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# Men and Women at Work: Sex Segregation and Statistical Discrimination<sup>1</sup>

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This article develops and tests hypotheses about the determinants of sex segregation in occupations employing both men and women, analyzing data on a diverse sample of California establishments. In the few instances in which men and women perform similar work roles, the jobs are typically done in distinct organizational settings, and when an enterprise employs both sexes in the same occupation, men and women are usually assigned different job titles. The findings are consistent with the theory of statistical discrimination, which posits that employers reserve some jobs for men and others for women. However, little evidence is found that employers' practices reflect efficient and rational responses to sex differences in skills and turnover costs. Alternative explanations for gender segregation within and among organizations are suggested and the research necessary to develop a more accurate account of the sexual division of labor in the workplace is outlined.

The magnitude, determinants, and consequences of sex segregation are of concern to both researchers and policymakers. Whatever its causes, job segregation by sex is the principal source of gender differences in labor market outcomes, and policies to remedy gender inequality differ in their assumptions about the extent, sources, and effects of the sexual division of labor. For instance, comparable worth advocates regard segregation as

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pervasive and resistant to change (in the short run, at least) and thus seek to achieve pay equity by recalibrating the value of jobs women now perform. Policies emphasizing improved educational and training opportunities for women, in contrast, involve quite different assumptions about the sources of segregated work.

Though the sexual division of labor may not be inevitable, it is certainly persistent. Recent research has shown that the level of occupational sex segregation has changed very little since 1900, despite changes in the sex composition of specific occupations (England 1981). Roughly 60%–70% of male (or female) workers would require reclassification across detailed occupations to equalize the sexual division of labor, although this percentage has declined somewhat over the past 20 years (Blau and Hendricks 1979; Beller 1984). While this result implies that the occupational structure is divided substantially along gender lines, it also shows that occupational specialization by sex is far from complete. During any given period, there are numerous occupations in which the sex composition is balanced.

However, a recent study at the organizational level (Bielby and Baron 1984) portrayed sex segregation as much more pervasive than did previous occupation-level research, showing that men and women rarely share job titles within establishments. Our present article seeks to reconcile those results with findings based on census occupational data. We show that men and women in the same census occupation are sorted into distinct organizations or are segregated by job titles within work settings. One set of explanations for this segregation stresses the optimal choices of employees and employers, sex differences in skills, and the technical requirements of work roles. These factors, it is argued, not only produce a sexual division of labor *across* occupations but also channel women into specific types of organizations or job classifications, even within occupational roles performed by both sexes. The first section of the article summarizes this explanation for sex segregation. The perspective is operationalized with a statistical model that predicts the sex composition of particular jobs within occupations employing both men and women. Hypotheses about the parameters of that model are tested with data from a diverse sample of work organizations in California.

Analyzing segregation within lines of work pursued by both men and women reduces the impact of socialization, occupational choice, and “supply-side” factors in general. That women are either pushed or pulled into a narrow range of occupations is well documented, although the causes of this “crowding” are still debated (Bergmann 1974; Polachek 1979; England 1982). We do not attempt here to explain differences in the occupational distributions of men and women. Instead, we examine areas

of work in which both men and women are available to staff a role, so any differential allocation to jobs is probably attributable to deliberate actions by employees and employers. In particular, we are interested in the degree to which pervasive segregation by sex, even in mixed occupations, can be attributed to technical features of work and its organizational context. We conclude that the patterns of segregation we observe are difficult to reconcile with perspectives stressing employer rationality on the one hand or workers' vocational "investments" on the other hand. Accordingly, we suggest how sex segregation is built into the hierarchy of organizational positions and is sustained by sex stereotypes and workplace social relations. The final section summarizes several major implications of our findings, identifying some priorities for future research on gender segregation.

#### IS ORGANIZATIONAL SEX SEGREGATION "EFFICIENT"? THE STATISTICAL DISCRIMINATION PERSPECTIVE

No doubt sex differences in labor supply account for some of the segregation we observe, even within mixed occupations. That is, sex-based work role specialization could exist, even within narrowly defined lines of work. For example, women bus drivers may choose employment with school districts because of the attractiveness of part-time work. Metropolitan and intercity bus lines may offer more lucrative compensation, but such benefits may not outweigh the disadvantage of longer hours to women burdened with child care and other household responsibilities. However, supply-side factors cannot fully account for the nearly complete segregation we document below. There is too much overlap between the sexes in the distribution of job-relevant skills and aptitudes for sex differences to account for near-complete segregation within and across organizations (Marini and Brinton 1984). Indeed, whatever sex differences in skills exist within representative samples of adults are likely to be much weaker among the select group of men and women in the same detailed occupation (Deaux 1985).

The model of statistical discrimination offers a compelling explanation for the existence of extreme segregation despite considerable overlap between the sexes in workers' attributes (Phelps 1972; Arrow 1973; Thurow 1975; Aigner and Cain 1977; Blau 1984). The model assumes employers perceive that *on average* the marginal productivity of men and of women differ for a given line of work. For example, within a specific occupation, women may be more likely to quit their jobs. If an employer incurs significant turnover costs due to the expense of finding and training new employees, the expected net contribution of the average female job appli-

cant is less than that of an otherwise comparable male applicant. The model also assumes that it is unduly costly to ascertain these differences among individual male and female job applicants. For example, employers may be unable to devise any procedure for screening individual applicants with respect to quit propensity or work commitment.

Given these assumptions, profit-maximizing employers will reserve jobs with high replacement costs for the group with the greater expected productivity. Group differences may in fact be small relative to variation within groups; there may be many female applicants with lower quit propensities and greater work commitment than the average male applicant. But if employers are unable to obtain this information for individual applicants, expected profits are maximized by segregating workers by sex. Females will be allocated to jobs with low turnover costs. Consequently, economically efficient behavior by employers who face uncertain information about applicants can lead to extreme sex segregation across and within organizations, corresponding to differences in the average expected net productivity of male and female job applicants. Even when women fill the same occupational roles as men, they are likely to be concentrated in less demanding jobs or firms, where the turnover costs are lower. Moreover, statistical discrimination produces inequities between men and women in wages and other career outcomes. Qualified, highly committed women obtain work assignments with lower pay and few opportunities for on-the-job investments in productivity-enhancing skills, which limits future wages as well. Conversely, men with weak work commitment are posited to receive the same favorable work assignments as the average male.

The model of statistical discrimination avoids invoking bias, prejudice, or "tastes" for discrimination, so long as employers' perceptions of group differences are accurate. In fact, economists argue that segregation would not persist if employers' beliefs were incorrect, since employers not sharing those beliefs would gain a competitive advantage by hiring women to perform tasks from which they are excluded in rival firms (Arrow 1973; Aigner and Cain 1977). However, empirical evidence on sex differences in turnover behavior is mixed. Recent studies show that quit rates are indeed higher overall for women than for men but that these differences disappear when worker, labor market, and job characteristics are controlled (Viscusi 1980; Blau and Kahn 1981; Osterman 1982; Haber, Lamas, and Green 1983; Shorey 1983). In other words, turnover behavior differs little among women and men with comparable human capital and job responsibilities.

We have highlighted explanations of segregation based on skill differences and rational employer responses to uncertainty for several reasons. First, as noted above, we have already documented near-complete segre-

gation at the level of job assignments within organizations (Bielby and Baron 1984), and the model of statistical discrimination purports to account for such findings. Second, that model is based largely on untested assumptions about the technical features of jobs and firms staffed by men versus women. Our data, based on detailed information about jobs in diverse organizations, are well suited for testing these assumptions. Third, alternative explanations of segregation emphasize subjective attitudes and intentions of employers and workers on the one hand and power relations among men and women on the other hand. Comparative information across organizations on those dimensions is difficult to obtain, and our data in these areas are qualitative and suggestive at best. Finally, the idea that workplace inequality reflects individual choices, technical demands, and optimal decision making figures prominently in economics, as well as in public opinion and social policy. It implies a particular set of remedies for gender inequality, namely, encouraging female workers to invest in certain vocational skills and providing accurate information to employers about the labor market behavior of men and women. The validity of such policies depends on whether there is empirical evidence of the optimality of existing arrangements.

In other words, many sociological and economic theories take for granted either the truth or falsity of the view that sex segregation arises from employers' satisficing behavior. However, we know of few studies that examine how consistent employers' hiring practices and staffing patterns are with the predictions of the statistical discrimination framework. Consequently, we develop hypotheses from that approach, examining the extent to which sex segregation within mixed occupations reflects: (a) differences (perceived or real) in the traits and abilities of female versus male workers and (b) differences in turnover costs confronting employers. Our analyses clearly do not represent a definitive "test" of rational accounts of segregation. They do, however, allow us to assess the extent to which workers and employers act *as if* those accounts are correct, based on the allocation of men and women within mixed occupations to specific establishments and job titles. The next section describes our data, hypotheses, and statistical model. We then present findings on the extent and determinants of sex segregation within and across organizations. First, we describe how occupation-level studies of segregation obscure the sexual division of labor by overlooking segregation within and across organizations, even within occupations that appear integrated. Then we report results from our statistical models that operationalize the efficiency accounts of segregation reviewed above. The concluding section considers alternatives to the efficiency-based account of sex segregation and suggests avenues for further research.

## DATA AND METHODS

Our data on the sex composition of mixed occupations were collected in 290 economic establishments in California between 1964 and 1979 by the California Occupational Analysis Field Center of the U.S. Employment Service.<sup>2</sup> This information is used primarily in preparing the *Dictionary of Occupational Titles* (hereafter, *DOT*). Over half the establishments are independent businesses; the rest are branches, regional divisions, subsidiaries, or production sites. Although the establishments do not constitute a probability sample from a distinct population, they reflect the diversity of California's work settings. Industries represented include agriculture, aircraft manufacturing, electronics manufacturing, banking, food processing, public utilities, eating and drinking places, hotels, and medical services (among many others). Manufacturing establishments are overrepresented, and major California industries not represented include construction trades, trucking, department stores, insurance carriers, and miscellaneous business services (see Baron 1982, chaps. 2, 3; Bielby and Baron 1984).<sup>3</sup> About 40,000 males and 11,000 females are employed in over 10,000 official job titles in the 290 establishments in our sample.

