2004) and improve their access to better jobs.

Problem-solving teams.—A different team structure is best known as quality circles, or off-line expert teams, which originated in the "quality movement" of the early 1980s. These teams are less inclusive. They tend to be composed of experts, who are mostly white and male, who come together periodically to address problems of quality, efficiency, or safety (Cappelli et al. 1997, pp. 90–92; Smith 1997; Vallas 2003*c*, p. 232; Batt 2004, p. 188). Unlike self-directed work teams, then, problem-solving teams have less potential to ameliorate the segregated structure of jobs and increase the exposure of women and minorities to new people and work tasks. And so, if counteracting segregation is the mechanism that leads to increases in managerial diversity, we are not likely to observe an increase in diversity following the adoption of such teams.

Cross-training and Job-Training Programs

Developing workers' skill is another commonly cited aspect of the reorganization of work (Piore and Sabel 1984; Osterman 1995), with employers offering workers cross-training and regular job-training programs (U.S. Department of Labor 1992; Osterman 1994; Lynch and Black 1998; Appelbaum and Berg 2001). As figure 3 shows, cross-training was offered by about 45% of the existing workplaces in my data in 1980, and this grew to almost 80% in 2002. The figures for job-training programs are 35% and 67%, respectively (see also Osterman 2000; Kalleberg et al. 2006).

Before I discuss these two types of training, it is important to note that in analyzing the adoption of training programs, I do not examine individual skill level. My research question is whether organizational changes, in the form of adopting cross-training or job-training programs, have been effective in bringing more women and minorities into management.

Cross-training.—Cross-training involves multiskilling programs that provide workers with knowledge of and experience in different jobs. The content of these programs varies widely; while some studies report on cross-training programs that enrich workers' skills and increase their motivation and job satisfaction (Adler 1992; Campion, Cheraskin, and Stevens 1994; Ollilainen and Rothschild 2001), others describe them as "job-intensification" methods (Smith 1997, p. 322), whereby workers are pressured to perform more deskilled work at a higher pace (Taplin 1995; Handel and Levine 2004, p. 6).

Like self-directed work teams, cross-training programs can undermine the negative implications of job segregation on women's and minorities' careers. Through rotating across jobs, women and minorities can reach out beyond their job boundaries, gain access to new people, experiences,
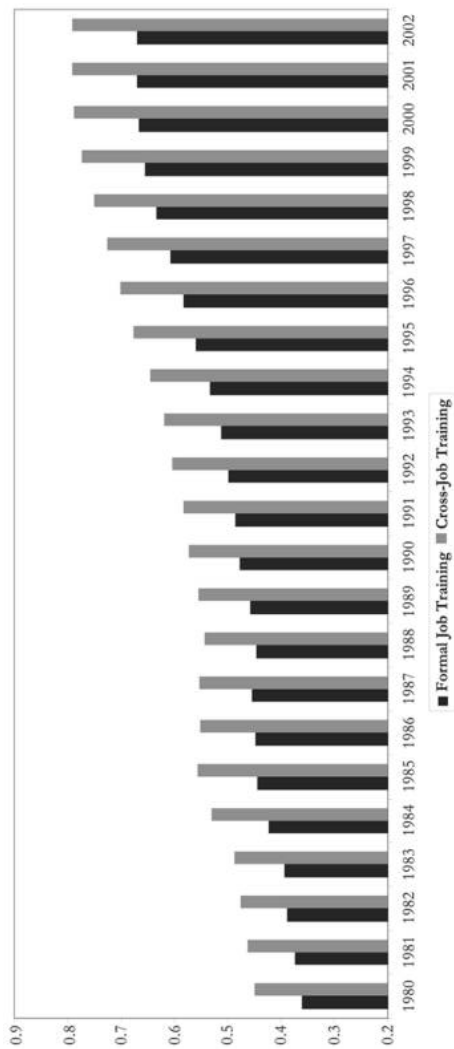
Fig. 3.—Proportion of workplaces with formal job training and cross-training, 1980–2002. Source: 2002 Princeton University Human Resources Survey. Max. $N = 810$.

and skills, and demonstrate their capabilities and management potential. This is exemplified nicely in Ollilainen and Rothschild's (2001) observations of a cross-training program in a bank. Even though the program was compromised by men's refusal to learn women's phone service jobs, women were encouraged—and took the opportunity—to gain new skills and learn how to perform multiple functions (p. 155). As a result, the authors conclude, this "could provide a new organizational justification and an opportunity for lower-status women workers to outlearn, and perhaps even move into some of the higher-status tasks formerly reserved for men" (Ollilainen and Rothschild 2001, p. 161; see Vallas [2003a, p. 235] for a similar scenario on a production line). Even Taplin's (1995, p. 35) gloomy description of job rotation in a textile mill as a "sweat method" suggests that supervisors came to better appreciate the abilities of their low-skill workers after they observed their performance across jobs. If cross-training increases the visibility of women's and minorities' capabilities, then the introduction of these programs may improve their chances to access managerial jobs.

Job training.—Job training provides workers with skills required for performing their job or the next job up the ladder. To the extent that, due to pre–labor market processes, women and minorities have lower skill levels than white men, receiving job training from their employers can help them obtain better jobs with better career prospects. This logic stood behind some of the early adoptions of these programs. Affirmative action regulations, as established in executive orders 10925 and 11246, encourage employers to take active steps to promote the "full realization of equal opportunity" of historically disadvantaged groups.[4] The adoption of skill-training programs has been perceived as an effective means for generating pools of women and minority employees qualified for management jobs (U.S. Glass Ceiling Commission 1995, p. 47; Holzer and Neumark 1998). In 1974, for example, Kaiser Aluminum signed a contract with U.S. Steelworkers to provide new training programs, which would open skilled craft jobs to blacks. These programs became famous when, in 1979, the Supreme Court supported Kaiser in a reverse discrimination suit, upholding quotas for blacks in recruitment to these training programs.[5] If job-training programs were to fulfill the goal of creating pools of women

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[4] Executive order no. 10925 was issued by President John F. Kennedy on March 6, 1961 and is available online at http://www.eeoc.gov/abouteeoc/35th/thelaw/eo-10925 .html (accessed March 6, 2009). Executive order no. 11246 was issued by President Lyndon B. Johnson on September 28, 1965 and is available online at http://www .eeoc.gov/abouteeoc/35th/thelaw/eo-11246.html (accessed December 11, 2004).

[5] *Kaiser Aluminum and U.S. Steelworkers v. Brian Weber*, 443 US 193 (1979).

and minorities eligible for promotion, managerial diversity should increase after employers adopt these programs.

Facing intensified international competition during the 1980s and 1990s, employers increased their provision of skill training as a way to improve quality and productivity (U.S. Department of Labor 1992; Lynch and Black 1998). Studies indicate, however, that employers view training more as an investment in human capital than as a means of equalizing opportunities; employers tend to provide job training to workers whom they perceive as most likely to return the investment, namely, more educated workers and those they expect to have continued employment and high productivity (Hight 1998; Lynch and Black 1998). These preferences result in statistical discrimination against women and minorities (Knoke and Ishio 1998). Not surprisingly, then, studies have shown that employer-provided training has not lived up to its potential to iron out pre–labor market disadvantages (Appelbaum and Berg 2001). If this is the case, the adoption of job-training programs will not bring more women and blacks into management.

Summary

I examine changes in the shares of women and minorities in management following the adoption of two types of team and training programs. Based on a structural relational approach to stratification that views job segregation as a mechanism of ascriptive inequality, I expect those programs that counteract job segregation—self-directed teams and cross-training—to be followed by an increase in managerial diversity. To the extent that white men's higher share of managerial jobs is a result of sex- or race-based privilege, programs that reduce ascription are likely to reduce white men's advantage (Reskin and McBrier 2000, p. 210). Because problem-solving teams and formal job training do not alter the organization of jobs, I do not expect their adoption to lead to similar increases in managerial diversity. Thus, I hypothesize that the adoption of self-directed work teams and cross-training programs will be associated with subsequent increases in the proportions of white women, black women, and black men and a decline in the proportion of white men among managers.

A caveat to this hypothesis is related to the differences between the mechanisms shaping gender and racial inequality at work. First, white women are, on average, more educated than blacks and better positioned in organizations (Bell, Nkomo, and Hammond 1994; Altonji and Blank 1999, pp. 3151–55); consequently, white women may be more likely to make use of their new career resources and acquire management positions. Second, research shows that racial diversity, to a greater extent than gender diversity, can have a negative impact on group processes, such as

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communication and integration (Baugh and Graen 1997; Williams and O'Reilly 1998, p. 115; Townsend and Scott 2001; Vallas 2003b); hence, racial boundaries may be slower to change than gender boundaries. These differences lead me to expect that self-directed teams and cross-training will be associated with higher subsequent increases in the proportion of white women among managers than in the proportions of black women and black men among managers.

ALTERNATIVE SOURCES OF VARIATION IN MANAGERIAL DIVERSITY

Some organizational changes that often accompany the adoption of team and training programs may also affect the gender and racial composition of management. I incorporate in the analysis measures of those changes and of other factors related to management composition, including the organizations' structure, labor pools, and legal and economic environments. Note that because I use a fixed-effects analysis, factors that do not vary with time, such as industry or geographical location, cannot be included in the models explicitly, but the variation stemming from them is implicitly accounted for.

