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AUTHOR Briggs, Norma L.
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ABSTRACT

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WOMEN AND THE SKILLED TRADES

written by

Norma L. Briggs
Wisconsin State Department of
Industry, Labor and Human Relations

The ERIC Clearinghouse on Adult, Career, and Vocational Education
The National Center for Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio

1978

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FOREWORD

The Educational Resources Information Center on Adult, Career, and Vocational Education (ERIC/AGVE) is one of sixteen clearinghouses in a nationwide information system that is funded by the National Institute of Education. One of the functions of the Clearinghouse is to interpret the literature that is entered in the ERIC data base. This paper should be of particular interest to curriculum developers, adult education directors and teachers, and apprenticeship training personnel.

The profession is indebted to Norma L. Briggs for her scholarship in the preparation of this paper. Recognition also is due Michele Zak, Kent State University, Carol Fought, Columbus Technical Institute and Lucy Thrane, The National Center for Research in Vocational Education, for their critical review of the manuscript prior to its final revision and publication. Robert D. Bhaerman, Assistant Director for Career Education at the ERIC Clearinghouse on Adult, Career, and Vocational Education, supervised the publication's development. Cathy Thompson assisted in the editing of the manuscript, Ruth Gordon of The National Center for Research in Vocational Education conducted the computer search, and Millie Dunning typed the final draft.

Robert E. Taylor
Executive Director
The National Center for Research
in Vocational Education

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INTRODUCTION

The purpose of this paper is to review the available research relating to the education and training of women for and their participation in the skilled trades. It is hoped that it will be of use to people concerned with employment and training for employment. These include vocational teachers, especially those in the trade and industrial area, placement officers, counselors, staff, and planners in government-sponsored employment and training programs.

Skilled trades, by dictionary definition, are occupations requiring technical training and expertise in manual or mechanical tasks. They are distinguishable from *professions* which require not only technical expertise but also both the knowledge of principles underlying the techniques and the dedication to continued study.

The Census Bureau groups forty-three skilled trades areas in its system of occupational and industry classifications under the title "craft and kindred workers." Much of the literature available has reference to this grouping. However, by definition, apprenticeship is a form of training leading to competence in a skilled trade. The U.S. Bureau of Apprenticeship and Training (1976) defined apprenticeship in terms of training in occupations that require a wide and diverse range of skills and knowledge--as well as maturity and independence of judgment. It lists ninety-four trade classifications and recognized more than 400 skilled occupations (BAT trade classifications are listed in the Appendix). Nevertheless, some apprenticeable trades sharing all the characteristics of craft and kindred occupations are not included in that census grouping. These include asbestos worker, barber and cosmetician, butcher, cook, drafter, and firefighter.

The skilled trades share several characteristics. Once learned, the skills of a trade are relatively easily transferable from one employer

to another. Most, if not all, of these occupations offer workers high degrees of autonomy, responsibility, decision-making opportunity, and the ability to control the development of a process or product without constant supervision. Most of the old craft occupations have long been unionized. Most strikingly, formal academic preparation usually consists of little more than a high-school education or its equivalent. In the apprenticeable trades, post-high school formal education is limited to courses of "related" instruction. They are related, that is, to the occupation in question. These courses are undertaken in a postsecondary, vocational-technical college, by correspondence, or under the employer's auspices, and do not lead to a degree or diploma or take more than one-tenth of the apprentice's working week. In some instances, a one or two-year sequence in a technical high school or postsecondary, vocational-technical college serves as a qualifier for apprenticeship or on-the-job training.

The apprenticeship itself will be a period of from one to five years in which planned, day-by-day, on-the-job training and experience under proper supervision is combined with technical studies in subjects related to the area. (This is a summary description of the U.S. Department of Labor, Bureau of Apprenticeship and Training, 1976.) The Bureau sets standards for apprenticeship programs. Standards for each major trade area are available from the Bureau or from local offices. Some have been included in the ERIC data base. In order to be recognized as apprenticeable by the Bureau, an occupation: (1) is learned through experience and training on the job, supplemented by related technical instruction, (2) involves manual, mechanical or technical skills and knowledge, requiring a minimum of 2,000 hours of work experience plus related instruction, (3) is practiced industry-wide as an identifiable and distinct trade, (4) involves the development of skills broad enough to be applicable throughout an industry, and (5) does not fall primarily into any one of the following categories: selling, managerial, clerical, or professional. The latter includes professional, scientific and learned fields requiring specialized, advanced knowledge and academic degrees.