### Occupational Classification and Sex Segregation

Empirical assessments of sex segregation almost always measure differences in the occupational distributions of men and women. Occupations are collections of jobs involving similar activities across establishments, whereas a job consists of positions in an establishment in which workers perform the same activities (Reiss 1961, pp. 10–11; Miller et al. 1980, p. 216). Almost every job involves some tasks and skills that are not easily transferable across work settings, so occupational boundaries are never clear-cut. Most available data are coded to census three-digit occupational specifications, and that system has become the standard for segregation studies, largely by default.

However, the sex composition of an occupation conceals two patterns of segregation. First, a given line of work can be done exclusively by men in some organizational settings and by women in others. For example,

<sup>2</sup> Procedures for collecting these data are described in U.S. Department of Labor (1972), Miller et al. (1980), and Spenner (1980).

<sup>3</sup> The Employment Service changed its occupational classification system around 1964. Consequently, establishments studied before 1964, which were included in our earlier paper (Bielby and Baron 1984), are not analyzed here. Those establishments we have excluded are neither more nor less segregated than the ones analyzed in this article.

most restaurants employ either male waiters or female waitresses, but it is unusual to find both in the same enterprise. Such patterns presumably reflect differences among organizations in employment and reward practices, work arrangements, and labor supply, and these differences often contribute to very different career prospects for men and women in the same occupation. Second, men and women can do equivalent work within an organization but hold distinct job titles. For example, male “operatives” and female “assemblers” in separate departments of a manufacturing establishment may do virtually identical work, although their similar duties may not be reflected in their paychecks or statuses. In short, empirical research must attend to two distinct phenomena: segregation *among* organizations, arising from gender-based differentiation of occupational labor markets across enterprises, and segregation *within* organizations, sustained by a differentiation of positions held by men and women in the same setting. It is important to know how much our understanding of sex segregation is obscured by studies at different levels of occupational detail.

*Major occupational groups.*—Government agencies that monitor compliance with EEO regulations do collect data on the sex composition of jobs in specific enterprises. However, government monitoring efforts are based almost exclusively on measures of sex composition across highly aggregated occupational groups. The EEOC requires private employers to report employment in nine categories: officials and managers, professionals, technicians, sales workers, office and clerical workers, skilled craft workers, semiskilled operatives, unskilled laborers, and service workers (U.S. EEOC 1982). It is therefore of interest to determine how much gender segregation is obscured by the highly aggregated scheme used to monitor trends. Five of the nine EEOC categories can be readily reconstructed from the *DOT*, but it is sometimes difficult to distinguish professionals from technicians and semiskilled from unskilled laborers. Consequently, we collapsed those categories to obtain seven major groups. Males tend to be overrepresented in each of the two major groups we combined (U.S. EEOC 1977) and therefore our measures of segregation across seven major groups should be comparable with those computed from the nine-group EEOC classification scheme.

*Detailed occupational categories.*—Because the three-digit *DOT* classification scheme used by the Employment Service differs considerably from that of the Census Bureau (Cain and Treiman 1981), we have taken two steps to improve comparability. First, unlike the Census Bureau, the *DOT* does not distinguish between skilled craft workers and operatives in manual occupations. Consequently, we divided each three-digit *DOT* production classification into skilled and unskilled categories



on the basis of the *DOT* index of worker involvement with things.<sup>4</sup> Within a three-digit manual category, job titles having a rating of zero, one, or two (the three highest levels of technical complexity) constituted the skilled subcategory, and all others represented semiskilled or unskilled jobs.

Second, several three-digit *DOT* categories are based primarily on industrial distinctions. As a result, some *DOT* production classifications actually include both manual and nonmanual work; for instance, “miscellaneous transportation occupations, not elsewhere classified” includes both ticket agents and truck drivers. After examining six-digit production occupations in the third edition of the *DOT*, we discovered that titles having simple involvements with things (complexity ratings of three to seven) *and* moderate to high ratings on complexity with data (zero to four) are almost always nonmanual occupations. Therefore, manual and nonmanual subcategories of three-digit titles were constructed accordingly.<sup>5</sup> These two modifications of the *DOT* three-digit classification increased the number of detailed categories in our sample from 455 to 645. Since our scheme is more detailed than the Census Bureau three-digit taxonomy (which included about 450 categories in 1970), segregation levels computed across the more detailed categories will be somewhat higher as well.

The first set of empirical analyses we report assesses aggregation biases in occupational measures of segregation. We compute indices of segregation across: (a) the seven major occupational groups, (b) our 645 detailed occupational categories, and (c) establishment job titles. Our measure of segregation is the index of dissimilarity—the percentage of female (or male) workers that would have to be reclassified to equalize the distributions of work roles by sex (Duncan and Duncan 1955).

<sup>4</sup> The second three digits of the *DOT* code are the ratings of complexity of involvement with data, people, and things, respectively. High scores correspond to low levels of complexity, but we have inverted the scales in our statistical analyses so that high scores denote complexity (see Cain and Treiman 1981).

<sup>5</sup> Third-edition *DOT* ratings of data and things appear to undervalue the technical complexity of women's work. The “no significant relationship” classification (ratings of seven or eight on data and eight on things) was used more for jobs done by women than for comparable jobs done by men (Miller et al. 1980). This bias was eliminated in the fourth edition by dropping the “no significant relationship” classification. We have corrected the bias in third-edition ratings by truncating the data scale at six and the things scale at seven. The other *DOT* variables used in this study did not change appreciably between the third and fourth editions, and there is no evidence to suggest they are biased by sex (Miller et al. 1980, chap. 7).

## Sex Composition of Jobs in Mixed Occupations

The second set of analyses attempts to account for variation in the sex composition of jobs in “mixed” occupations. For our purposes, a detailed occupational category is “mixed” if males account for no less than 20% of employment (in our sample) and no more than 80%.<sup>6</sup> Of 645 detailed occupational categories, only 84 were mixed according to this criterion, accounting for 24% of employment in our 290 establishments.<sup>7</sup>

Since we are interested in the determinants of segregation across and within organizations, we partition the sex composition of a job into two components. We denote the percentage female in the  $i$ th job in occupation  $j$  within establishment  $k$  as  $p_{ijk}$ . Averaging over jobs in one establishment yields  $p_{jk}$  and over jobs and establishments gives  $p_{.j}$ . The sex composition of jobs within a given occupation can be partitioned into the sum of within- and between-establishment components:

$$(p_{ijk} - p_{.j}) = (p_{ijk} - p_{jk}) + (p_{jk} - p_{.j}).$$

Below we test hypotheses about characteristics of jobs and organizational context that explain why some establishments employ men while others employ women in the same mixed occupation. That is, we account for variation in the between-establishment component:  $(p_{jk} - p_{.j})$ . We also examine why a given establishment assigns men to some job classifications and women to others within the same detailed occupation. That is, we examine variation in the within-establishment component,  $(p_{ijk} - p_{jk})$ .

For example, over 2,000 workers in our sample are employed in the classification “packaging occupations,” and about 55% are women, giving the appearance of an integrated line of work. The workers are distributed across 106 establishments, and our analysis seeks to explain why some of those organizations employ mostly (or exclusively) male packagers while others rely on women. Twenty-eight of those establishments

<sup>6</sup> By including occupations with sex ratios no greater than four to one, we capture a diverse range of occupational roles while excluding lines of work clearly dominated by one sex (see Kanter 1977, p. 209).

<sup>7</sup> Four of the 84 occupations occurred in only one establishment and were excluded from our analysis. Of the 290 establishments, 24 employed no workers in mixed occupations. Over half (58%) the women in our sample were in mixed occupations. However, many of these women were in a few job titles in several very large manufacturing establishments (17% of the women in mixed occupations were concentrated in just five job titles). Consequently, these figures differ considerably from labor force statistics. Apart from employment in these organizations, our data were consistent with statistics that show women disproportionately represented in a small number of occupations that occur in diverse industrial settings (e.g., clerical, service, and light assembly work).

employ both male and female packagers but assign them distinct job titles. Therefore, our analyses also attempt to explain why within those organizations, male and female packagers are usually assigned distinct job titles.

#### Determinants of Sex Composition of Jobs in Mixed Occupations: Hypotheses and Operationalization

Table 1 lists attributes of organizations and jobs that are hypothesized to affect the sex composition of jobs in mixed occupations, according to the efficiency-based accounts of sex segregation outlined above. Collectively, these measures index the turnover costs, training requirements, and technical features of work roles that are assumed to influence staffing decisions by employers and employees. Although some are more direct measures of theoretically relevant dimensions than others, there is ample precedent in previous research for including each measure in table 1 in our statistical model. Descriptive statistics are reported in table 2.

*Organizational context.*—Large organizations typically have formal job ladders and other personnel procedures that facilitate on-the-job training and reduce turnover costs. Oi argues: “The initial fixed investments in recruiting and training employees are likely to be greater in large firms for two reasons. First, smaller firms with shorter, uncertain lives have less opportunity to capture the returns. Second, training yields higher returns when workers must be taught to conform with prescribed production methods. Large firms are thus provided with more incentives to design pay and personnel policies which can reduce labor turnover, thereby increasing the returns to firm-specific human capital” (1983, p. 150). Empirical results on the relationship between establishment size, job tenure, and personnel practices support Oi’s contention (Bielby and Baron 1983; Oi 1983; Barth, Cordes, and Haber 1984; Pfeffer and Cohen 1984; Wholey 1984). Consequently, the efficiency-based perspective suggests that within mixed occupations, women typically find employment in organizations operating on a smaller scale. We measure scale ( $z_1$ ) as the natural logarithm of total establishment employment.

Williamson (1981) argues that formal governance structures regulating the employment relationship are implemented to economize on the cost of turnover and job-specific training. Accordingly, we expect women in mixed occupations to be underrepresented in organizations covered by a union contract or formal job posting and bidding procedures. A binary variable ( $z_2$ ) denotes the presence of such arrangements.