Complementary Organizational Changes

Management training.—Firms that adopt autonomous work teams may establish leadership-training programs (as distinct from job-training programs), with the idea of increasing workers' efficacy in these teams (Appelbaum et al. 2000, p. 104). These training programs can provide women and minorities a formal path and credentials for entering the managerial pipeline, and so their introduction should increase management diversity.

Peer evaluations.—Peer evaluations, whereby workers are evaluated by their co-workers, are common among firms with team structures. Researchers have found gender and racial bias in managers' performance evaluations (Greenhaus, Parasuraman, and Wormley 1990; Williams and O'Reilly 1998; Elvira and Town 2001). Peer evaluations rely on a broader set of views that may be less biased (Smith-Doerr 2004) and consequently may improve the promotion chances of women and minorities.

Work/family accommodations.—Employers that adopt "high-performance" programs are likely to adopt work/family practices as well (Berg, Kalleberg, and Appelbaum 2003). Because the "ideal worker" is expected to be available for work around the clock and because women still bear primary caregiving responsibilities (Williams 2000), women are expected to benefit disproportionately from employers' work/family support.

Organizational downsizing.—Downsizing of the establishment's workforce is likely to accompany changes in the organization of work (Osterman 2000; Black et al. 2004) and may affect workforce composition. Studies of downsizing layoffs, though not focused on managerial jobs, suggest that blacks are more likely to be displaced than whites, controlling for individual and occupational characteristics (Fairlie and Kletzer 1998; Elvira and Zatzick 2002), while women seem to be less or equally as likely as men to be displaced (Farber 1997). Hence, downsizing may reduce the share of blacks in management.

Percentage of managerial jobs.—Osterman (2000) finds that establishments with high-performance work organization have smaller managerial ranks. Growth in managerial ranks has been shown to increase diversity (Blum, Fields, and Goodman 1994). Konrad and Linnehan (1995) and Leonard (1990, p. 52) find that managerial growth positively affects white women more than African-Americans.

Organizational Structures

Personnel policies.—The presence of formal personnel systems has played a prominent role in research on organizational stratification. Such systems are expected to limit managerial discretion and thereby curtail discrimination (Reskin 2000). Using data from the National Organizations Survey, Reskin and McBrier (2000) find that formalization of personnel decisions is associated with a lower share of white men in management. Others contend that formalization may create separate career trajectories for different groups and thus may not equalize access to management across groups (Baron and Bielby 1985; Baldi and McBrier 1997). Still others find that some "identity-conscious" personnel programs, namely, affirmative action and diversity policies, are effective in increasing management diversity (Konrad and Linnehan 1995; Edelman and Petterson 1999; Holzer and Neumark 2000; Kalev, Dobbin, and Kelly 2006). I include in the analysis measures for formalized personnel policies, affirmative action plans, and diversity programs, expecting these programs to have a positive effect on managerial diversity.

Union agreement.—Unions may affect management diversity to the extent that they can affect the composition of workers in promotable jobs. Despite improvements in their status, women remained underrepresented in unions in the period under study (Milkman 2007), while black men were disproportionately hurt by the decline in union coverage during the 1980s (Blau and Kahn 1992, p. 9). Union coverage may thus correlate with white and male advantage in access to good, promotable jobs. Yet unions vary in composition and agendas (Leonard 1985; Baron, Mittman, and Newman 1991). For example, some unions have promoted work/

family programs, which may enhance women's careers (Kelly 2003). Their expected effect can thus go either way.

Establishment size.—Growth in establishment size may be an indication of success, rendering managerial jobs more desirable, and more likely to go to white men than to women and minorities (Reskin and Roos 1990). Evidence is mixed (Bielby and Baron 1986; Baron et al. 1991; Reskin 1993), and so I do not specify the direction of the expected effect.

Workforce Demography

Women and minorities in top management.—Managerial composition is said to be self-reproducing due to homosocial reproduction (Kanter 1977; Elliott and Smith 2004), social closure (Tomaskovic-Devey 1993; Roscigno 2007), or social networks (Burt 1998; Reskin and McBrier 2000). Cohen, Broschak, and Haveman (1998) find that women are more likely to be promoted when some of the positions above them are filled by women. I thus expect the gender and racial composition of top management to be positively associated with the overall composition of managerial rungs.

Demographic composition of the external and internal labor pools.— Employers operating in diverse labor markets have a more diverse pool of managerial candidates to draw from and may also face pressures to adopt norms of inclusiveness (Blum et al. 1994, p. 245). The composition of nonmanagerial jobs at the organization may affect women's and minorities' access to management also because members of these groups are more likely to supervise workers from the same groups (Paulin and Mellor 1996; Cohen et al. 1998; Elliott and Smith 2001).

Organizational Environment

Legal environment.—Title VII of the Civil Rights Act of 1964 outlawed discrimination based on sex and race, and in 1965, executive order number 11246 mandated that covered employers take "affirmative action" to end discrimination in employment (see n. 4 above). Research has established that employers that have a legal counsel and those that experience Title VII litigation or affirmative action compliance reviews are more likely to see increases in managerial diversity (Leonard 1984; Kalev and Dobbin 2006; Skaggs 2008).

Unemployment.—High unemployment rates may disadvantage women and minorities in the labor queue for managerial jobs (Reskin and Roos 1990). I thus expect lower managerial diversity when unemployment is high.

Industry size.—Growing industries may provide more opportunities for women and minorities, but they also indicate increased market success,

which renders managerial jobs more attractive and more likely to go to white men (Reskin and Roos 1990). Because the analysis includes separate measures for the proportion of each group in the industry labor force, I expect growth in industry employment to be associated with a higher presence of white men in management.

DATA AND METHODS

I analyze unique longitudinal data on annual measures of the workforce composition and work practices of 810 establishments to estimate changes in the proportions of managers who are white men, white women, black women, and black men following the adoption of team and training programs between 1980 and 2002.

Data

The data set was assembled from two main sources: annual reports on establishments' workforce composition from 1980 to 2002 and an original survey of these same establishments' work and personnel structures. The data collection was conducted in collaboration with Frank Dobbin and was funded by the National Science Foundation and the Russell Sage Foundation.

The workforce composition data come from annual EEO-1 reports submitted to the Equal Employment Opportunity Commission (EEOC) by all private-sector employers with more than 100 employees and government contractors with more than 50 employees and $50,000 worth of contracts.[6] These reports detail the sex, racial, and ethnic composition of the workforce in nine broad occupational categories. These data were obtained for research purposes from the EEOC under an Intergovernmental Personnel Act (IPA) agreement.[7]

The broad occupational categories used by the EEOC obscure segregation within management, where women and minorities are often concentrated in lower-level positions. Accordingly, my analysis examines the

[6] Excluded employers, such as state and local governments, schools, and colleges, provide different reports (see the EEOC's "Instructions for Standard Form 100 (EEO-1)," available at http://www.eeoc.gov/stats/jobpat/e1instruct.html [accessed April 19, 2004]).

[7] EEO-1 data were obtained for 1971–2002. The 1970s were not included here because cross-functional work arrangements as such began their diffusion in the early to mid-1980s, with high-profile employers such as GM, Xerox, and Corning transforming their organization of work. The in-person interviews I conducted in 2000–2001 confirm that when employers talk about cross-training before the 1980s, they are referring to it as part of executive programs.

entrance of women and minorities at least to lower-level managerial ranks, but not mobility within management.[8] Still, EEO-1 reports provide the best available data for studying long-term change in organizations' workforce composition (see Robinson et al. 2005).

I drew a random sample of establishments from the EEO-1 data for the year 1999 (the latest year of data available at the time of sampling). The sample was stratified by the number of years the establishment appeared in the EEO-1 data to ensure a sufficient longitudinal perspective as well as variation in the establishments' age. Half of the establishments had to have been in the data at least since 1992 and half since 1980. The sample was also stratified by size, with 35% of the establishments having less than 500 employees, and by industry, into the following categories: food, chemical, computer, and transportation equipment manufacturing, wholesale and retail trade, and insurance, business, and health services. The sampling unit was an establishment (that is, a single location of a firm or a firm with a single location), and only one establishment per parent firm was sampled.

Before composing the survey instrument, I examined the wording and findings of other employment surveys conducted in the last decade (in particular, Appelbaum, Bailey, and Berg 2000; Kelly 2000; Osterman 2000), as well as information about changes in work organization obtained from in-person interviews with human resources managers that I conducted in 2000–2001. During 2002, trained interviewers at the Princeton University Survey Research Center completed 833 interviews with a response rate of 67%, which is higher than or comparable to similar surveys (Osterman 1994, 2000; Kalleberg et al. 1996; Kelly 2000).[9] The interviewees were mostly human resources or plant managers with an average

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[8] The growth in managerial diversity in the EEO-1 reports may be an artifact of the reclassification of clerical and lower-level supervisory jobs as management jobs (Smith and Welch 1984; Baron and Bielby 1985). Reclassification is most likely to have occurred in the 1970s, the early years of the EEO-1 reporting requirement. Nonetheless, I excluded all organization-year cells in which there was a large change in the number of women or blacks in management (larger than 95% of the cases), and results were not affected. This is consistent with evidence that women's and minorities' entrance to management does represent a significant, if small, change in their status (Jacobs 1992).