The great majority of the skilled trades are apprenticeable. However, some skilled occupations classified by the Census Bureau as craft and kindred occupations are not prepared for through government registered apprenticeships. Several examples are carpet installer, inspectors (log and lumber, railroads and railway express service), roofer, electric power and telephone line installer and repairer. For these occupations the employer usually provides a formal or semi-formal on-the-job training sequence, sometimes complemented by classroom instruction in related theory.

Most of the traditional crafts have been "male" occupations since medieval times. Almost all of the apprenticeable skilled trades and those categorized by the Census Bureau as craft and kindred occupations were still disproportionately male in both 1960 and 1970. For either date, women, had they been randomly distributed throughout all occupations, would have formed the same proportion of workers in each occupation as they formed of the total labor force, that is, in 1960 thirty-three percent and in 1970, thirty-eight percent. In either year an occupation may be said to be disproportionately male if the ratio of the actual percentage of women in it compared to the expected "random" percentage is less than 0.9; it is disproportionately female if the ratio exceeds 1.1. On this basis all of the occupations listed in Table 1 below were disproportionately male in 1960 except for bookbinders and decorators and windowdressers. A severe decline in total employment in the fur trade in that decade, accompanied by an apparently disproportionately high layoff of women workers, meant that this trade in 1970 was a disproportionately male occupation.

During the early years of the twentieth century there developed a considerable body of literature on working women. This included numerous studies of women in industrial and manufacturing occupations. In the last fifty years, however, little scholarly attention has been paid to women in blue-collar trades of any kind. The literature on women in the skilled trades is not extensive. A bibliography on working women by Bickner (1974) contained over 600 entries; however, it contained only seven entries on women in the semi-skilled and unskilled trades. Of these, only one had any bearing on women in the skilled trades as that term is conceived here. This is compared with twenty-two entries on women in the professions, twenty-two on women in academia, eleven on women in management, and thirteen on women in public employment. Of the seven, one is concerned with part-time opportunities in several areas of employment, five are concerned with women in paid domestic work, and one, as we indicated, is relevant to our analysis.

Other reviews presented a similar pattern. A review by Kohne and others (1975) of theoretical and empirical literature on sex differentiation in the labor market included only four items on women in the skilled trades. A three-part bibliography dealing in part with discrimination occurring in traditionally male occupations by Hughes (1970-1972) included only professional occupations under that heading. Two Department of Health, Education and Welfare bibliographies on women in non-traditional female occupations also reported no scholarly work on women in the skilled trades (Tack and Ashford, 1975; Koba Associates, Inc., 1976).

Table 1. Women Employed in the Skilled Trades, By Detailed Trade, 1960 and 1970

Trade [a]	Number of women employed			Women as percent of total	
	1960[b]	1970	Change, 1960-70	1960	1970
Total	277,140	494,871	217,731	3.1	5.0
Automobile accessories installers		297	297		4.4
Bakers	20,283	32,665	12,382	18.0	29.8
Blacksmiths	101	249	148	.5	2.4
Blue-collar worker supervisor, n.e.c.	77,728	127,751	50,023	7.2	8.0
Construction	206	1,608	1,402	.2	1.1
Durable manufacturing	14,724	25,539	10,815	4.1	4.6
Nondurable manufacturing, including not specified	40,882	52,193	11,311	13.9	14.4
Transportation, communications, and other public utilities	2,480	5,676	3,196	1.2	3.7
All other industries	19,436	42,735	23,299	9.1	11.8
Boilermakers	41	371	330	.2	1.3
Bookbinders	16,513	19,461	2,948	57.9	57.1
Brickmasons and stonemasons	722	2,049	1,327	.5	1.3
Bulldozer operators		1,151	1,151		1.3
Cabinetmakers	891	3,429	2,538	1.3	5.1
Carpenters	3,312	11,059	7,747	.4	1.3
Carpet installers		754	754		1.7
Cement and concrete finishers	103	908	808	.2	1.4
Compositors and typesetters	15,494	23,962	8,468	8.2	15.0
Crane, derrick, and hoist operators	656	1,952	1,296	.5	1.3
Decorators and window dressers	23,566	40,408	16,852	46.3	57.6
Dental lab. technicians	641	6,057	5,416	4.3	22.7