When production technology creates interdependence among workers, they are less likely to be interchangeable and the costs of replacing workers who quit should be higher. Such interdependence is characteristic of

TABLE 1  
HYPOTHESIZED RELATIONSHIPS BETWEEN JOB CHARACTERISTICS, ORGANIZATIONAL  
CONTEXT, AND PERCENTAGE FEMALE IN JOBS IN MIXED OCCUPATIONS

Independent Variable	Description	Hypothesized Effect on % Female
Organizational context:		
$z_1$ .....	Organizational scale	—
$z_2$ .....	Formal governance structures	—
$z_3$ .....	Process technology	—
Job characteristics:		
$x_1$ .....	Specialization	—
$x_2$ .....	Training time	—
$x_3$ .....	Technical complexity	—
$x_4$ .....	Numerical skills	—
$x_5$ .....	Verbal skills	+
$x_6$ .....	Motor coordination	+
$x_7$ .....	Manual dexterity	—
$x_8$ .....	Finger dexterity	+
$x_9$ .....	Clerical perception	+
$x_{10}$ .....	Spatial skills	—
$x_{11}$ .....	Eye/hand/foot coordination	—
$x_{12}$ .....	Physical strength	—
$x_{13}$ .....	Varied duties	+
$x_{14}$ .....	Performance standards	+
$x_{15}$ .....	Repetitiveness	+
$x_{16}$ .....	Interpersonal skills	+
$x_{17}$ .....	Direction or planning skills	—

automated production processes (Blauner 1964; Woodward 1965). Our specification includes a binary variable ( $z_3$ ) denoting whether an establishment utilizes continuous process production techniques as its primary production technology. Within mixed occupations, we expect that women are underrepresented in establishments engaged in highly automated production.

*Job characteristics.*—We measure task specialization ( $x_1$ ) at the job level by the natural logarithm of the number of workers allocated to an establishment job title. Workers who monopolize an organizational position are likely to have specialized duties and responsibilities. If many people are assigned to a position, however, workers are more likely to be interchangeable and turnover costs should be lower. Consequently, we hypothesize that job-level specialization has a negative effect on female representation in jobs within mixed occupations.

The remaining 16 measures are ratings of job attributes from the *DOT* (U.S. Department of Labor 1972). For about 30% of the jobs in our

TABLE 2  
DESCRIPTIVE STATISTICS FOR ATTRIBUTES OF ESTABLISHMENTS AND JOBS IN MIXED OCCUPATIONS

Variable	Attribute	Metric	Mean	SD*
Attributes of 290 establishments:				
$z_1$ .....	Organizational scale	Log <sub>e</sub> employment <sup>o</sup>	3.68	1.56
$z_2$ .....	Union or bidding arrangements		.29	...
$z_3$ .....	Process technology		.11	...
Organizational sex composition (% female) ..	...	...	33	27
Attributes of 2,997 jobs:				
$x_1$ .....	Specialization <sup>†</sup>	Log <sub>e</sub> workers	.60	1.0
$x_2$ .....	Training time		4.4	2.1
$x_3$ .....	Complexity of involvement with things ( <i>DOT</i> rating) <sup>‡</sup>		5.8	1.9
$x_4$ .....	Numerical aptitude <sup>§</sup>		3.3	.9
$x_5$ .....	Verbal aptitude		3.2	.9
$x_6$ .....	Motor coordination aptitude		3.5	.6
$x_7$ .....	Manual dexterity aptitude		3.4	.6
$x_8$ .....	Finger dexterity aptitude		3.5	.6
$x_9$ .....	Clerical perception aptitude		3.4	1.0
$x_{10}$ .....	Spatial skills aptitude		3.0	.5
$x_{11}$ .....	Eye/hand/foot coordination aptitude		4.8	.4
$x_{12}$ .....	Physical strength, lifting $\geq$ 25 lbs.		.27	...
$x_{13}$ .....	Varied duties temperament		.23	...
$x_{14}$ .....	Performance standards temperament		.39	...
$x_{15}$ .....	Repetitiveness temperament		.56	...
$x_{16}$ .....	Dealing with people temperament		.32	...
$x_{17}$ .....	Direction, control, planning temperament		.21	...
Job sex composition (% female) .....	...	...	43	48

\*Not reported for dichotomous variables.  
<sup>†</sup>Low scores correspond to high specialization. Signs have been reversed on results computed below  
<sup>‡</sup>Low scores correspond to high complexity. Signs have been reversed on results reported below.  
<sup>§</sup>Low scores correspond to high skills on the eight aptitude measures. Signs have been reversed on results reported below.

sample, these ratings were obtained from Employment Service analysts' on-site evaluations. Detailed job analyses were not performed for the remaining jobs, and ratings were obtained from the published *Dictionary* based on the nine-digit *DOT* classifications assigned to jobs.<sup>8</sup>

Our single direct measure of training time ( $x_2$ ) is the *DOT* rating of specific vocational preparation (SVP). The scale ranges from one ("short demonstration only") to nine (over 10 years). The typical job in our sample from mixed occupations requires about six months' training, and we expect women to be overrepresented in jobs requiring little training.<sup>9</sup>

Technical complexity, like specialization, is assumed to be associated with higher training and turnover costs and therefore an underrepresentation of females. Our measure ( $x_3$ ) is the *DOT* rating of the job's complexity of involvement with things.

The next eight measures,  $x_4$  through  $x_{11}$ , are based on *DOT* ratings of job aptitudes, "the specific capacities or abilities required of an individual in order to facilitate the learning of some task or job duty" (U.S. Department of Labor 1972, p. 233). Each is measured on the following scale: (1) the top 10% of the working population, (2) the ninetieth to sixty-seventh percentile, (3) the middle third, (4) the thirty-third to tenth percentile, and (5) the bottom decile.

Previous research has documented small but significant differences between men and women on traits corresponding to these eight aptitude measures (Maccoby and Jacklin 1974; Marini and Brinton 1984), and hypothesized signs in table 1 correspond to the directions of those differences. That is, we expect men to dominate employment in jobs requiring numerical ability, manual dexterity, or spatial skills, but not verbal skills, motor coordination, finger dexterity, or clerical perception.<sup>10</sup> Since sex

<sup>8</sup> Both on-site and published *DOT* ratings were available for about 500 jobs. Correlations between *DOT* and on-site ratings for these jobs generally ranged from .7 to .8. Correlations of about .9 were obtained for training time; complexity of involvement with things; verbal aptitude; dealing with people; and the direction, control, and planning temperament. The lowest correlations between *DOT* and on-site ratings were for motor and eye/hand/foot coordination (about .4).

<sup>9</sup> This measure includes some training that is not firm specific and therefore may not perfectly index employers' incentives to reduce turnover. Among a sample of 1,750 jobs analyzed by the Employment Service for which estimates of general versus firm-specific training were available, the SVP measure correlated about .6 with a similar variable based on specific skills. We would argue, however, that employers have an incentive to retain highly trained workers, even when some of that training is not firm specific, because of the costs of disrupting stable work relations and of replacing such a worker.

<sup>10</sup> Clerical perception is the "ability to perceive pertinent detail in verbal or tabular material. To observe differences in copy, to proofread words and numbers, and to avoid perceptual errors in arithmetic computation" (U.S. Department of Labor 1972, p. 267).

differences across individuals are modest on these dimensions, however, male-female aptitude differences alone cannot explain extreme sex segregation across jobs; an efficiency-based account must also assume that employers statistically discriminate based on these aptitudes. For example, within a mixed line of work, it is difficult to explain why only women would choose to apply for jobs requiring finger dexterity, when many men also have the requisite skills.<sup>11</sup> However, if there is no reliable, less expensive method of measuring whether applicants can accurately manipulate small objects, employers are likely to reserve jobs requiring such tasks for women.

On average, men have greater upper-body strength than women. Strength is one of the few physical traits related to work roles for which nontrivial sex differences exist (Maccoby and Jacklin 1974; Marini and Brinton 1984). Our binary indicator ( $x_{12}$ ) is based on *DOT* ratings of the amount of lifting required on the job (U.S. Department of Labor 1972, pp. 325–27) and is coded one for jobs requiring lifting 25 pounds or more (zero otherwise).

Our last five measures of job characteristics are based on dichotomous *DOT* ratings of “temperaments,” defined as “the adaptability requirements made on the worker by specific types of job-worker situations” (U.S. Department of Labor 1972, p. 297). The varied duties temperament ( $x_{13}$ ) characterizes jobs requiring “adaptability to performing a variety of duties, often changing from one task to another of a different nature without loss of efficiency or composure” (U.S. Department of Labor 1972, pp. 309–10). Within mixed occupations, such jobs are likely to have lower turnover costs owing to lower firm- and job-specific skill content. Consequently, we expect women to be overrepresented in jobs coded one on this measure.

The performance standards temperament ( $x_{14}$ ) denotes “adaptability to situations requiring the precise attainment of set limits, tolerances, or standards” (U.S. Department of Labor 1972, pp. 308–9. It should characterize work that is sufficiently routinized that control is embodied in technical standards of performance (Edwards 1979). Since training and turnover costs should be lower, women should be overrepresented in jobs

<sup>11</sup> Supply-side differences in aptitudes can explain extreme sex segregation *within* mixed occupations only if sex differences in aptitudes are greater within detailed occupations than in the general adult population. For example, if women with an aptitude for tasks requiring finger dexterity self-select into an occupation and men without such skills also choose that line of work, perhaps a supply-side account could explain differential job assignments by sex within that line of work. Of course, we would then need to explain why men with the relevant skills avoided specializing in an occupation that utilizes those skills and why men without skills were attracted to the occupation.

characterized by this temperament. Similarly, within mixed occupations women should be concentrated in jobs requiring the repetitiveness temperament ( $x_{15}$ ): “adaptability to performing repetitive work, or continuously performing the same work, according to set procedures, sequence or pace” (U.S. Department of Labor 1972, p. 305).