[9] I examined response bias using logistic regression with industry, establishment status (headquarters, subunit, or stand-alone organization), size, government contract status, and managerial composition (results are available upon request). Responding establishments were larger and had a larger proportion of white men in their managerial ranks than nonresponding organizations. Size is included in the models, as well as the composition of top management teams. All industries were equally likely to participate in the survey, excluding establishments from the business services industry, which were less likely to participate. The proportion of each industry in the final sample varies little, between 9.66% and 12.80%.

tenure of 11 years. Interviewees were asked whether a series of programs related to the organization of work had ever been adopted in their establishment, in what years they were first adopted, and whether they were still in place. The survey included similar questions about related personnel practices and other organizational characteristics that are included as control variables in this analysis. When the respondents did not know the year in which certain programs were adopted, they were sent a list of the unanswered questions, so they could answer them after consulting their records or colleagues. For three of the four programs examined here, 4% or less of the respondents did not know the years of adoption. For job-training programs this number was 7%. All missing values were imputed using ordinary least squares (OLS) regression with industry, establishment age, and type of establishment as covariates. The results remain robust when imputed data for each variable are excluded.

Upon completion of the phone interviews, I matched the survey data for each establishment with the corresponding annual EEO-1 records and removed all identifying information from the data set to ensure confidentiality. Data on national, state, and industry labor market characteristics were added from Bureau of Labor Statistics (BLS) sources. The final data set used in this analysis contains 810 cases and 14,693 establishment-years, with a median of 23 years of data for each establishment.[10]

Dependent Variable—Managerial Diversity

The outcome variables are the proportions of white men, white women, black women, and black men among managers in an establishment, as calculated from the EEO-1 data. Between 1980 and 2002 the share of white men among managers declined from 75% to 62%, while white women's share grew from 19% to 26%, black women's from less than 1% to 2%, and black men's from 2.4% to 3.1% (see fig. 4). Similar trends are found in the overall EEO-1 data set and in data from the Current Population Survey (CPS) of the BLS, but those other data sets show larger gains for women and blacks because they describe a dynamic population, rather than the stable set of firms in my sample, and they also include nonprofits and government agencies.

Because there are large differences in the absolute magnitude of the change in the proportions across groups, I use the log odds of each group's being in management as dependent variables (Fox 1997, p. 78). Using log

[10] For 15 cases, EEO-1 data were usable for only four years or less. For an additional eight cases, the survey data were unusable. These cases are excluded from the analysis.
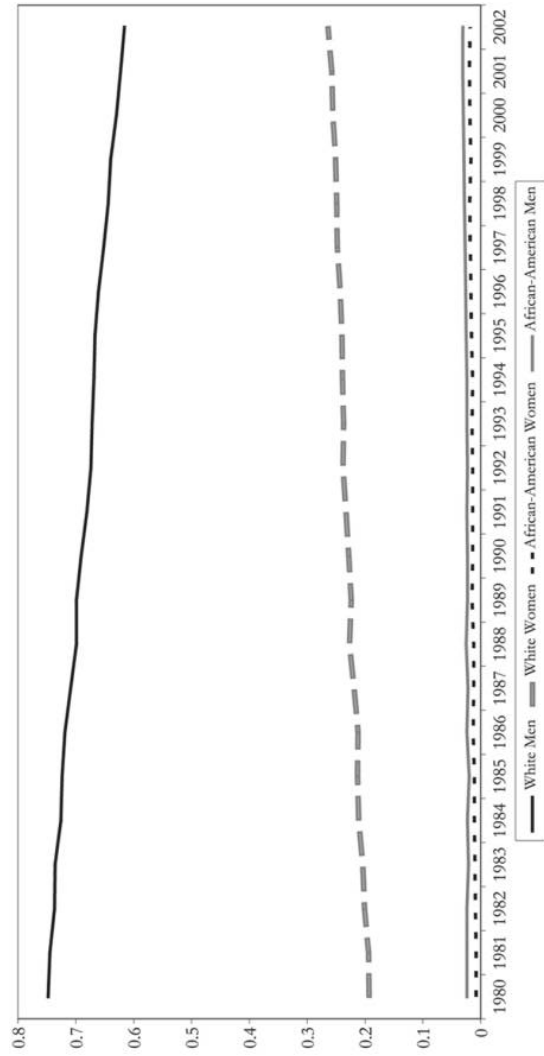
Fig. 4.—Proportions of white men and women and African-American men and women among managers, 1980–2002. Source: EEO-1 reports for 1980–2002 sampled for the 2002 Princeton University Human Resources Survey. Max. $N = 810$.

proportion rather than log odds does not alter the results, but the distribution of log odds is closer to normal.[11]

Independent Variables—the Reorganization of Work

I use four variables to measure different aspects of the reorganization of work: self-directed work teams, problem-solving teams, cross-training, and formal job training (this last variable is defined as other than on-the-job training). The variables are based on answers to survey questions pertaining to the adoption of these programs and the years in which they operated in the core job. The questions pertained to the core job category to maintain consistency in measuring across establishments and in relation to other programs and policies involved in the analysis (Osterman 1994), and also to ensure that the programs are not limited to one or two minor jobs. The variables are binary, coded 1 in every establishment-year cell since the year of adoption of each program and 0 before the program is adopted and after it is revoked, if relevant, or if it has never been adopted. The median year of adoption for self-directed work teams is 1992, and overall 18% of the establishment-year cells in my data had these teams by 2002. For problem-solving teams the median year of adoption is 1991, and 30% of the establishment-year cells in my data had them by 2002. Both cross-training and job-training programs have 1985 as the median year of adoption. About 57% of the establishment-year cells in my data had cross-training programs and 50% had job-training programs by 2002.

All the independent variables in the analysis are measured annually in the year before the dependent variables. Table 1 presents the means, standard deviations, definitions, and data sources for all variables used in the analysis.

Control Variables—Other Factors Affecting Managerial Composition

Organizational characteristics that do not vary with time, such as industry and location, are not included, but are accounted for by organization fixed effects.

Complementary organizational changes.—Management training, peer

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[11] Logit $(i) = \log [P_i/(1 - P_i)]$, where P_i is the proportion of group i among managers. The logit is undefined when $P = 0$ or $P = 1$. I thus substituted 0 with $1/2N_j$, and 1 with $1 - 1/2N_j$, where N_j is the number of managers in establishment j (Hanushek and Jackson 1977; Reskin and McBrier 2000). The results of my analysis are robust to different strategies for substituting zeros. I chose the one that kept the distribution unimodal and closest to normal. I also included a dummy variable that equals 1 when there are no managers from the focal group. The results are also not sensitive to whether this variable is included.

TABLE 1

Means and Standard Deviations of Variables Used in the Analysis of Managerial Workforce Composition (N = 14,693)

Variable	Mean	SD	Min	Max	Type	Data Source
Outcome variables:						
Proportion white men among managers	.684	.231	0	1	Continuous	EEO-1
Proportion white women among managers	.231	.210	0	1	Continuous	EEO-1
Proportion black women among managers	.013	.038	0	.556	Continuous	EEO-1
Proportion black men among managers	.025	.055	0	1	Continuous	EEO-1
Team structures:						
Self-directed work teams	.176	.381	0	1	Binary	Survey
Problem-solving teams	.297	.457	0	1	Binary	Survey
Skill upgrading:						
Cross-training	.558	.497	0	1	Binary	Survey
Formal job training	.501	.500	0	1	Binary	Survey
Complementary organizational changes:						
Management training	.444	.497	0	1	Binary	Survey
Peer evaluations	.118	.322	0	1	Binary	Survey
Work/family accommodations	1.049	.996	0	4	Count[a]	Survey
Organizational downsizing	.225	.418	0	1	Binary	Survey
%managerial jobs in establishment	12.600	9.200	0	100	Continuous	Survey
Organizational structures:						
Formalized personnel policies	4.454	2.245	0	8	Count[b]	Survey
Affirmative action plan	.503	.500	0	1	Binary	Survey
Diversity programs	.358	.792	0	4	Count[c]	Survey
Union agreement	.248	.432	0	1	Binary	Survey
Establishment size	753.516	972.482	13	14,195	Continuous	EEO-1
Workforce demography:						
%women in top management	16.933	22.959	0	100	Continuous[d]	Survey
%minorities in top management	3.471	9.490	0	100	Continuous[d]	Survey