Trade [a]	Number of women employed			Women as percent of total	
	1960[b]	1970	Change, 1960-70	1960	1970
Electricians	2,483	8,646	6,163	.7	1.8
Electric power and cable installers	1,648	1,457	-191	2.1	1.4
Electrotypers and stereotypers	72	283	211	.8	4.0
Engravers, except photoengravers	1,948	2,333	385	17.3	26.6
Excavating, grading, road machine operators except bulldozer operaters	688	2,513	1,825	.4	1.1
Floor layers, except tile setters	882	364	-518	4.9	1.7
Forge and hammer operators	769	724	-45	6.4	4.7
Furniture and wood finishers	768	3,600	2,832	3.5	16.9
Furriers	1,936	461	[c]-1,475	40.4	17.3
Glaziers	227	783	556	1.3	3.1
Heat treaters, annealers, and temperers	293	598	305	1.4	2.9
Inspectors, scalers, and graders, log and lumber	798	1,877	1,079	3.9	11.0
Inspectors, n.e.c.	5,670	8,855	3,195	5.8	7.5
Construction	100	334	234	.7	1.5
Railroads and railway express service	76	247	171	.3	1.0
Jewelers and watchmakers	2,239	4,285	2,046	6.0	11.5
Job and die setters, metal	322	2,221	1,899	.6	2.6
Locomotive engineers	85	396	311	.1	.8
Locomotive firemen	104	151	47	.3	1.2
Machinists	6,685	11,787	5,102	1.3	3.1
Mechanics and repairers	18,329	49,349	31,020	.9	2.0
Air conditioning, heating and refrigeration	125	1,065	940	.2	.9
Aircraft	1,668	4,013	2,345	1.5	2.9

Trade [a]	Number of women employed			Women as percent of total	
	1960[b]	1970	Change, 1960-70	1960	1970
Automobile body repairers		1,332	1,332		1.2
Automobile mechanics	2,270	11,130	8,860	.4	1.4
Data processing machine repairers		864	864		2.7
Farm implement		410	420		1.2
Heavy equipment mechanics including diesel	3,345	10,768	7,423	1.2	1.8
Household appliance and accessory installers and mechanics		2,550	2,550		2.1
Loom fixers	208	437	229	.9	2.1
Office machine	279	688	409	.9	1.7
Radio and television	1,688	5,032	3,344	1.7	3.7
Railroad and car shop	332	510	178	.6	.9
Other	8,414	10,540	2,126	1.2	4.2
Millers, grain, flour, and feed	64	161	97	.7	2.3
Millwrights	80	903	823	.1	1.2
Molders, metal	1,452	5,757	4,305	2.9	10.6
Motion picture projectionists	390	670	280	2.2	4.2
Opticians and lens grinders and polishers	3,045	6,121	3,076	15.0	22.3
Painters, construction and maintenance	6,449	13,386	6,937	1.9	4.1
Paperhangers	1,455	1,111	[c]-344	6.0	10.8
Pattern and model makers, except paper	647	1,858	1,211	1.6	4.8
Photoengravers and lithographers	2,847	3,851	1,004	10.4	11.8
Piano and organ tuners and repairers	153	330	177	2.5	4.8
Plasterers	158	435	277	.3	1.5
Plumbers and pipe fitters	952	4,110	3,158	.3	1.1
Power station operators	1,375	557	[c]-818	5.1	3.0
Printing press operators	4,848	13,374	8,526	5.8	3.5
Rollers and finishers, metal	802	1,264	452	4.2	6.4
Roofers and slaters	107	749	642	.2	1.3

Trade [a]	Number of women employed			Women as percent of total	
	1960[b]	1970	Change, 1960-70	1960	1970
Sheetmetal workers and tinsmiths	1,530	2,902	1,372	1.1	1.9
Shipfitters		123	123		1.2
Shoe repairers	2,759	6,359	3,600	6.7	20.3
Sign painters and letterers	1,285	1,614	323	4.6	8.5
Stationary engineers	1,563	2,472	909	.5	1.4
Stone cutters and stone carvers	132	445	313	2.0	7.0
Structural metal workers	909	883	-26	1.5	1.2
Tailors	21,728	21,265	[c]-463	26.5	31.4
Telephone installers and repairers	3,018	8,289	5,271	2.0	3.5
Telephone line installers and repairers	824	762	-62	2.0	1.5
Tile setters		378	378		1.2
Tool and die makers	1,128	4,197	3,069	.6	2.1
Upholsterers	5,668	9,980	4,312	9.4	16.0
Craft and kindred workers, n.e.c.	5,777	7,339	1,562	6.7	8.5