Finally, we expect women to be overrepresented in jobs characterized by the interpersonal or “dealing with people” temperament ( $x_{16}$ ) and underrepresented in jobs requiring the direction, control, and planning of activities ( $x_{17}$ ). The former is assigned to jobs requiring cooperativeness, the ability to work in teams, and ease in working relations (U.S. Department of Labor 1972, p. 304), interpersonal traits often thought to be more characteristic of women than men (Marini and Brinton 1984). Conversely, the latter temperament corresponds to interpersonal traits more often attributed to men (Deaux 1985).

Our model attempts to represent efficiency-based accounts of sex segregation as accurately as possible, given the available data. Some variables included in our model, however, also apply to other perspectives on segregation. In some cases, other accounts suggest hypotheses about variables that are the opposite of those in table 1. For example, various organizational theories argue that larger organizations are more visible to and dependent on the state and are therefore more vulnerable to political pressures to provide employment opportunities for women and minorities (e.g., Salancik 1979). If so, women in mixed occupations should be overrepresented in large establishments, contrary to the hypothesis in table 1. In other instances, competing perspectives on segregation suggest effects similar to those hypothesized in table 1, but for different reasons. For example, male-dominated unions might make deliberate efforts on behalf of male workers to exclude women from more desirable jobs (Deaux and Ullman 1983);<sup>12</sup> we cannot distinguish that effect from the one hypothesized above for formal governance structures merely on the basis of our statistical model. We have opted to formulate a reasonably complete representation of one dominant approach to segregation, the efficiency-based account, rather than include weak measures from competing perspectives within a single statistical model. That is, we have taken the statistical discrimination perspective seriously and operationalized it as faithfully as possible. We rely on two kinds of evidence in evaluating how well that perspective explains sex segregation within mixed occupations: the estimates obtained from our statistical model and, in a later section

<sup>12</sup> On the contrary, unions and formal job bidding procedures might constrain employers' ability to use ascriptive criteria in job assignment and thus facilitate integration of work roles (Bridges 1982; Freeman and Medoff 1984; Roos and Reskin 1984).



of the article, qualitative information about employment practices in specific organizations.

### Statistical Model

We represent the determinants of percentage female in the  $i$ th job in occupation  $j$  within establishment  $k$  as:

$$p_{ijk} = a + \mathbf{b}_1' \mathbf{x}_{ijk} + \mathbf{b}_2' \mathbf{z}_k + u_j + e_{ijk}, \quad (1)$$

where  $\mathbf{x}_{ijk}$  is a vector of job attributes ( $x_1$  through  $x_{17}$  in tables 1 and 2) and  $\mathbf{z}_k$  includes establishment characteristics ( $z_1$  through  $z_3$  in tables 1 and 2). The term  $u_j$  represents all (unmeasured) occupational attributes that affect the sex composition of jobs in that line of work, and  $e_{ijk}$  is an orthogonal job-specific stochastic disturbance.

Averaging equation (1) across jobs in an establishment yields

$$p_{jk} = a + \mathbf{b}_1' \mathbf{x}_{jk} + \mathbf{b}_2' \mathbf{z}_k + u_j + e_{.jk}, \quad (2)$$

and averaging equation (2) across jobs in all establishments for the  $j$ th occupation gives

$$p_j = a + \mathbf{b}_1' \mathbf{x}_j + \mathbf{b}_2' \mathbf{z} + u_j + e_{j.}. \quad (3)$$

Subtracting equation (2) from (1) provides the equation estimated for the within-establishment analysis:

$$(p_{ijk} - p_{.jk}) = \mathbf{b}_1' (\mathbf{x}_{ijk} - \mathbf{x}_{.jk}) + (e_{ijk} - e_{.jk}). \quad (4)$$

Subtracting equation (3) from (2) gives the equation estimated in the between-establishment analyses:

$$(p_{.jk} - p_j) = \mathbf{b}_1' (\mathbf{x}_{.jk} - \mathbf{x}_j) + \mathbf{b}_2' (\mathbf{z}_k - \mathbf{z}) + (e_{.jk} - e_j). \quad (5)$$

OLS regression provides unbiased estimates of both equations (4) and (5). Furthermore, all occupational characteristics that affect the propensity to employ females have been differenced out of both equations and can be ignored (see Judge et al. 1980, pp. 325–43). In addition, all attributes that characterize establishments have been differenced out of equation (4) and can be ignored in the within-establishment analyses.<sup>13</sup> Equation (4) is

<sup>13</sup> Estimation by OLS is unbiased but not efficient, since the variance of the composite disturbance is a function of the number of jobs within an occupation in a given establishment ( $N_{jk}$ ). Consequently, the OLS estimates reproduced here are less precise than optimal GLS estimates, and significance levels should be interpreted with caution. However, since our analyses are based on thousands of observations, any effect that is substantively important should be statistically significant well beyond conven-

estimated for the 2,997 jobs employing 5,771 men and 6,311 women within 80 mixed occupational categories. To estimate equation (5), we aggregate across all specific jobs in an enterprise in a given mixed occupation. Doing that for every mixed occupation in each establishment yields the 1,385 observations (instances of mixed occupations in 266 establishments) used to estimate equation (5). Below, we report estimates of  $\mathbf{b}_1$ , the effects of job attributes, obtained from equation (4) and estimates of  $\mathbf{b}_2$ , the effects of establishment characteristics, from equation (5).<sup>14</sup>

Organizational scale and job specialization are entered in logarithmic form (base  $e$ ) in equations (1)–(5), since we assume that *proportionate* differences have equal effects on sex composition.

## RESULTS

### A Note on Segregation across Occupations and Jobs

Table 3 shows how occupational measures of sex segregation overstate the extent to which men and women share comparable work assignments. It compares segregation indices computed across major occupational groups, detailed occupations, and job titles. To equalize the distribution of men and women across the seven major groups listed in table 3, only 36.5% of female (or male) workers would have to be reclassified.<sup>15</sup> In contrast, over three-fourths of the women (or men) would require

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tional levels. Both OLS and GLS estimates of eq. (5) are biased to the extent that relevant variables are omitted from  $\mathbf{x}_{ijk}$  and  $\mathbf{z}_k$  in eq. (1), but estimates for eq. (4) are unaffected by omissions from  $\mathbf{z}_k$ . The OLS estimates reported here were computed from pairwise present correlations, since *DOT* ratings of aptitudes, temperaments, physical demands, and training time were missing for about 8% of the jobs in our sample.

<sup>14</sup> In fact, we have two estimates of the coefficients that make up  $\mathbf{b}_1$ , since  $\mathbf{b}_1$  appears on the right side of both eqq. (4) and (5). We ignore estimates of  $\mathbf{b}_1$  from eq. (5) for two reasons. First, those estimates can be biased because of omissions of relevant organizational variables in  $\mathbf{z}_k$ , whereas estimates from eq. (4) are immune from that specification error. Second, estimates of  $\mathbf{b}_1$  from the two equations will differ if there are nontrivial “contextual” effects of job attributes. We have no substantive rationale for hypothesizing contextual effects, so we do not interpret differences in the effect of  $\mathbf{x}_{ijk}$  as estimated from eqq. (4) and (5). Instead, we assume that any apparent contextual effects actually reflect omitted establishment characteristics in eq. (5).

<sup>15</sup> In comparison, the index for the same seven groups among California establishments that filed reports with EEOC in 1975 was 42.6 across all industries and 44.6 in manufacturing (U.S. EEOC 1977). Our sample includes some small establishments not covered by the EEOC, which are likely to be more segregated (Bielby and Baron 1984). Among establishments in our sample with at least 100 employees, the segregation index across major groups equaled 38.4. Note that this figure is smaller than that computed from EEOC data, so it seems unlikely that our sample is biased toward establishments and industries that are more segregated than average.

TABLE 3  
SEX SEGREGATION AMONG OCCUPATIONS AND JOB TITLES BY MAJOR OCCUPATIONAL GROUPS

MAJOR OCCUPATIONAL GROUP	No. OF WORKERS	% FEMALE	No. OF OCCUPATIONS	No. OF TITLES	Δ SEGREGATION ACROSS		
					3-Digit Occupations	Job Titles	
1. Professional and technical workers .....	3,597	50	59	1,035	70.7	94.4	
2. Managers and officials .....	2,879	19	20	1,602	48.4	86.0	
3. Skilled production workers ....	14,744	4	190	1,860	89.4	98.9	
4. Unskilled and semiskilled production workers .....	14,308	29	198	2,606	68.6	96.9	
5. Clerical workers .....	10,115	42	97	2,644	67.7	95.1	
6. Sales workers .....	1,805	18	33	169	85.1	93.3	
7. Service workers .....	3,390	20	48	609	73.7	96.1	
Total .....	50,838	21	645	10,525	75.1	96.3	

reclassification across the 645 detailed occupations (bottom row, table 3). This is slightly higher than the index values reported for 1970 census three-digit categories (England 1981). The difference is not surprising, since our classification scheme is more detailed, particularly among highly segregated manufacturing occupations.

At the level of establishment job titles, sex segregation is nearly complete. In our sample, over 96% of the women would have to be transferred to different job titles to equalize sex ratios.<sup>16</sup> Indeed, only 8% of the workers in our sample shared job titles with members of the opposite sex, and only 4% of the titles were mixed.

Nor is there much difference in job segregation across major occupational groups, despite modest differences at the level of detailed occupations (compare the last two cols. of table 3). Administrative work (managers and officials) seems modestly desegregated, but job-level segregation is uniformly high (indeed, almost complete) in six of the seven groups and only slightly lower among managers and officials. Men and women may share occupational designations in a few lines of work; but even then they almost always work in different organizations or hold different job titles within an establishment.

Table 4 demonstrates how assessments of segregation within establishments are affected by aggregation. A classification scheme similar to the one used by EEOC portrays 28% of the establishments as having segregation indices less than 40, and the same fraction has indices of 90 or above. Yet only a handful of enterprises were even modestly desegregated at the level of detailed occupations or establishment job titles.<sup>17</sup> Indeed, only 42% of the 290 establishments had *any* job titles to which both men and women were assigned. An overwhelming majority of the work settings were either completely sex segregated by job title or nearly so.