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Variable	Mean	SD	Min	Max	Type	Source
Proportion white men among nonmanagers	.403	.247	0	.982	Continuous	EEO-1
Proportion white women among nonmanagers	.377	.247	0	1	Continuous	EEO-1
Proportion black women among nonmanagers	.058	.095	0	.886	Continuous	EEO-1
Proportion black men among nonmanagers	.053	.089	0	.940	Continuous	EEO-1
No white men in management	.005	.074	0	1	Binary	EEO-1
No white women in management	.094	.291	0	1	Binary	EEO-1
No black women in management	.686	.464	0	1	Binary	EEO-1
No black men in management	.533	.499	0	1	Binary	EEO-1
Proportion white men in industry labor force	.434	.147	.145	.711	Continuous	CPS
Proportion white women in industry labor force	.323	.140	.129	.624	Continuous	CPS
Proportion black women in industry labor force	.040	.018	.014	.097	Continuous	CPS
Proportion black men in industry labor force	.042	.023	.005	.098	Continuous	CPS
Proportion white men in state labor force	.380	.060	.116	.502	Continuous	CPS
Proportion white women in state labor force	.358	.066	.093	.496	Continuous	CPS
Proportion black women in state labor force	.042	.029	.001	.186	Continuous	CPS
Proportion black men in state labor force	.049	.035	.001	.201	Continuous	CPS
Organizational environment:						
In-house legal counsel	.303	.460	0	1	Binary	Survey
Government contract	.486	.500	0	1	Binary	EEO-1
Legal antidiscrimination enforcement	.948	1.019	0	3	Count[e]	Survey
Unemployment rate	6	2	2	18	Continuous	CPS
Industry size	3,961	2,904	996	11,458	Continuous	BLS
Year	1991	6	1980	2001	Continuous	EEO-1

NOTE.—All independent variables, excluding %managerial jobs, are measured one year before the outcome variables.
[a] Includes paid maternity leave, paid paternity leave, policy allowing flexible working hours, and top-management support for work/family balance.
[b] Includes adoption of formal HR department, written hiring, promotion, and discharge guidelines, written job description, written promotion ladder, written performance evaluations, pay-grade system, and internal posting of jobs.
[c] Includes diversity committee, diversity training, diversity networking, mentoring, diversity evaluation for managers, and diversity staff.
[d] Percentages were obtained in 10-year intervals from 1982 to 2002. Values for years in between were interpolated using a linear function.
[e] Includes affirmative action compliance review, EEOC charges, and discrimination lawsuits.

evaluations, and organizational downsizing are measured as binary variables, based on survey data. The variable for work/family accommodations counts four elements: paid maternity leave, paid paternity leave, a policy allowing flextime, and top-management support for work/family programs. The percentage of managerial jobs is measured using EEO-1 data on the number of managerial employees.

Organizational structures.—Personnel policies are measured using three variables, based on survey data. First is a variable counting the presence of eight policies formalizing HR decisions: hiring, promotion, and discharge guidelines, job descriptions, promotion ladders, performance evaluations, pay-grade systems, and internal job posting. Second is a binary variable denoting the presence of an annual affirmative action plan. Last is a count of five diversity programs, including diversity training, evaluations, staff, and mentoring and networking. Unionization is measured as a binary variable using survey data. Establishment size is the number of employees in the establishment, based on the EEO-1 data.

Workforce demography.—The composition of top managerial ranks is measured as the percentages of women and blacks in the top 10 executive positions, based on survey data. Interviewees were asked about the percentages at 10-year intervals, and values for intervening years were interpolated. The composition of the establishment's internal labor pool is measured as the proportion of the focal group among nonmanagerial workers, based on the EEO-1 reports. The composition of the establishment's external labor pool is measured using annual data from the CPS on the proportion of each demographic group among the industry and state labor forces. Industry employment variables are logged.

Organizational environment.—Organizations' legal environment is measured in several ways. To measure managers' awareness of the legal environment, I use a binary variable on the presence of in-house legal counsel, based on the survey data. Another binary variable, based on EEO-1 data, denotes whether the establishment is a government contractor subject to affirmative action regulations. Finally, a count variable, based on survey data, counts the establishment's experience with three types of antidiscrimination enforcement: EEOC charges, Title VII lawsuits, and affirmative action compliance reviews. Unemployment is measured as the yearly state unemployment rate and industry size as total annual industry employment. Both are based on data from the BLS.

Method

The four dependent variables examined in this study are parts of the same whole—the sum of management jobs in an establishment at a certain year—and so their error terms are expected to be correlated. Under these

conditions, ordinary least squares would produce unbiased and consistent estimators, but not efficient ones. I thus use seemingly unrelated regression, a generalized least squares (GLS) estimation that takes into account this covariance between the errors (Zellner 1962; Felmlee and Hargens 1988).[12] This estimation also allows me to perform a formal test of the hypothesis that self-directed work teams and cross-training will be more effective in eroding gender barriers than racial barriers (Zellner 1962; Kalleberg and Mastekaasa 2001).

An important concern in the analysis of organizational changes is establishing reliable estimates that are not biased by unobserved heterogeneity. In addition to including in the analysis an expansive series of control variables that may affect the outcome variable, I address this concern by using a fixed-effects specification for establishment and year (Hsiao 1986; Hicks 1994; Western 2002) and by conducting several sensitivity analyses, which I discuss later on.

Establishment fixed effects capture the variance from unmeasured characteristics of individual establishments that do not change with time and may affect both the independent and the outcome variables. For example, a progressive organizational culture may cause organizations to experiment with new work structures and also to promote more women and minorities. The fixed-effects specification increases my confidence that an unobserved factor of that sort does not drive my results. This specification is achieved by subtracting the values of each observation from the establishment's mean (Hsiao 1986, p. 31):[13]

$$y_{it} - E(y_i) = \beta[x_{it-1} - E(x_i)] + \delta D_{t-2} + [u_{it-1} - E(u_i)],$$

where y is a vector of outcome variables, x is a vector of time-varying variables, D is a vector of dummy variables for $t - 2$ years (the first year, 1980, is the omitted year, and the last year, 2002, is included only for calculating the outcome variable), E denotes a mean, i denotes an establishment, and t denotes a year. This transformation is logically equivalent to including in the model 810 dummy variables, one for each establishment in the data. By virtue of this definition, fixed-effects estimation models only within-establishment variation, and hence only variables that change over time are included in the analysis.

Year fixed effects are included to capture unobserved heterogeneity that

is associated with the passage of time and affects all establishments alike, such as national cultural or legal changes. The establishment and year fixed effects also offer an efficient means of dealing with the nonconstant variance of the errors (heteroscedasticity) that stems from the cross-sectional and over-time aspect of the pooled data (Sayrs 1989).[14] To examine the robustness of my results to within-unit serial correlation, I corrected for AR(1) using the Cochrane-Orcutt method,[15] which multiplies the equation for time $t - 1$ by the autocorrelation coefficient, ρ, and subtracts it from the equation for time t: $y_t - \rho y_{t-1} = (1 - \rho)\beta_0 + (x_t - \rho x_{t-1})\beta_1 + u_t - \rho u_{t-1}$. The results of the analysis and the main argument of the article are robust to this correction.

Additional sources of unobserved heterogeneity can come from the unbalanced nature of the data (30% of the establishments enter the data set after the first year of data, 1980) if the reason that an establishment is not in the data (e.g., its size or age) is correlated with the outcome variable. To verify that the results are not driven by the selection of establishments into the data, I replicated the analysis using a subsample of establishments that enter and exit the data in the same year; the results were substantially similar to those of the main analysis reported here. Additional robustness checks are discussed at the end of the findings section.

FINDINGS

My analysis provides strong support for the argument that restructuring work to weaken job segregation improves the access of women and minorities to management. Both self-directed work teams and cross-training programs have significant positive effects on the odds that managers are white women, black women, and black men and a negative effect on white men's odds of being in management. In contrast, programs that do not expand workers' opportunities to transcend job boundaries—problem-solving teams and job training—do not have these effects. The results also indicate that racial barriers are more resistant to change than are gender barriers. The effect of self-directed teams on black women is significantly smaller than that on white women, and problem-solving teams have a negative effect on black men's and black women's shares in management. Below I discuss the findings in greater detail.

Table 2 includes the results of the full model. Exponentiating the coefficients β in the following way, $[\exp(\beta) - 1] \times 100$, gives us the average

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[14] Using the Huber-White robust standard errors did not change the results of the analysis.

[15] Available in Stata using the *xtregar* procedure.

TABLE 2

FIXED-EFFECTS ESTIMATES OF THE LOG ODDS THAT MANAGERS ARE WHITE MEN, WHITE WOMEN, BLACK WOMEN, OR BLACK MEN AFTER ADOPTION OF NEW FORMS OF WORK ORGANIZATION, 1980–2002

	White Men	White Women	Black Women	Black Men
Team work:				
Self-directed work teams	−.081**	.087**	.035*	.048*
	(.019)	(.020)	(.018)	(.019)
Problem-solving teams	.014	.024	−.031*	−.058**
	(.014)	(.015)	(.013)	(.014)
Skill upgrading:				
Cross-training	−.076**	.044*	.033*	.040*
	(.016)	(.017)	(.016)	(.018)
Job training	−.005	.007	.017	−.002
	(.016)	(.017)	(.015)	(.017)
Complementary organizational changes:				
Management training	.002	.040**	.003	−.017
	(.015)	(.015)	(.014)	(.015)
Peer evaluations	.007	.013	.011	.032
	(.018)	(.019)	(.018)	(.018)
Work/family accommodations	−.036**	.029**	.018*	−.005
	(.008)	(.008)	(.007)	(.008)
Organizational downsizing	−.025	.070**	.080**	.024
	(.016)	(.022)	(.015)	(.016)
%managerial jobs in establishment	−1.357**	.823**	−2.919**	−2.191**
	(.103)	(.110)	(.098)	(.101)
Organizational structures:				
Formalized personnel policies	.002	−.007	−.012**	−.007
	(.004)	(.004)	(.004)	(.004)
Affirmative action plan	−.045**	.029	−.003	.040*
	(.017)	(.018)	(.016)	(.017)
Diversity programs	−.046**	.059**	.043**	.015
	(.009)	(.009)	(.008)	(.009)
Union agreement	−.086*	−.019	−.019	.037
	(.035)	(.038)	(.034)	(.036)
Establishment size (log)	−.096**	.041**	−.549**	−.342**
	(.012)	(.013)	(.012)	(.013)
Workforce composition:				
%women in top management	−.002**	.004**	.001	−.003**
	(.000)	(.001)	(.001)	(.001)
%minorities in top management	−.001	−.003	.008**	.013 **
	(.001)	(.002)	(.001)	(.002)
Proportion focal group in nonmanagerial jobs	1.058**	1.217**	.475**	1.533**
	(.048)	(.054)	(.116)	(.136)
No focal group in management	−.360**	−.221**	−.579**	−.156**
	(.046)	(.013)	(.012)	(.007)