In sum, tables 3 and 4 demonstrate that occupational segregation in specific establishments is typically much higher than segregation computed from sex composition figures aggregated across establishments. Consequently, for many detailed occupations there appears to be disagreement across work settings about the sex label of specific occupational roles. Moreover, results reported in table 4 imply that even when an establishment employs both sexes in the same (detailed) line of work, men and women are usually assigned different official job titles. In the

<sup>16</sup> Although segregation is complete *by definition* for jobs with one incumbent, eliminating those jobs hardly affects the level of segregation. The segregation index computed among jobs with two or more workers is 95.9.

<sup>17</sup> In other analyses, we applied sampling weights to reproduce the size distribution of establishments within California industries and the distribution of establishments across industries. These reweightings had little effect on the statistics reported in table 4.

TABLE 4  
DISTRIBUTIONS OF ESTABLISHMENTS BY LEVELS OF SEGREGATION COMPUTED ACROSS MAJOR OCCUPATIONAL GROUPS, DETAILED OCCUPATIONS,  
AND JOB TITLES

SEGREGATION LEVEL	Δ ACROSS MAJOR GROUPS		Δ ACROSS OCCUPATIONS		Δ ACROSS JOB TITLES	
	No of Establishments	%	No of Establishments	%	No. of Establishments	%
Δ < 20 .....	23	8	3	1	1	0
20 ≤ Δ < 40 .....	59	20	7	2	5	2
40 ≤ Δ < 60 .....	61	21	23	8	7	2
60 ≤ Δ < 80 .....	37	13	57	20	24	8
80 ≤ Δ < 90 .....	29	10	33	11	22	8
90 ≤ Δ < 95 .....	19	7	20	7	17	6
95 ≤ Δ < 100 .....	15	5	33	11	45	16
Δ = 100 (mixed) .....	23	9	90	34	145	50
Δ = 100 (all male) .....	17	6	17	6	17	6
Δ = 100 (all female) .....	7	3	7	2	7	2
Total .....	290	100	290	100	290	100
Median .....	60.6		95.0		100	
Interquartile range .....	57.6		23.0		5.9	

next section, we examine whether patterns of sex composition between and within establishments are consistent with accounts linking segregation to optimal employer decision making.

### Segregation in Mixed Occupations: Statistical Models

All but 24 of the 290 establishments in our sample employed workers in at least one mixed occupation.<sup>18</sup> However, only 144 enterprises employed *both* men and women in mixed occupations. Roughly 12,000 workers in our sample (24%) were employed in seemingly mixed occupations, and over 4,000 of those were in organizations that did not hire members of the opposite sex in their line of work. Working in the same job classification with members of the opposite sex is even rarer. Of nearly 3,000 job titles in mixed occupations, only 215 were filled by both men and women. Just five establishments account for 85 (40%) of these mixed job titles.

In short, the majority of workers in our sample did *not* work in mixed occupations, and those that did were typically engaged in routine administrative tasks (e.g., bookkeepers, production clerks), production work (e.g., assemblers, packagers), or service jobs (e.g., hotel clerks, waiters, and waitresses). Workers in mixed occupations occasionally labored in settings where members of the opposite sex had similar roles, but men and women were rarely assigned the same job titles in the same enterprise. Thus, even when men and women are not segregated occupationally, they are often segregated organizationally.

Table 5 reports the effects of organizational and job characteristics on the gender composition (percentage female) of jobs in mixed occupations. The results modestly support the hypotheses we derived from efficiency-based explanations of sex segregation. All but three of the hypothesized effects are statistically significant; the strongest effects are associated with physical demands, training time, specialization, and finger dexterity. For example, consider two otherwise comparable jobs that differ on the binary variable denoting heavy lifting, that differ by one point on the finger dexterity aptitude, and that are a standard deviation apart on specialization and training time. The expected difference in percentage female is 68, with the job that is less specialized, requires less training, involves greater finger dexterity, and does not require heavy lifting likely to be allocated to women.

However, the statistical model specified in equation (1) is at odds with the empirical data in one important respect. The model assumes that job

<sup>18</sup> The 24 that do not employ workers in mixed occupations account for just 0.5% of total employment in our sample.

TABLE 5  
DETERMINANTS OF SEX COMPOSITION (% Female) OF WORK IN MIXED OCCUPATIONS,  
METRIC COEFFICIENTS FOR REGRESSION ( $N = 2,997$ )

Independent Variable	Description	Metric	Coefficient Estimate <sup>a</sup>
Organizational context:			
$z_1$ .....	Organizational scale	Log employment	-2.7**
$z_2$ .....	Union or bidding arrangements	0-1	-8.8**
$z_3$ .....	Process technology	0-1	-5.9**
Job characteristics:			
$x_1$ .....	Specialization	Log workers <sup>b</sup>	-6.5**
$x_2$ .....	Training time	1-7	-6.6**
$x_3$ .....	Complexity of involvement with things	0-7 <sup>c</sup>	-3.8**
$x_4$ .....	Numerical aptitude	1-5 <sup>d</sup>	-3.9*
$x_5$ .....	Verbal aptitude	1-5	7.3**
$x_6$ .....	Motor coordination aptitude	1-5	1.2
$x_7$ .....	Manual dexterity aptitude	1-5	-2.4
$x_8$ .....	Finger dexterity aptitude	1-5	13.3**
$x_9$ .....	Clerical perception aptitude	1-5	7.4**
$x_{10}$ .....	Spatial skills aptitude	1-5	-6.5**
$x_{11}$ .....	Eye/hand/foot coordination aptitude	1-5	-7.1**
$x_{12}$ .....	Physical strength, lifting $\geq 25$ lbs.	0-1	-34.2**
$x_{13}$ .....	Varied duties temperament	0-1	10.2**
$x_{14}$ .....	Performance standards temperament	0-1	5.7**
$x_{15}$ .....	Repetitiveness temperament	0-1	6.2**
$x_{16}$ .....	Dealing with people temperament	0-1	-14.3**
$x_{17}$ .....	Direction, control, planning temperament	0-1	1.0
		Between Establishments	Within Establishments
Variance explained:		$(p_{jk} - p_j)$	$(p_{ijk} - p_{jk})$
Adjusted $R^2$ .....	.142		.156
Standard error of estimate .....	34.5		25.0

<sup>a</sup> Estimated effects of organizational context are from the between-establishment equation, and estimated effects of job characteristics are from the within-establishment equation, see n. 13  
<sup>b</sup> Sign reversed so that high scores correspond to more specialized jobs  
<sup>c</sup> Sign reversed so that high scores correspond to more complex jobs.  
<sup>d</sup> Sign reversed so that high scores correspond to greater aptitude.  
\*  $P < .05$  (two-tailed test).  
\*\*  $P < .001$  (two-tailed test).

sex composition has a continuous distribution and varies in response to marginal changes in organizational and job characteristics. In effect, the model assumes that both the sex composition of the applicant pool and the propensity of employers to hire females in mixed occupations are distributed continuously. Given the distributions on the independent variables and the coefficient estimates reported in table 5, nearly two-thirds (63%) of the jobs in our sample are predicted to have between 20% and 80% females. However, only 6% actually did; 54% of the jobs in our sample from mixed occupations contained no women and 39% were 100% females.<sup>19</sup>

Thus men and women differ much more in their job assignments within mixed occupations than one would expect if segregation primarily reflects labor supply. That is, the women in our sample of mixed occupations have already eschewed “female” work roles; consequently, it seems unlikely that the vast majority of them would have *chosen* to be segregated from men, either by organizational setting or by virtue of their specific job classification. Nor does it seem very likely that their abilities and aptitudes would be sufficiently different from their male counterparts within the same work role to explain the pervasive sex segregation within mixed occupations. Instead, the sharp discontinuity in the distribution of sex composition among jobs suggests that statistical discrimination by employers on the demand side has a far greater impact on segregation within mixed occupations than do labor supply constraints. Suppose, for example, that employers rank jobs with respect to their appropriateness for female applicants based on their perceptions of requisite skills, training, and turnover costs. Then, using some type of mental discriminant function, they classify jobs into one cluster reserved for males and another reserved for females. Such behavior is consistent with the model of statistical discrimination and with the dichotomous distribution of gender composition observed in our job-level data.

To test this notion more adequately, we reformulated our statistical model to account for whether or not women were excluded from a given job. That is, we specify the gender mix of a job as a dichotomous (rather than continuous) outcome, affected by the same factors that we suggested above are weighed by employers. Accordingly, we respecified equation (1) as a logistic model:

$$O_{ijk} = \exp(a + \mathbf{b}_1' \mathbf{x}_{ijk} + \mathbf{b}_2' \mathbf{z}_k), \quad (6)$$

<sup>19</sup> Of course, jobs with one employee cannot be mixed. Among 1,323 jobs with two or more incumbents, only 12% are between 20% and 80% female, whereas 48% are exclusively male and 36% are exclusively female. Reestimating the model for those jobs yields results almost identical to those reported in table 5.



where  $O_{ijk}$  represents the conditional odds that women are excluded from the  $i$ th job in occupation  $j$  in establishment  $k$ . Estimates of logistic coefficients are reported in table 6, along with the net effect of each variable on the probability of female exclusion (Hanushek and Jackson 1977, p. 189). (Effects are evaluated with all independent variables set to their mean values.)

The coefficients are comparable in relative size with those reported in table 5. Women in mixed occupations are most likely to be excluded from job classifications that are specialized; require heavy lifting; do not require finger dexterity, verbal aptitude, or clerical perception; or have longer training requirements. Women are also more likely to be absent from jobs that involve variable tasks, spatial skills, eye/hand/foot coordination; that are in larger establishments; or that are in enterprises with unions or formal bidding arrangements.

The differences between tables 5 and 6 are informative. The predictive power of the model in table 5 was quite weak, since it attempted to locate jobs along a continuum of percentage female, when in fact most jobs had values of zero or 100. The model explained just 14% of the variance in sex composition of mixed occupations across establishments and only 16% of the variance in the sex composition of jobs within establishments.<sup>20</sup> In contrast, the logistic regression model in table 6 is remarkably successful in predicting whether or not women are excluded from a job, correctly classifying 82% of the 3,000 jobs.