TABLE 2 (*Continued*)

	White Men	White Women	Black Women	Black Men
Proportion white men in industry labor force (log)	.400**	−.240**	.123	.151
	(.086)	(.090)	(.082)	(.088)
Proportion white women in industry labor force (log)	−.037	.235**	.151*	−.084
	(.059)	(.063)	(.056)	(.061)
Proportion black women in industry labor force (log)	−.042	.037	−.023	.051*
	(.022)	(.024)	(.021)	(.023)
Proportion black men in industry labor force (log)	−.058*	.048	.030	.008
	(.025)	(.026)	(.024)	(.025)
Proportion white men in state labor force	.192	−.097	−1.349**	−.020
	(.350)	(.370)	(.333)	(.359)
Proportion white women in state labor force	−.493	1.070**	−.439	.056
	(.294)	(.312)	(.280)	(.302)
Proportion black men in state labor force	1.080	−.378	−1.049	−1.614*
	(.720)	(.761)	(.687)	(.740)
Proportion black women in state labor force	−.943	2.638**	1.200*	.245
	(.604)	(.639)	(.580)	(.620)
Organizational environment:				
In-house legal counsel	−.059*	.104**	.023	.074**
	(.024)	(.025)	(.023)	(.024)
Government contract	−.013	.039*	−.036*	.040*
	(.019)	(.020)	(.018)	(.019)
Legal antidiscrimination enforcement	−.034**	.050**	.002	.015
	(.008)	(.008)	(.007)	(.008)
Unemployment rate	.023**	−.026**	−.011**	−.002
	(.004)	(.004)	(.004)	(.004)
Industry employment	.023**	−.053**	−.007	−.014**
	(.005)	(.005)	(.005)	(.005)
R^2	.2215	.1936	.2362	.1305
χ^2	4,464	3,661	4,635	1,970

NOTE.—Unstandardized coefficients from a seemingly unrelated regression. Numbers in parentheses are SEs. All independent variables are lagged by one year, excluding the percentage of managerial jobs. The analysis includes 20 variables for the years 1981–2001 (1980 is the omitted year, and 2002 is included in the analysis only for calulating the outcome variable). $N = 14,693$; number of parameters = 53. Log-likelihood ratio tests: χ^2 (16) = 84.01; $P > \chi = .000$.

* $P < .05$ (two-tailed tests).

** $P < .01$.

percentage change in the odds that managers are from a focal demographic group, a change that is associated with a change in an independent variable, net of all other variables and each establishment's unique stable characteristics. When the coefficient's absolute value is smaller than 0.1, the percentage change can be calculated simply as $\beta \times 100$. The error of such approximation is about 0.005. The R-squared statistics reported in this table represent the percentage of the variance explained by the predictors when excluding the unique (fixed) effects of each establishment. The log-likelihood ratio test shows that adding measures of teams and training programs to the baseline model (presented in app. table A1) significantly increases the percentage variance explained by the model.

Team-Based Work

The results presented in table 2 show that the adoption of self-directed teams by an establishment has a significant positive effect on the shares of women and minorities among managers of that establishment. After the adoption of self-directed work teams, the odds that managers are white men decline by an average of 8%, the odds for white women increase by an average of 9%, and those for black women and black men increase by about 3.5% and 5%, respectively. A chi-squared test indicates that the estimated effect of self-directed teams on white women is significantly larger than the estimated effect on black women ($\chi^2 = 3.98$; $df = 1$; $P < .046$), but not significantly larger than the effect on black men ($\chi^2 = 1.86$; $df = 1$; $P < .173$).

In contrast to self-directed work teams, the adoption of problem-solving teams is not followed by increased diversity; rather, it lowers the odds that managers are black women by 3% and that managers are black men by 6%. The magnitude of these effects is comparable to the positive effects of self-directed work teams. Does this mean that when both programs are adopted, there will be no change in the proportions of black men and women in management, or is there an added value of having both programs in place? To examine this question, in a separate model, I included an interaction term for self-directed work teams and problem-solving teams. The coefficients for the interaction term indicated that having both these programs at the same time has a weak positive effect on black women, significant only at the 10% level of confidence ($\beta = 0.053$; SE = 0.029), and no effect on black men ($\beta = 0.024$; SE = 0.031). In other words, there is no evidence of an added value from having both types of programs at the same time.[16]

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[16] Coefficients of the interaction analysis for white men and women also show no significant effects. Full results are available upon request.

Problem-solving teams, which often include experts and higher-ranking workers, who are typically white and male, may improve the career chances of other workers (white men or women) and thereby deepen the disadvantage of black workers. Note that the coefficients for white women and men are positive, though not statistically significant.

Cross-training and Job Training

According to the analysis presented in table 2, the introduction of cross-training programs increases the odds that managers are white women, black women, or black men by about 4% on average and reduces the odds for white men by about 7.5%. These results suggest that cross-functional training programs may indeed translate into new mobility opportunities for women and minorities, as case studies have suggested (Smith 1996; Ollilainen and Rothschild 2001).

The shares of women and blacks among managers do not change following employers' adoption of job-training programs. None of the coefficients for job training are significant. Despite the historical intent to use job training as a means for helping women and minorities advance, employers' adoption of these programs does not undermine ascriptive disadvantage, perhaps because women and minorities are less likely to be eligible for training (Knoke and Ishio 1998; Lynch and Black 1998).

What do these coefficients mean in terms of changes in the proportions of women and minorities in management between 1980 and 2002? Because the log odds transformation is not a linear transformation, the magnitude of the change associated with each program varies according to the starting point, the baseline proportion (Fox 1997, p. 78). Table 3 summarizes the percentage and percentage-point differences between the sample mean proportion of each group among managers and the predicted proportion following the adoption of each program. These magnitudes are calculated using the coefficients in table 2 and are associated only with the adoption of the focal program.[17] For example, the mean proportion of white men among managers in the sample is 67.9%. Adopting self-directed work teams is estimated to reduce their share to 66.2%, net of all the other

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[17] To evaluate the magnitude of the effect as a percentage change in the proportion of a focal group in management. I use the following calculation: $\Delta P_{ij}/P_{ij} = \{\exp(L_{1ji})/[1 + \exp(L_{1ji})]\} - \{\exp(L_{0ji})/[1 + \exp(L_{0ji})]\} / \{\exp(L_{0ji})/[1 + \exp(L_{0ji})]\}$, where j denotes the focal demographic group and i is the focal program. L_{0ji} is the log odds of group j's being in management before the unit change in D_i (i.e., before the adoption of program i) and $L_{1ji} = L_{0ji} + B_{ij}$ is the log odds of group j's being in management after the unit change in D_i (after adoption), where B_{ij} is the regression coefficient, estimating the percentage change in odds associated with adoption of program i in the model for the jth group (Petersen 1985).

TABLE 3

ESTIMATED AVERAGE DIFFERENCES IN MANAGERIAL COMPOSITION FOLLOWING THE ADOPTION OF TEAM AND TRAINING PROGRAMS
(Based on the Sample Mean Proportion of Each Group in Management)

	White Men	White Women	Black Women	Black Men
Baseline: Mean proportion in management	.679	.233	.0146	.0253
Self-directed work teams:				
Estimated proportion with the program	.662**	.246**	.0151*	.026*
% difference due to the program	−2.5	5.6	3.4	3.6
Percentage-point difference due to the program	−1.70	1.30	.05	.09
Problem-solving teams:				
Estimated proportion with the program	.683	.234	.0136*	.024**
% difference due to the program	.6	.4	−6.8	−6.7
Percentage-point difference due to the program	.40	.10	−.10	−.17
Cross-training:				
Estimated proportion with the program	.663**	.241*	.0151*	.026*
% difference due to the program	−2.4	3.4	3.4	2.8
Percentage-point difference due to the program	−1.60	.80	.05	.07
Job training:				
Estimated proportion with the program	.680	.231	.0148	.025
% difference due to the program	.1	−.9	1.4	−1.2
Percentage-point difference due to the program	.10	−.20	.02	−.03
% change in group proportion among managers between 1980 and 2002	−17	37	125	29

* $P < .05$.
** $P < .01$.

variables and the establishment and year fixed effects. This is a decline of 1.7 percentage points or 2.5% in their proportion that is associated solely with the adoption of these teams. To evaluate this 2.5% change in context we can look at the bottom line in table 3, which summarizes the percentage change in the share of each group among managers between 1980 and 2002. The proportion of white men among managers declined in this period by 17%, from 75% to 62%. To give another example, the proportion of white women among managers is estimated to increase by 5.6% due to the adoption of self-directed work teams, while overall the share of white women among managers increased by 37% (from 19% to 26%) between 1980 and 2002.