In short, the statistical results suggest that employers do reserve some jobs for men and others for women, based on their knowledge of technical and organizational features of work and their perceptions (however accurate) of sex differences in skills and work orientations. Technical features of jobs in the same mixed occupation are similar in many respects, but they are not identical. Our findings indicate that small differences in job requirements get amplified into large differences in gender composition. In the organizations we examined, the propensity to hire females in a mixed line of work appears to be an all-or-nothing proposition. With few exceptions, a job was either inappropriate for women or appropriate only for women, regardless of the amount of overlap in the attributes of prospective male and female employees.

As we noted above, economists often *assume* that such employment practices are economically optimal and not based on bias or prejudice,

<sup>20</sup> The squared correlation between predicted and actual percentage female—an estimate of the proportion of variance explained by eq. (1)—is .34. Adjusted  $R^2$  statistics reported in table 3 pertain to the differenced equations, not to the original substantive specification in eq. (1). Consequently, those statistics do not reflect variance attributable to unobserved differences among occupations.

TABLE 6  
DETERMINANTS OF LIKELIHOOD THAT WOMEN ARE EXCLUDED FROM JOBS IN MIXED  
OCCUPATIONS, LOGISTIC REGRESSION COEFFICIENTS (N = 2,997)

Independent Variable	Description	Coefficient Estimate <sup>a</sup>	Effect on Probability <sup>b</sup>
Organizational context:			
$z_1$ . . . . .	Organizational scale	.20**	.05
$z_2$ . . . . .	Union or bidding arrangements	.59**	.14
$z_3$ . . . . .	Process technology	...	...
Job characteristics:			
$x_1$ . . . . .	Specialization <sup>c</sup>	.60**	.14
$x_2$ . . . . .	Training time	.29**	.07
$x_3$ . . . . .	Complexity of involvement with things	...	...
$x_4$ . . . . .	Numerical aptitude <sup>d</sup>	.33**	.08
$x_5$ . . . . .	Verbal aptitude	-.70**	-.17
$x_6$ . . . . .	Motor coordination aptitude	...	...
$x_7$ . . . . .	Manual dexterity aptitude	...	...
$x_8$ . . . . .	Finger dexterity aptitude	-1.13**	-.26
$x_9$ . . . . .	Clerical perception aptitude	-.58**	-.14
$x_{10}$ . . . . .	Spatial skill aptitude	.52**	.12
$x_{11}$ . . . . .	Eye/hand/foot coordination aptitude	.52**	.12
$x_{12}$ . . . . .	Physical strength, lifting $\geq 25$ lbs.	1.45**	.32
$x_{13}$ . . . . .	Varied duties temperament	-.27	-.07
$x_{14}$ . . . . .	Performance standards temperament	...	...
$x_{15}$ . . . . .	Repetitiveness temperament	-.39*	-.10
$x_{16}$ . . . . .	Dealing with people temperament	...	...
$x_{17}$ . . . . .	Direction, control, planning temperament	...	...

NOTE — Likelihood ratio  $\chi^2 = 1001.4$  with 22 df; 82% of cases correctly classified.

<sup>a</sup>Maximum likelihood estimate of linear net effect on log odds of exclusion. Three dots denote variables with insignificant effects in the full model and dropped from the final model.

<sup>b</sup>Net effect on probability of exclusion of a one-unit change in the independent variable, evaluated at the mean.

<sup>c</sup>Sign reversed so that high scores correspond to more specialized jobs.

<sup>d</sup>Signs reversed so that high scores correspond to greater aptitude.

\*  $P < .05$  (two-tailed test).

\*\*  $P < .001$  (two-tailed test).

even if those policies are disadvantageous to individual women or men. Our statistical model, however, does not test that assumption, and we are not prepared to accept it as axiomatic. Indeed, case materials on employment practices in specific organizations, which we examine next, lead us to question that assumption.

### Is Statistical Discrimination Efficient? Anecdotal Evidence regarding Employers' Staffing Decisions

Employers' practices regarding the placement of women in jobs requiring strenuous physical effort are particularly difficult to reconcile with an efficiency perspective on sex segregation. According to table 6, whether or not a job required lifting 25 pounds or more was one of the strongest predictors of the likelihood of excluding women from that job. Since an individual's ability to lift heavy objects seems neither difficult nor costly to measure, it should be possible to devise more efficient screening mechanisms for physically demanding jobs than totally excluding women who are in that line of work.

Policies such as those summarized in Appendix A provide the context for our statistical results and suggest alternative explanations for our findings. Appendix A lists the observations of some Employment Service analysts about employer policies toward female employment. This information is compiled from narrative reports for 153 of the 290 establishments in our sample.<sup>21</sup> Physical demands of work are mentioned in 41% of those reports, and Appendix A lists examples in which physical requirements figured explicitly or implicitly in employers' policies for assigning women to specific jobs.

The comments in Appendix A (and others we encountered like them) underscore the diversity of organizational and industrial contexts in which restrictions based on physical demands were invoked, such as finance, transportation, utilities, and recreation, as well as light and heavy manufacturing. Narratives for some establishments (e.g., the airline in App. A) mentioned state legal restrictions that, until struck down by the California Supreme Court in 1970, restricted women's lifting to 25 pounds. No doubt those restrictions provided the rationale for excluding women from heavy physical work in many other establishments as well. Nevertheless, our data contain numerous instances in which employer

<sup>21</sup> Procedures for preparing narrative reports are summarized in U.S. Department of Labor (1972, pp. 59–68). In summarizing an establishment's "hiring requirements and its method of placement," analysts are guided by the following questions regarding employment of women: "What openings for women are there in this establishment? What is the establishment's attitude toward their employment? Have jobs been restructured to facilitate their employment?" (p. 61).

policy cited heavy lifting as the reason for excluding women from specific jobs, although detailed job analyses revealed that those jobs required *no strenuous physical exertion* (see also Deaux and Ullman 1983). Thus, our statistical model understates the impact of such policies on sex segregation, since it assesses only the extent to which women were excluded from jobs that actually required lifting in excess of the (pre-1971) legal limit.

Since legal restrictions on lifting for women became unconstitutional after 1970, we would expect rational, profit-maximizing employers to cease using sex as an inefficient screen for that job requirement, instead filling physically demanding jobs with workers of either sex who could demonstrate the capability to perform the work. Indeed, policies restricting women's employment based on physical demands were mentioned less frequently in narrative reports after 1970. Although 45% of the 124 reports prepared between 1965 and 1970 mentioned such restrictions, only 24% of the 29 reports prepared between 1971 and 1979 did so.

However, if employer policy—as articulated to Employment Service analysts—changed after 1970, employer practices apparently did not. We added two binary terms to our logistic regression model to test whether the tendency to exclude women from jobs requiring heavy lifting declined after 1970. The first was coded one if the establishment was studied after 1970, and the second was an interaction term coded one if the job required lifting 25 pounds or more and was studied after 1970. If anything, however, women were *more* likely to be excluded from jobs requiring heavy lifting in establishments studied after 1970. The logistic coefficient for the main effect of physical demands (the effect for establishments studied before 1971) was 1.1, but the sum of main and interaction effects for physical demands (the effect for establishments studied after 1970) was 2.6.<sup>22</sup>

In short, strenuous physical effort appears to have justified excluding women from specific jobs for some time after the legal rationale disappeared. On the one hand, these results suggest that employers persisted in a practice for which they could be held liable under both state and federal civil rights legislation. On the other hand, staffing patterns observed in the 1970s partially reflect both job assignments made before the era of effective EEO enforcement and inertia in women's work preferences. For all these reasons, organizational practices endure long after the circumstances that warranted them have disappeared (Stinchcombe 1965).

Although women are typically excluded from work perceived as physically demanding, they are often given exclusive access to tasks viewed as

<sup>22</sup> Evaluated at the mean, the effect of physical demands on the probability of female exclusion is .24 for establishments studied between 1965 and 1970 and .40 for establishments studied since then.

routine and requiring attention to detail. Unlike the practices summarized in Appendix A, policies regarding employment of women in “detail” work have not been sanctioned by protective legislation and regulations. Nevertheless, as the examples in Appendix B show, an employer’s beliefs about the work habits and skills of women can become part of an organization’s personnel policy. A job in assembly or packaging may be labeled “men’s work” or “women’s work” depending on whether it is identified as physically demanding—and therefore suitable only for men—or routine and requiring attention to detail—and thus suitable only for women. For example, women worked as bottlers and packers in several of the pharmaceutical enterprises in our sample, whereas men did remarkably similar tasks in a brewery (where a union refers job applicants to the plant).

The labeling of “men’s work” and “women’s work” for similar tasks occurs within organizations as well. Table 7 reports staffing patterns in packing jobs for a pharmaceutical establishment. An Employment Service analyst classified each job into the same nine-digit *DOT* category of “packager, machine.” The establishment, however, recognized 10 distinct job classifications for the eight men and 85 women performing this occupational role, terming men “technicians” and women “operators.” An establishment that processes sugar, studied in 1972, had a staffing pattern for the same *DOT* category that was the mirror image of the one in table 7. Over 120 male packagers were distributed across 15 job titles, and 19 women were employed in three different job classifications. For both establishments, our original statistical model in table 5, based on measures of job requirements and organizational context, predicts that each job would have between 30% and 50% female incumbents. However, these jobs were actually fully segregated by sex, as were many others like them in our sample. In other words, the role of machine packager has some characteristics of traditionally “male” jobs, such as heavy lifting requirements, and of traditionally “female” jobs, such as repetitive tasks, low training requirements, low spatial skills, and modest finger dexterity. Thus, there appears to be no compelling technical rationale for attaching a specific sex label to each particular job, yet employers did so. Accounting for these gender distinctions among work roles requires going beyond efficiency perspectives on organizations and inequality, and we suggest some alternatives in the concluding section.

## DISCUSSION AND CONCLUSION

### Overview

Historian Joan Wallach Scott offers this description of 19th-century textile factories: “The specific jobs done by men and women varied from mill

TABLE 7  
STAFFING PATTERNS FOR PACKAGING JOBS IN SAME NINE-DIGIT DOT CLASSIFICATION:  
1968, PHARMACEUTICAL MANUFACTURING

Job Title	Men	Women
Senior aerosol technician .....	1	0
Aerosol technician .....	1	0
Floorlady .....	0	3
Senior aerosol operator .....	0	3
Aerosol operator (entry) .....	0	14
Senior packaging technician .....	2	0
Packaging technician .....	4	0
Floorlady .....	0	4
Senior packaging operator .....	0	20
Packaging operator (entry) .....	0	41

to mill, but the separation of male and female work was almost universal; in most mills many rooms were staffed entirely by women. Thus the separate realms of work for men and women remained undisturbed” (1982, pp. 171–72). Sex segregation appears just as pervasive within and across organizations in almost every line of work represented in our diverse sample of California establishments, even within seemingly integrated occupations. Work done by both men and women is often done in distinct organizational settings, and when enterprises employ both sexes in the same occupation, they typically assign them different job titles. Once established, sex labels of job titles acquire tremendous inertia, even when similar work is done by the opposite sex elsewhere in the same establishment or in other settings.

To be sure, differences in the allocation of men and women across occupational roles, whether by choice or by constraint, *do* account for much of the segregation we observe. For example, as recently as 1980, men outnumbered women by more than two to one in managerial occupations, whereas the ratio was about one to three in clerical work. Women still make up less than 3% of workers in the construction trades, whereas less than 4% of all registered nurses are men (U.S. Department of Commerce 1983). But as we have shown, there is considerable sex segregation within and across organizations, even within detailed occupational categories. This article focused on occupational roles that are filled by both men and women, allowing us to reduce the impact of vocational choice on segregation.

Within the mixed occupations in our sample, men tended to be employed in larger organizations and in establishments with unions or formal bidding arrangements. They also tended to monopolize specialized

jobs with more complex tasks and firm-specific training requirements. Physically demanding work was typically not performed by women, whereas tasks requiring finger dexterity were rarely done by men. The organizations in our sample utilized diverse technologies, drew from many different labor pools, and ranged from small family businesses to massive bureaucracies. Yet men and women were found in distinct job classifications in almost every setting, even when their roles were so similar that they belonged to the same detailed (nine-digit) occupational classification.

Our research has several important implications for studying the sexual division of labor. First, the aggregation biases we illustrate clearly underscore the limits of occupation-level analyses. Second, our finding of almost complete job-level segregation by sex, even within seemingly integrated occupations, suggests a structural basis for sex differences in promotion opportunities, occupational status, and earnings trajectories. Third, our regression results are consistent with models of statistical discrimination, but they are difficult to reconcile with the view that such decision making is rational or optimal. Our findings suggest two important directions for future research: analyses of the role played by employers' beliefs and perceptions and studies of the institutionalization of gender-biased employment practices. Finally, our research demonstrates the importance of attending to changes in job- and organization-level structures and processes in studying labor force trends. We discuss each of these issues briefly.

### Implications

*Reevaluating the results of research on occupations.*—Our findings point to several limitations of research that ignores intraoccupational patterns of sex segregation. First, trends in the sex composition of occupational categories mask how segregation develops between and within firms. Although aggregate statistics on occupational composition show a very modest trend toward gender integration (Snyder, Hayward, and Hudis 1978; England 1981; Beller 1982), this may partly reflect increased sex-based differentiation of *jobs* as men and women have become more similar occupationally. Our data from the late 1960s and early 1970s show that few work settings could have been more segregated at the job level. This suggests that as detailed occupations become mixed, intraoccupational segregation within and across work settings becomes more prevalent. Therefore, a more balanced sex mix in a given occupational category need not reflect increased equity of job opportunities in specific work settings. The appearance of increasing occupational integration between men and women may mask: (1) growth in female employment

confined to specific work settings, such as when driving school buses becomes “women’s work” while intercity bus driving remains “men’s work”; (2) increased employment of women in segregated job titles in organizations already utilizing male workers, as appears to be the case in some areas of data processing; or (3) transitory employment patterns as an occupation’s sex label changes from “men’s” to “women’s work” (e.g., telephone operator and bank teller early in the century).<sup>23</sup>

Second, using major occupational groups to monitor segregation, as EEOC does, seems virtually worthless. Biases in EEO-1 data have been documented by Smith and Welch (1984). They find that establishments that are covered by contract compliance regulations apparently have a broad view of what constitutes a managerial job when classifying women and minority workers. Moreover, these data are limited even when classification into major groups is done accurately. In our data, establishments that appeared integrated according to the major group classification were seldom desegregated by official job titles, which usually form the basis for workers’ duties, pay, promotion opportunities, and responsibilities. In short, what gets reported on an EEO-1 form may have little to do with differences in work experiences and outcomes by sex.

Third, in addition to aggregation biases, contemporary research efforts are limited because they restrict our understanding of the social organization of work. For example, in an imaginative analysis of occupational and industrial data, Bridges (1982) found that highly unionized industries have lower levels of occupational sex segregation. Our finding that unionized enterprises are *more* segregated by job titles (Bielby and Baron 1984) is not necessarily inconsistent with Bridges’s results. The proliferation of work rules, seniority systems, and detailed job hierarchies in unionized settings might facilitate the pattern we observe: employment of men and women in the same *occupation* but in distinct job titles (see Aronowitz 1973, p. 131; Deaux and Ullman 1983). In any event, reconciling the two sets of results demands attention to organizational arrangements. Work tasks, authority relations, personnel practices, and wage determination are largely designed and implemented at the organizational

<sup>23</sup> An extreme contemporary example is the occupational category “hucksters and peddlers.” It changed from being overwhelmingly male to predominantly female between 1950 and 1970 (Snyder et al. 1978; Blau and Hendricks 1979), but not necessarily because women took over the task of selling vacuum cleaners and encyclopedias door-to-door. A more likely explanation is that fewer salesmen are continuing their trade, becoming outnumbered by women selling cosmetics and kitchenware for such firms as Avon, Mary Kay, and Amway. Similarly, women are becoming pharmacists, but they are concentrated in organizational settings and job titles that provide lower wages than their male counterparts receive (Barbara F. Reskin, personal communication).



level. Nowhere is that more evident than in the way sex differences become incorporated into work arrangements.

*Segregation and job hierarchies.*—If jobs are almost perfectly segregated by sex, authority hierarchies and career ladders are likely to be segregated as well. Preliminary analyses of our data on job hierarchies show that women in positions of authority almost always supervised other women, though it is also common for women to be supervised by men. Women are much less likely to be in jobs with promotion opportunities, and career ladders are typically longer for men. The few jobs containing men and women are mostly in entry-level slots at the bottom of organizational hierarchies, and typically women's promotion opportunities diminish almost entirely after moving a step or two beyond entry level (Baron and Bielby 1984; Baron, Davis-Blake, and Bielby 1984).

Our data also provide numerous examples of men's apparent ability to circumvent formal promotion rules. In these cases, an entry-level position was monopolized by women, and that position was listed as requisite experience for promotion to the next level. However, all occupants of the next highest position were men. Employment Service analysts were sometimes quite explicit in conveying such inequalities:

"[MOLDING MECHANIC] workers [three males] are usually obtained from outside the plant. . . . Promotion from OPERATOR, MOLDING MACHINE [to MOLDING MECHANIC] within the company is not normal since these workers are all female" (Job analysis schedule 2909975, pen and pencil company, 1965). This recurrent pattern underscores the political aspect of credentials, skills, and experience (Collins 1979). Apparently, men can often substitute alternative qualifications for those required and obtained in the internal labor market, but women rarely enjoy this option.

Thus, job-level segregation affects the structure of organizational authority and promotion, with dramatic consequences for the careers of men and women. Indeed, our analyses are consistent with case study results that document "rank segregation" as the basis of gender inequalities in job rewards (Malkiel and Malkiel 1973; Grimm and Stern 1974; Halaby 1979; Cabral, Ferber, and Greene 1981; Rosenbaum 1983) and access to high-wage employers as an additional source of male advantage (Mennerick 1975; Blau 1977; Talbert and Bose 1977). Future research should examine how job structures were first implemented and subsequently institutionalized and whose interests are currently served.

*Limitations of efficiency-based accounts of segregation.*—It is difficult to reconcile our findings with supply-side accounts of sex segregation within mixed occupations. It is of course possible that a given female "invests" in becoming an assistant professor, but not an associate or full professor; or in becoming a training representative, but only in firms

where that job is done exclusively by women. However, such extensions of supply-side accounts of segregation require us to assume not only that women “disinvest” in certain general lines of work (occupations) but also that those who *do* pursue male or integrated work roles avoid certain specific titles and organizational settings.

Our findings are consistent with the model of statistical discrimination in one respect. Employers seem to reserve some jobs for men and others for women in a manner consistent with their perceptions of sex differences in skills, turnover costs, and work orientations. However, gender seems to be a very inefficient screen for attributes as easy to measure as physical strength and finger dexterity, and these job requirements had some of the strongest effects on the sex composition of jobs in our statistical models. In short, the end result—near-complete sex segregation across organizations and job titles in mixed occupations—may be consistent with the model of statistical discrimination, but there is considerable qualitative evidence that appears to undermine the notion that such decision making is optimal.

However, we do not mean to imply that employers are simply irrational, indulging their personal biases at the expense of profits. It is possible that employer actions are a rational response to the interests of male employees in excluding women from their job categories. For example, in Becker’s (1957) model, given “tastes for discrimination” among male employees, an employer must pay a wage premium to men in order to induce them to work in an integrated setting. Under such circumstances, labor costs are minimized by employing either men or women exclusively.

We cannot completely dismiss this explanation. The interests and attitudes of male employees almost certainly play a role in generating sex segregation. Given the diversity of organizational and technical arrangements represented in our sample, there is almost certainly variation across jobs and establishments in the desire and ability of male workers to exclude women. For instance, where production is highly interdependent, male workers may perceive the entry of women as particularly disruptive to stable work group relationships. Similarly, employers in competitive markets are least able to absorb the additional costs required to induce male employees to work alongside women. However, even within mixed occupations, we found that women were almost invariably segregated from men by job title or organizational context. Thus, at least some of the intraoccupational segregation that we observed probably does not reflect the exclusionary interests and actions of male coworkers. We hope that future theory and research will devote more attention to specifying when male workers might have both interests in promoting segregation and the means to realize those interests.