Self-directed work teams and cross-training programs erode job segregation, but if these programs are implemented in highly segregated organizations, or if women and minorities are excluded from participating, the programs might not change these groups' career opportunities. The analysis cannot account for variation in women's and minorities' participation (data on their participation were not collected), and so the estimated effects we observe may include cases where these programs are demographically homogeneous and may thus underestimate the extent to which women and minorities benefit from participation.

Accompanying Changes and Other Factors Affecting Managerial Composition

Coefficients for variables measuring other organizational changes that may affect managerial composition, presented in table 2, are generally consistent with expectations based on theory and previous research. These measures are included in the analysis to help isolate the effects of the team and training programs, but their coefficients contribute to a broader understanding of stratification at work.

One clear pattern that arises from these results is of intersectionality, whereby organizational characteristics create distinct opportunities for each demographic group (McCall 2001; Browne and Misra 2003). In particular, the results show that some organizational features advantage black women more than black men (e.g., work/family and diversity programs, as well as downsizing), while other features advantage black men more (see also Nkomo and Cox 1989, p. 835). Black women, however, rarely benefit more than white women in these models (excluding the effect of minorities in top management). I review specific results below.

Management training has the expected positive effect on the share of white women in management, suggesting that expanding formal opportunities for access to management can reduce ascriptive disadvantage, though these effects are not observed for black men and women. White

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women may be better positioned to take advantage of these programs (Bell et al. 1994). Peer evaluations show no significant effect on managerial diversity. This result is in contrast to Smith-Doerr's (2004) argument that being evaluated by a wider range of people helps women's careers. It appears that the exposure and visibility granted by changes in work structures, such as self-directed teams and cross-training, are a more effective means for reducing career barriers than formal peer-evaluation programs. Work/family accommodations have the expected effect of reducing women's disadvantage in access to management (they are the most likely beneficiaries of these programs). The parallel decline in white men's odds suggests that women's work/family conflict serves as a source of advantage for white men. Downsizing layoffs show a positive effect on white and black women in management and no effect on black men. These results are inconsistent with what we know from individual-level data about minorities' higher vulnerability to downsizing, controlling for individual and occupational characteristics (Farber 1997; Fairlie and Kletzer 1998; McBrier and Wilson 2004) and may suggest that intervening organizational factors shape the vulnerability of women and minorities to downsizing layoffs. Higher availability of managerial jobs has a positive effect on white women in management, at the expense of all other groups.

Formalization of human resources does not seem to increase managerial diversity. This result is anticipated by mixed evidence from past research looking at different aspects of formalization (Baldi and McBrier 1997; Reskin and McBrier 2000). Consistent with previous research, affirmative action plans and diversity programs have positive effects on managerial diversity (Konrad and Linnehan 1995; Edelman and Petterson 1999; Kalev et al. 2006), as do the presence of in-house legal counsel and antidiscrimination enforcement (Leonard 1984; Kalev and Dobbin 2006; Skaggs 2008). Some argue that the negative effects of affirmative action plans, diversity programs, and antidiscrimination enforcement on white men reflect a quota system or reverse discrimination.[18] Several studies provide evidence against this notion. Holzer and Neumark (1998) find that when affirmative action is used in recruiting it does not result in lower credentials or performance for the women and minorities hired. Wilson (1995) found that only 100 of 3,000 discrimination cases filed involved reverse discrimination and that only six of these had claims that could be substantiated (cited in Bond and Pyle 1998, p. 260). The results also show that the presence of a union contract leads to declines in the odds that managers are white men, though it does not have, on average,

[18] This criticism is usually directed at affirmative action plans and is less relevant for cross-functional work programs, which are not adopted as part of employers' efforts to comply with antidiscrimination regulations.

a significant effect on any other group. This pattern suggests that on average unions help erode, rather than sustain, white men's advantage in good jobs (Leonard 1985).

The variables measuring organizational workforce composition show that higher presence of women and minorities—be it in top management or in nonmanagerial jobs—enhances the entrance of women or minorities to management (Cohen et al. 1998). When women's share of top management increases, only white women gain, and when top management is more racially diverse, both black women and men benefit. Here too racial barriers seem to be more resistant to change than gender boundaries, and black women do not experience a "double advantage" of being both women and black (Nkomo and Cox 1989). Also, men's share among managers declines when the share of women among top managers increases. This may reflect homophily among women that disadvantages men (Elliot and Smith 2004). It may also reflect the ability of highly ranked women managers to serve as the role models and mentors that aspiring women often lack (Ely 1995; Bell and Nkomo 2001).

Among industry and state labor force composition variables, it is noteworthy that a higher presence of black men in industry has a negative effect on white men in management, and there is weak evidence that white women's share among managers increases in these cases. An increase in the share of black men among the state labor force is associated with a lower share of black men among managers, suggesting indirect support for the threat hypothesis holding that a higher presence of blacks threatens the majority group, which may then intensify exclusion efforts (Blalock 1967). Finally, high unemployment hurts the share of women among managers, supporting the queuing theory, whereby men are positioned higher in the gender queue for jobs (Reskin and Roos 1990).

Confounding Factors and Reverse Causality

The model specification, with fixed effects for each establishment and year, accounts for two possible sources of bias. First, the establishment fixed effects account for stable unobserved heterogeneity that might affect the outcomes. For example, adopters may have a change-oriented organizational culture or may be concentrated in progressive industries or states and so may be more likely to both adopt new programs and be diversity-friendly. Second, the inclusion of a dummy variable for each year accounts for unmeasured heterogeneity that is correlated with time and affects all organizations alike, such as changes in societal attitudes, legal environment, or managerial fads.

Time-varying organization-specific exogenous changes.—The fixed-effects specification by itself does not rule out the possibility that time-

varying organization-specific exogenous changes—for example, new leadership or a decline in profits—may affect both the organization of work and the access of women and blacks to management. I try to rule out spuriousness due to such unobserved heterogeneity in three ways. The first way is through the research design: all four programs I examine are often adopted as part of what is called "high-performance reorganization" (Cappelli et al. 1997; Osterman 2000). That only two of the four innovations examined here show positive effects on managerial diversity increases my confidence that these effects are not caused by a latent factor. For example, if the real factor that affected management diversity was the arrival of a new CEO infatuated with progressive management programs, we would expect to see positive effects for all four programs. Second, the effects of cross-functional team and training programs are observed despite the inclusion of many related organizational innovations, such as management training, peer reviews, work/family accommodations, and diversity efforts (see table 2). Third, the models may still be subject to omitted variable bias, if an unmeasured factor led both to the adoption of cross-functional programs and to changes in management diversity. To test for omitted variable bias, I performed an additional analysis (results are available upon request) in which I added binary variables as proxies for the occurrence of unmeasured events (such as financial or technological changes) before the adoption of each program. I performed this sensitivity analysis with proxy events assumed to occur two and three years prior to the adoption of each of the four team and training programs examined here, in models parallel to those in table 2. If adding a proxy variable for an event occurring before, say, the adoption of self-directed work teams caused the coefficients for these teams to decline in size or become nonsignificant, and the proxy variable showed significant effects in the same direction as the original coefficients, the results for these teams might be spurious (Bennear 2007). As expected, however, the coefficients of interest and the standard errors remained robust to the inclusion of these proxy variables, and the proxy variables did not produce significant coefficients. These analyses also suggest that the observed relationship between the reorganization of work and managerial diversity is not spurious.

Reverse causality.—If adopters of cross-functional team and training programs are more diverse firms, there is a possibility of reverse causality. Appendix figure A1 shows the presence of each of the four team and training programs in workplaces with different workforce composition. For example, the first quartile includes organizations that are located in the bottom 25% of the distribution in terms of the proportion of white women, black women, or black men in their workforce—these are the least diverse organizations. The figure illustrates that team and training

programs are present in organizations with different levels of diversity and are not concentrated in the more diverse firms. For example, self-directed work teams are about equally present in organizations in the first and fourth quartiles of %white women in their workforces and the second and fourth quartiles of %black women, while cross-training programs are more highly concentrated in workplaces with the lowest proportions of white and black women and about equally present across the distribution of the proportions of black men. The heterogeneous patterns shown in figure A1 suggest that the effects of self-directed work teams and cross-training programs are unlikely to be a reflection of their concentration in firms with higher initial shares of women and minority workers. Finally, to buttress our confidence that the results do not reflect previous levels of diversity, I repeated the multivariate analysis presented in table 2, this time including the proportion of each group in management in the year of adoption as an independent variable (the proportion of each group in nonmanagement positions is already included in the models). This variable absorbs the variance in the outcome that comes from earlier levels of diversity. The results of that analysis (available upon request) are not significantly different from the results reported here.

Taken together, the fixed-effects specifications, the research design, the range of control variables, and the various additional analyses reported here strengthen my confidence in the conclusions about the effects of cross-functional team and training programs on the shares of women and minorities in management.