*Statistical discrimination as a self-fulfilling prophecy.*—Some economists maintain that statistical discrimination based on mistaken beliefs should not persist in a market economy. In contrast, social psychologists maintain that stereotypes are cognitive structures that are a normal part of one's perception of others, a shorthand invoked to conserve our limited information-processing resources (Ashmore and Del Boca 1981, 1985). Even employers must cope with bounded rationality (Simon 1972). If workers' performances are not exogenous but influenced by the social context of work (Roethlisberger and Dickson 1939; Hackman and Oldham 1980), employer beliefs and perceptions might actually elicit the very behaviors employers expect. That is, given their initial beliefs, however accurate, employers might assign females to routine tasks and dead-end jobs, in which a particular woman's actual skills remain invisible to the employer (Milgrom and Oster 1984). In response to such work conditions, rational women may exhibit higher turnover and lower work involvement, just as employers predicted. While some organizational research has shown the substantial impact of expectations on worker performance (Berlew and Hall 1966), the effect on subsequent employment policies and practices has to date been documented only in case studies (e.g., Kanter 1977).

Another reason that statistical discrimination might not vanish in a market economy is that individuals are more likely to attend to and retain information that confirms their stereotypes and to ignore information that does not fit expectations (Hamilton 1981). Employers are probably no exception. Such "expectancy confirmation sequences" have been documented repeatedly in laboratory experiments (for reviews, see Berger, Rosenholtz, and Zelditch 1980; Darley and Fazio 1980).

*The institutionalization of gender-based job assignments.*—Beliefs and perceptions alone cannot account for the extent to which segregated arrangements are built into the structure of work. We need to understand how sex-based job assignments become standard organizational procedure. For example, as noted above, laws against assigning women to heavy manual work rationalized segregation by job title until the early 1970s. Case materials from our data repeatedly cited the California labor code to justify excluding women from some jobs, but we found no evidence of changes in job assignments after the laws were repealed. Thus, understanding current personnel practices and staffing patterns requires studying a legacy of interests that coalesced throughout this century in support of protective legislation and learning how bureaucratic inertia, cultural stereotypes, and contemporary interests sustain practices that are now illegal.

Indeed, social histories of personnel practices in diverse lines of work, such as Tyack and Strober's (1981) study of the teaching profession, can

reveal how sex labels are assigned to jobs and formalized through organizational procedures. A promising line of inquiry would be to study new occupational specialties in rapidly growing fields to learn how definitions and sex labels of job titles emerge and are translated into organizational arrangements for personnel practices.

*Monitoring labor force changes.*—Our data do not capture very recent employment trends as employers have responded to EEO pressures and changing career aspirations. However, although gender segregation has certainly abated during the decade or so since our typical firm was studied, we should not overstate how much progress has occurred. Consider, for instance, the data summarized in table 8, describing the gender composition of jobs in the civil service personnel system of California at the end of 1984. These data are of particular interest because they almost certainly provide a lower boundary on the degree of job segregation in the private economy. The vigor with which EEO has been pursued in this state's public sector and the greater ability of agencies to pass along the costs of equality to customers (taxpayers) imply less job segregation than in the private sector as a whole.

According to table 8, job-level segregation is less extreme than in our sample but still pervasive. Even with the exclusion of the 798 jobs having one incumbent, 66% of the jobs (employing 17% of state workers) are perfectly segregated. Kanter (1977) and Pettigrew (1975) argue that the psychological and social effects of tokenism become manifested when a role or group has roughly 80% or more of its members in one category. According to that criterion, over 64% of the full-time employees in the state civil service system are in positions whose gender balance is severely skewed. Also, male workers employed by the state are about three times more likely than women to be in job classes with no members of the opposite sex, suggesting that there are considerably fewer women doing "men's work" than there are men doing "women's work."

Moreover, unpublished statistics supplied by the California State Personnel Board document numerous instances of the same forms of intraoccupational segregation encountered in our sample: sex-specific job titles within the same occupation and the segregation of women from men in mixed occupations across specific agencies or bureaus. In sum, notwithstanding recent changes in the sexual division of labor, the patterns documented in our research appear applicable to contemporary organizations.

In case after case, as EEO officials, corporate leaders, and reformers try to effect (or avoid) changes in traditional employment patterns, they encounter intransigent organizational structures and processes that sustain the patterns of sex segregation documented in this article. Our findings were consistent with the theory of statistical discrimination as applied to gender segregation, but they are difficult to reconcile with

TABLE 8  
GENDER COMPOSITION OF JOBS IN CALIFORNIA PERSONNEL SYSTEM, FULL-TIME  
WORKERS, JOBS WITH TWO OR MORE INCUMBENTS: DECEMBER 31, 1984

	% of Jobs		% of Full-Time Workers	
% female in job:				
100 . . . . .	29.5	(28.8)	6.9	(7.0)
90.0–99.9 . . . . .	2.6	(2.4)	11.9	(11.9)
80.0–89.9 . . . . .	3.2	(2.9)	6.0	(5.9)
70.0–79.9 . . . . .	2.6	(2.4)	5.3	(5.3)
60.0–69.9 . . . . .	3.3	(3.0)	10.1	(10.1)
50.0–59.9 . . . . .	6.6	(6.0)	5.2	(5.2)
40.0–49.9 . . . . .	1.9	(1.7)	3.0	(2.9)
30.0–39.9 . . . . .	3.6	(3.3)	4.3	(4.2)
20.0–29.9 . . . . .	4.5	(4.1)	8.0	(7.9)
10.0–19.9 . . . . .	3.4	(3.1)	12.4	(12.3)
.1– 9.9 . . . . .	2.2	(2.0)	17.1	(17.0)
0 . . . . .	36.5	(40.3)	9.9	(10.3)
N . . . . .	8,159	(8,957)	121,962	(122,760)
Gender mix:				
No workers of opposite sex . .	66.0	(69.1)	16.8	(17.3)
< 10% workers of one sex . . .	70.8	(73.5)	45.8	(46.2)
< 20% workers of one sex . . .	77.4	(79.5)	64.2	(64.4)
< 30% workers of one sex . . .	84.5	(86.0)	77.5	(77.6)
< 40% workers of one sex . . .	91.4	(92.3)	91.9	(91.9)

NOTE.—When the same job class occurred in multiple agencies, each occurrence was treated as a separate job in the table. Figures in parentheses include the 798 job classifications having one incumbent each (632 men, 166 women).

explanations emphasizing optimal employer decision making under uncertainty. Instead, we have suggested some features of organizations and their environments that foster and sustain the sexual division of labor. Researchers studying workplace inequalities should be examining these features directly. Ignoring them is likely to hinder both social science and social policy.

APPENDIX A

Policies regarding Employment of Women in Physically Demanding Jobs

The job of *UTILITY WORKER, FEMALE* could be considered a dead-end job. Women are restricted to that title due to physical demands and working conditions (1964, brick and tile manufacturing).

The employment of women is primarily confined to the home econom-

ics and clerical classifications because of the physical nature of other jobs (1964, natural gas utility).

Employment opportunities for women are limited in the production sections due to the physical requirements of many of the jobs (1971, felt goods manufacturing).

The nature of the work (medium to very heavy) does not lend itself to employment in production of either women or the handicapped, although these people are hired for office positions (1973, wire manufacturing).

Normally they [women] are excluded from jobs requiring heavy physical exertion such as *DRIVER*, *PUTPOST INSTRUCTOR*, and *SWIMMING INSTRUCTOR*. They are specified for the job of *ARTS AND CRAFTS INSTRUCTOR* (1965, coeducational summer camp).

Women are hired for office work classifications in all divisions. Women are also hired exclusively to fill *HOSTESS*, hostess supervisory, and training and cabin cleaning positions. They are preferred applicants for positions in reservations and counter sales. They are generally excluded from the passenger service counter, cargo service, and terminal operations because of the physical labor involved. Women are not hired as maintenance or flight crew personnel primarily because those jobs have been traditionally filled by men and because workers are often required to lift or carry objects in excess of the 25 pound limit set by state law for women (1964, commercial airline).

Males are hired as *FLOOR REPORTERS* and females as *CLERKS*, *GENERAL*. Both entry jobs are on the trading floor. *FLOOR REPORTERS* stand and walk constantly and *CLERKS*, *GENERAL* stand and walk about 50% of the time. . . . According to a stock exchange executive, the *FLOOR REPORTER* classification is a "training ground" for young men starting a career in the securities business (1968, securities exchange).

Women are hired in clerical occupations and in other plant areas where the physical requirements of the tasks involved do not preclude it (1968, pharmaceutical manufacturing).

SOURCE.—Narrative reports prepared by U.S. Employment Service Analysts for selected establishments.

## APPENDIX B

### Policies regarding Employment of Women in "Detail" Work

Female employees perform work of repetitive nature under exacting standards and must possess the temperament for confining work at one station (1970, ordnance manufacturing).

Women are used almost exclusively in Packing and Carton Departments where the work is somewhat routine. The work requires consider-

able standing and walking, and demands a high degree of finger dexterity, close attention to details, and near acuity of color vision (1969, bottle manufacturing).

Women perform all of the assembly operations, since the work is light and merely requires good hand and finger dexterity and a willingness to perform monotonous work (1965, wooden box manufacturing).

The work force of this establishment is predominantly female, as the employer feels they are best suited to this type of work (1967, jewelry manufacturing).

When hiring new employees the company favors older women because of increased stability and favorable attitudes toward job responsibility. Women are employed for practically all production jobs (1970, electronics manufacturing).

Only women are hired for packing and inspection duties, because various aptitude tests indicate that women are more manually adept at this type of work. However, according to the employer, in company plants in other countries throughout the world, the reverse has been found (1966, chewing gum production).

SOURCE.—Narrative reports prepared by U.S. Employment Service Analysts for selected establishments.

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