CONCLUSION AND DISCUSSION

The modern workplace has traditionally been structured around a rigid division of labor and narrow job definitions, themselves the products of early management ideologies, job-control unionism, and government intervention in labor markets during World War II (Jacoby 1985; Baron, Dobbin, and Jennings 1986). More than a system of labor control (Edwards 1979), narrow job definitions also institutionalize ascriptive disadvantage, as women and minorities are segregated into low-level, undervalued positions with limited opportunities to be evaluated for their contributions and to build strategic networks (Kanter 1977; Baron and Bielby 1985; Acker 1990). While the question of how to reduce the channeling of women and minorities into segregated jobs has been keeping scholars busy, I focus on what happens when the segregated structure of jobs is ameliorated. If job segregation reinforces ascription, then reorganizing work around teams and more porous job boundaries should improve career outcomes for women and minorities. This type of reor-

ganization has become popular in the United States over the last quarter century.

Analyzing data on changes in the organization of work and managerial composition from 1980 to 2002 in a national sample of more than 800 workplaces, I find that the introduction of cross-functional work programs—self-directed teams and cross-training—leads to increases in the shares of women and minorities in management. These results are not merely due to the churning of managerial positions associated with organizational change: team and training programs that do not allow women and minorities to transcend job boundaries do not have these effects. Though it would be myopic to assume that gender and racial biases cease to exist in a restructured work setting (or to ignore the possibility that restructuring remains decoupled), my findings provide strong support for a relational approach to stratification and for the notion that relaxing narrow job boundaries and emphasizing collaborative work, instead of segregated work, erodes ascription and gives women and minorities new career opportunities (Smith 1996; Ollilainen and Rothschild 2001; Smith-Doerr 2004).

The research reported here has significant implications for theory and practice. It provides a wake-up call for stratification researchers to move beyond personnel policies for allocating jobs and rewards and look at the organization of work and the relations between jobs as a source of ascription. On their end, industrial relations researchers who study restructuring focus on labor control and class inequalities, overlooking the distinct effects of the labor process on women's and minorities' career opportunities (Edwards 1979; Baron and Bielby 1980; Barker 1993; Osterman 2000; Handel 2005). The finding that changes in the structure of work change the ascriptive structure of opportunities corroborates evidence from case studies showing that women and minorities working in cross-functional contexts get more exposure, voice, and appreciation than those working in segregated structures (e.g., Smith 1996; Ollilainen and Rothschild 2001; Smith-Doerr 2004).

How would this translate into higher shares of women and minorities in management? The general causal chain, based on evidence from research and theory, suggests the following stages: the restructuring of work alters the type of intergroup contact and interaction, from segregated to collaborative; these more collaborative relations weaken stereotypes and group boundaries (Ridgeway and Smith-Lovin 1999; Pettigrew and Tropp 2006); weakened stereotypes can lead to better assessment of women's and minorities' capabilities by others (Reskin 2000, p. 322) and increase the tendency of higher-status workers to network with them (McGuire 2002); these improved evaluations and expanded networks in turn can

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lead to new promotion opportunities.[19] Such opportunities could come, for example, through lateral moves to jobs with better career ladders. Lateral moves often provide the only outlet from jobs with limited promotion ladders (DiPrete and Soule 1988; Spilerman and Petersen 1998), but here too segregated workers are disadvantaged because these moves require that the worker know of the vacancy and be perceived as eligible for that job (Spilerman and Petersen 1998, p. 225). The networking and visibility opportunities afforded by cross-functional work environments can help women and minorities learn of these opportunities and put them on the radar screen for such moves. Other career opportunities facilitated by the new work environment can include, for example, new mentoring relations or assignments to prestigious tasks, both of which have been found to facilitate the entrance of women and minorities to management (Bell and Nkomo 2001; Kalev et al. 2006). Whether women and minorities seek out career opportunities in these new environments, managers and high-status employees reach out to the newly discovered talent, or the two processes work together, the end result is improved access to management jobs.

Looking at the organization of work as a source of ascription adds a relational dimension to the dialogue between structural and social psychological theories of stratification (Baron and Pfeffer 1994; Bielby 2000; Reskin 2000). Social psychologists argue that biases and stereotypes are adaptive. Sociologists have mostly studied the effect of personnel structures on cognitive biases among decision makers. Here we explore a relational aspect of the connection between the structure of work and cognitive biases in intergroup relations (see also Reskin 2000). Social psychologists have shown that power and status differentials affect stereotypes, boundaries, and prejudice (Tajfel and Turner 1979; Ridgeway 1997; Pettigrew and Tropp 2006). We have now seen that work structures that weaken these differentials also lead to better access to management for women and minorities.

The analysis explores distinct effects of restructuring across the intersection of gender and race, suggesting that this model might not be equally applicable for all groups of women and minorities. First, black women's gains from the transition to team-based work are significantly smaller than white women's. Black women might benefit less from teams because they are more segregated than white women, and so fewer of them may

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[19] It remains an open question whether the positive effects pertain only to women and minorities participating in these teams, or whether there is a spillover effect wherein, following workers' and managers' encounters with countertypical examples, gender and racial biases at the workplace are attenuated more generally (see Kang and Banaji [2006, p. 1109] on the effects of debiasing agents).

be in a position to actually participate in these programs. Because of their double minority status (as women and as blacks), once they participate in teams black women may have lower returns to participation; they may face stronger intergroup boundaries and may be less successful in forming useful networks (McGuire and Reskin 1993; Bell and Nkomo 2001). For example, even though teams may serve as a conduit for career-building mentoring relations, if having a mentor of the same race matters, as some argue (Thomas 2001), black woman may simply have fewer potential mentors than white women. The second pattern we have observed is that black men and black women experience adverse effects from the introduction of problem-solving teams. This probably reflects a pattern in which highly valued employees—usually whites and men—are more likely to participate in these expert teams (Vallas 2003*a*; Batt 2004) and so to benefit from the associated career opportunities, deepening the disadvantage of minority workers in access to management. Another possible explanation of these adverse effects is suggested by evidence that problem-solving teams (but not self-directed work teams) are accompanied by increased tension at the workplace (Appelbaum et al. 2000, p. 177; Vallas 2003*a*). It is possible that racial boundaries, more than gender boundaries, are reinforced in such a context (Vallas 2003*a*). Taken together, the results for the main and control variables show that race and gender combine to create unique opportunities for each group (Nkomo and Cox 1989; Nkomo 1992; Browne and Misra 2003, p. 506; Elliott and Smith 2004). We need to explore the structural, relational, and cognitive mechanisms that sustain and erode disadvantage separately for each of these groups.

It is also significant that the adoption of conventional job-training programs does not undermine gender and racial inequality. Proponents of affirmative action have promoted employers' training programs as a means of improving the career chances of women and minorities (U.S. Glass Ceiling Commission 1995). Yet research has shown that women are less likely to receive such training, precisely because of their segregation in positions that are not eligible for training (Knoke and Ishio 1998). It is hardly surprising, then, that job-training programs do not lead to higher managerial diversity in my analyses.

This study bridges organizational and sociological research on gender and race relations in organizations. Management researchers studying intergroup relations focus on the implications for organizational efficiency and productivity (Chatman and Flynn 2001; Bacharach et al. 2005), while sociologists mostly look at how intergroup relations shape stratification and exclusion (Ridgeway 1997; see also DiTomaso, Post, and Parks-Yancy 2007). The results of the current study tie these two literatures together. Others have already shown that cross-functional work improves organizational efficiency (Ichniowski et al. 1996; Appelbaum et al. 2000), and

I have shown here that it also increases managerial diversity. Because restructured jobs may remain nonetheless within the realm of white's and men's jobs, if employers are to consciously tie high-performance work systems to diversity efforts they will need to ensure that restructuring is indeed cross-functional, rather than creating collaborative relations within existing functional divisions (Kanter 1985; Brickson 2000), and that women and minorities participate in these programs.

Sociologists of stratification rarely discuss the decline in white men's share in management that often accompanies the improvements in women's and minorities' careers. We have seen that the odds of managers' being white men decline following the adoption of self-directed teams and cross-training programs as well as other organizational changes analyzed in the models. These results are likely a symptom of the current structure of work, where opportunities are, at least partially, based on ascriptive characteristics and where women's and minorities' disadvantage is inherently linked to white men's advantage (Linnehan and Konrad 1999, p. 409). White men, as a group, benefit from job segregation because they are more likely to be concentrated in the more visible jobs with better career ladders and to face lower competition over career opportunities. If other groups gain more visibility and access to better jobs, white men's advantages will be reduced. At minimum, as the managerial pipeline becomes more diverse, ceteris paribus, the chances of white men becoming managers will decline.[20]

If a given program helps one group but clearly harms another, it might evoke backlash by the harmed group, be it due to sexism or racism, aversion to change, or the feeling that the group's interests, status, social identity, or rights are being undermined (Cockburn 1991; Tsui, Egan, and O'Reilly 1992; Tomaskovic-Devey 1993; Linnehan and Konrad 1999; Lowery, Knowles, and Unzueta 2007).[21] There are good reasons to believe, however, that diversity gains from cross-functional reorganization may be less likely to evoke a backlash. First, because such diversity gains are a product not of diversity efforts but rather of efficiency efforts, they are more likely to be associated with organizational effectiveness than with

[20] An alternative explanation for the negative effect of self-directed teams on the odds that managers are white men is that white male managers may voluntarily leave after the adoption of these programs, which may entail a change in management style. If voluntary resignation is the mechanism, this pattern will be less pronounced in periods of high unemployment. I examined this possibility by reanalyzing the data, adding to the model measures for an interaction between the presence of self-directed teams and state unemployment rates. None of the interaction coefficients was significant (for white men the coefficient is 0.006; SE $= 0.007$), and so the analysis does not support the voluntary exit hypothesis. Full results are available upon request.

[21] I thank an anonymous reviewer for this point.

legal compliance; researchers find that an organizational perspective on diversity that emphasizes efficiency is less associated with backlash than a perspective emphasizing compliance and fairness (Ely and Thomas 2001). Second, researchers report a greater sense of opportunity for all workers in cross-functional structures, because of the flexibility to transition across jobs and tasks (Kvande and Rasmussen 1994, p. 172; Smith-Doerr 2004). Given that what constitutes individuals' self-interest is affected by the opportunities afforded by organizational structures (Kanter 1977; Dobbin et al. 1993, p. 400), it is possible that this greater sense of opportunity will reduce the majority group's sense of threat and tendency for exclusion and social closure.

The negative effects on white men suggest that access to management may be a zero-sum game across demographic groups. Yet the implications of these results for the life chances of workers from all groups should be interpreted with caution. Census data show that the percentage of white men who are managers continues to rise (Padavic and Reskin 2002, p. 102), and white men continue to hold most high-level, powerful jobs (Elliott and Smith 2004). At the same time, women's and minorities' labor market gains remain unstable. Blacks suffered higher rates of downward mobility from managerial occupations during the 1990s than whites (McBrier and Wilson 2004), and white men are more likely than any other demographic groups to find jobs after layoffs (Spalter-Roth and Deitch 1999). No single program will stop these trends. But if the increased diversity that follows the adoption of cross-functional work structures is less likely to provoke a backlash, as the discussion above suggests, such structures may help women and minorities institutionalize their labor market gains.

Employers have been experimenting with ways to increase the representation of women and minorities in the workforce and in management for almost half a century (Dobbin et al. 1993). The formalization of human resources policies is one prominent means for curbing bias by procedural fairness (Reskin 2000). But researchers (Baldi and McBrier 1997; Elvira and Town 2001), as well as the Supreme Court,[22] have found formalization to be far from a panacea. Employers have devised special networking and mentoring programs for women and minorities to reduce their social isolation. Research has shown that these programs have weak, and often negative, effects on diversity outcomes (Carter 2003; Friedman and Craig 2004; Kalev et al. 2006). The results of my research shift our attention toward the way work is done and advance a relational approach to inequality and its reduction (Tilly 1998). Compliance structures attempt to change behavior from the top down, through formal rules. The organi-

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[22] *Griggs v. Duke Power Co.*, 401 U.S. 424 (1971).

zation of work changes the structure of intergroup relations and interactions more organically. People collaborate and cooperate rather than give and accept assignments. Previously invisible and undervalued workers now voice their opinions on important issues or perform tasks no one thought they could. New types of relations between advantaged and disadvantaged groups are more likely to evolve under these conditions. We need to think about how to structure relations at work in a way that will disrupt the reproduction of stereotypes and group boundaries. Job segregation is one of the most institutionalized work practices that reinforce and reify ascriptive disparities. As this study demonstrates, employers and managers can alter the organization of jobs in ways that will reduce ascriptive disadvantage.
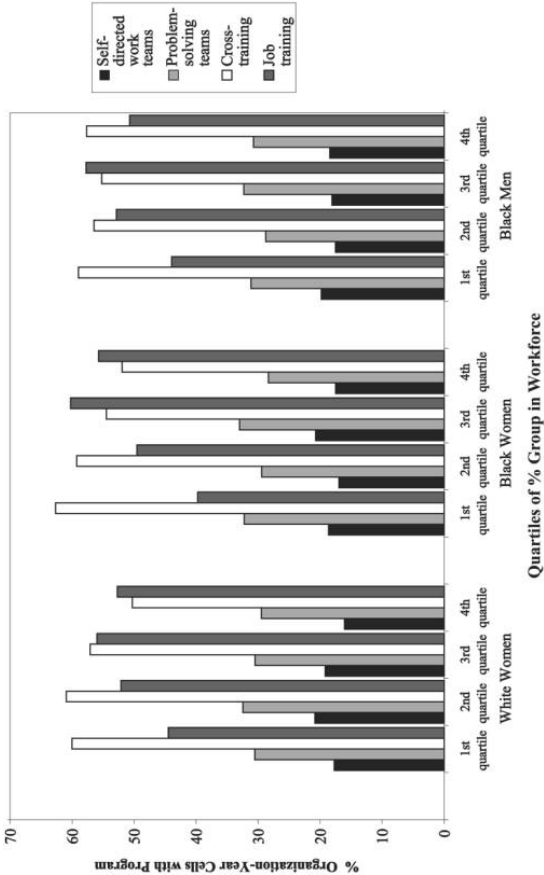
APPENDIX

FIG. A1.—The presence of team and training programs in organizations by workforce composition

TABLE A1

FIXED-EFFECTS ESTIMATES OF THE LOG ODDS THAT MANAGERS ARE WHITE MEN, WHITE WOMEN, BLACK WOMEN, OR BLACK MEN, 1980–2002, BASELINE MODEL

	White Men	White Women	Black Women	Black Men
Complementary organizational changes:				
Management training	.002	.043**	.002	−.020
	(.015)	(.015)	(.014)	(.015)
Peer evaluations	−.002	.025	.014	.034
	(.018)	(.019)	(.017)	(.018)
Work/family accommodations	−.041**	.034**	.021**	−.003
	(.008)	(.008)	(.007)	(.008)
Organizational downsizing	−.032*	.062**	.082**	.024
	(.016)	(.017)	(.015)	(.016)
%managerial jobs in establishment	−1.339**	.795**	−2.920**	−2.186**
	(.104)	(.110)	(.098)	(.101)
Organizational structures:				
Formalized personnel policies	−.001	−.005	−.010**	−.006
	(.004)	(.004)	(.004)	(.004)
Affirmative action plan	−.053**	.037*	.001	.043*
	(.017)	(.018)	(.016)	(.017)
Diversity programs	−.046**	.059**	.043**	.015
	(.008)	(.009)	(.008)	(.008)
Union agreement	−.079*	.027	−.022	.034
	(.035)	(.038)	(.034)	(.036)
Establishment size (log)	−.096**	.042**	−.549**	−.343**
	(.012)	(.013)	(.012)	(.012)
Workforce composition:				
%women in top management	−.002**	.004**	.001	−.003**
	(.001)	(.001)	(.001)	(.001)
%minorities in top management	−.001	−.002	.008**	.013**
	(.001)	(.002)	(.001)	(.002)
Proportion focal group in nonmanagerial jobs	1.060**	1.226**	.469**	1.539**
	(.048)	(.054)	(.116)	(.136)
No focal group in management	−.362**	−.223**	−.579**	−.156**
	(.046)	(.013)	(.012)	(.007)
Proportion white men in industry labor force (log)	.402**	−.246**	.126	.155
	(.086)	(.090)	(.082)	(.088)
Proportion white women in industry labor force (log)	−.039	.236**	.153*	−.083
	(.059)	(.063)	(.056)	(.061)
Proportion black women in industry labor force (log)	−.039	.034	−.024	.050*
	(.022)	(.024)	(.021)	(.023)
Proportion black men in industry labor force (log)	−.056*	.045	.031	.010
	(.025)	(.026)	(.024)	(.025)

TABLE A1 (*Continued*)

	White Men	White Women	Black Women	Black Men
Proportion white men in state labor force	.189	−.133	−1.327**	.032
	(.350)	(.370)	(.332)	(.359)
Proportion white women in state labor force	−.557	1.143**	−.424	.080
	(.295)	(.311)	(.280)	(.302)
Proportion black men in state labor force	.957	−.266	−.995	−1.553*
	(.720)	(.761)	(.687)	(.740)
Proportion black women in state labor force	−.992	2.678**	1.233*	.286
	(.605)	(.639)	(.576)	(.620)
Organizational environment:				
In-house legal counsel	−.058*	.104**	.023	.074**
	(.024)	(.025)	(.023)	(.024)
Government contract	−.011	.035	−.036*	.041*
	(.019)	(.020)	(.018)	(.019)
Legal antidiscrimination enforcement	−.035**	.052**	.001	.012
	(.008)	(.008)	(.007)	(.008)
Unemployment rate	.024**	−.028**	−.011**	−.002
	(.004)	(.004)	(.004)	(.004)
Industry size	.023**	−.051**	−.007	−.015**
	(.005)	(.005)	(.005)	(.005)
R^2	.2191	.1917	.2355	.1290
χ^2	4,415	3,616	4,615	1,940

Note.—Unstandardized coefficients from a seemingly unrelated regression. Numbers in parentheses are SEs. All independent variables are lagged by one year, excluding the percentage of managerial jobs. The analysis includes 20 variables for the years 1981–2001 (1980 is the omitted year, and 2002 is included in the analysis only for calulating the outcome variable). $N = 14,693$; number of parameters = 49.

* $P < .05$ (two-tailed tests).

** $P < .01$.

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