a Some of the occupational titles that appear in this table and elsewhere in the article are recent modifications of older titles which denoted or connoted sex stereotyping. The new titles were accomplished by a subcommittee of the Interagency Committee on Occupation Classification, under the auspices of the Office of Management and Budget. (See "Removal of Sex Stereotyping in Census Occupational Classification." Monthly Labor Review, January 1974, pp. 67068)

b Adjusted to 1979 occupation classifications. See John A. Priebe, Joan Heinkel, and Stanley Green, 1970 Occupation and Industry Classification Systems in Terms of Their 1960 Occupation and Industry Elements, Technical Paper 26 (Bureau of the Census, 1972).

c Also showed a decline in total employment.

SOURCE: 1970 Census of Population, Detailed Characteristics, U.S. Summary, Final Report PC(1)-D1 (Bureau of the Census), table 221.

This writer is not alone in concluding that scholarly output on women in the skilled trades is meager. This finding is shared by Walshak (1975) who also reported a lack of theoretical and empirical studies in her description of research in progress on women in blue-collar occupations.

The most likely explanation for this dearth of research is no doubt the fact that by custom the skilled trades were expected to be and were, in fact, "male" occupations. It is only recently that people have started to notice occupational sex segregation, to ask why it has come about, what are its effects, and how one can modify this situation. It only has been since 1970, when the Women in Wisconsin Apprenticeships Project was funded, that a growing number of people have been asking the question why a woman should not be allowed to train for and practice a skilled trade if she so desires. Only when questions such as this are raised will the subject be studied in earnest. For the time being the analysis of research must be speculative and somewhat anecdotal.

In the past five years there has been a flurry of popular newspaper and magazine articles describing individual women performing traditionally male blue-collar skilled jobs. Some typical titles are: "Factory Girl," "Plumber's Here and He's a Women," "The Return of Rosie," "Look Who's Wearing Lipstick," "How to Get a Blue Collar," and "Hardhatted Women in Construction." Their sources vary from *Ms.* to the *Wall Street Journal, Redbook, Women: a Journal of Liberation, Worklife* (U.S. Department of Labor) and *Off Our Backs*. Articles appearing in *Worklife* and its predecessor, *Manpower*, are useful not so much for the information they convey about women in the skilled trades but for their demonstration, by the use of success stories and photographs, of credible role models. These articles are particularly useful to counterbalance the often stereotyped occupational literature available to vocational guidance counselors. Such pieces popularize the issue and generate hypotheses that must be put forward. To mount a full scale research effort, however, there must be a significant population to be studied.

Unless women markedly reduce their pressure to force barriers aside and enter occupations previously closed to them and unless government policies change, there probably will be a great increase in the numbers of women in the skilled trades within the next ten years and, hence, increased research activity.

REVIEW OF THE LITERATURE

WOMEN'S POSITION IN THE SKILLED TRADES

The single overview of women in the skilled trades is contained in an article by Hedges, an economist in the Bureau of Labor Statistics, and Bemis, a psychologist in the Office of Federal Contract Compliance. Hedges and Bemis (1974) compared changes in rates of participation by women in selected occupations and in the total labor force in 1960 and 1970 (see Table 2). Between those years, the participation of women in the total labor force increased by thirty-eight percent and in the craft and kindred occupations by seventy-six percent. This rate of increase was far in excess of other occupational classifications. Hedges and Bemis (1974) also detailed the numbers of women employed in each trade in 1960 and 1970 (see Table 1). They attributed the increase in women's participation in the skilled trades to several factors, namely, social, legal, economic, and psychological. Socially, they indicated that the demarcation between men's and women's activities in the home had already shown signs of weakening under the long-term employment of many wives. On the legal issue, they noted Title VII of the Civil Rights Act of 1964 upon which were based a number of federal regulations prohibiting sex discrimination in employment. Economically, they indicated that skilled trades offered women higher pay. Psychologically, they noted that the skilled trades offered more satisfying work than many occupations traditionally open to women with a high school education. The authors optimistically concluded:

> Theoretically, given the similarity of aptitudes among men and women, the only limits to an equal division of jobs in the skilled trades are the ratio of men to women in the labor force and the physical requirements of some trades. The importance of the latter will decline with increasing mechanization. (p. 21)

The statistics on increasing participation by women in the skilled trades should, however, be considered together with other census data. Hedges (1970) noted, for example, that the actual changes in women's participation in major occupational groups deviated substantially from those that might have been expected on the basis of the increase in women's participation in the total labor force. Between 1960 and 1969, using Hedges' measure of theoretical growth, that is,

Table 2. Employment of Women in Major Occupational Groups, 1960 and 1970

(Numbers in thousands)

Occupation	1960		1970		Change, 1960-70	
	Number	Women as % of total	Number	Women as % of total	Number	%
Total*	21,172	32.8	29,170	37.7	7,998	38
Blue-collar workers:						
Craft and kindred workers	277	3.1	495	5.0	218	79
Operatives	3,173	28.0	3,842	30.5	669	21
Nonfarm laborers	173	5.2	269	8.4	96	56
White-collar workers:						
Professional and technical	2,683	38.4	4,314	39.8	1,631	61
Managers and administrative	829	14.7	1,014	16.5	185	22
Sales workers	1,652	35.6	2,000	38.0	348	21
Clerical workers	6,204	68.0	9,582	73.5	3,378	55
Service workers:						
Private household	1,657	95.4	1,052	96.6	-605	-37
Other service workers	2,963	51.5	4,424	54.9	1,461	49
Farm workers:						
Farmers and farm managers	118	4.7	62	4.6	-55	-47
Farm laborers	248	16.7	141	15.2	-107	-43

*Includes occupations not reported.

Source: 1970 Census of the Population, Detailed Characteristics, U.S. Summary, Report PC(1)-D (Bureau of the Census), table 221. Washington.

the growth that would have occurred if the change in the total number of persons in the occupation had been distributed between the sexes in the same proportion as the increase in the total labor force, the actual growth in women's participation in the skilled trades fell short of theoretical growth. The actual number of women in the skilled trades in 1970 increased by 218,000 over 1960, compared with a growth of 747,000 in men's participation in the skilled trades during this same period. The theoretical increase should have been 601,000; the actual increase was 389,000 short.

Similarly between 1972 and 1977 the actual increase in women's participation in the skilled trades fell far short of the theoretical increase. Between those years, women constituted sixty-four percent of the increase in the total labor force but represented only twenty-five percent of the increase in the number of persons working in the skilled trades.[1]

Tsuchigane and Dodge (1974), in a book dealing with economic discrimination against women, also analyzed census data relating to women in the skilled trades. They determined that in both 1960 and 1970 women workers generally (and those in the skilled trades) earned much less than men. In 1960, median male earnings in all occupations were $5,354; median female earnings were $3,161. In 1970, these figures had increased to $9,030 for men and $4,873 for women. In the skilled trades in 1960, men's median earnings were $5,727; women's $3,592. These figures increased in 1970 to $9,034 for men and $5,370 for women. Analyzing these differentials, Tsuchigane and Dodge pointed out that they were attributable, in part, to variables in the number of hours worked, education, job seniority, and absenteeism rates. However, this left in each instance what was termed an "unexplained residual" differential.

For all occupations, the unexplained residual in 1970 was $2,854; the unexplained percentage of the difference between men's and women's earnings was 68.7 percent. For the skilled trades, the unexplained residual in 1970 was $2,921; the unexplained percentage of the difference between men's and women's earnings was 79.7 percent. Legitimate differences in job content and valid exceptions to equal pay legislation may constitute some portion of the residual difference between men's and women's earnings. However, Tsuchigane and Dodge attribute the rest to prejudice and discrimination, terming it the "unjustified" component of the income differential. They noted that census data are cast "in rather broad occupational categories which do not permit our coming to grips with the question of what proportion of the residual is due to bias, prejudice and discrimination." (p. 49) Yet they pointed out that the problem may be examined from another perspective,

namely, legal actions brought by individuals or by the Equal Employment Opportunities Commission against employers believed to be guilty of discrimination. They stated:

> We can only conclude from an examination of these court decisions that a significant share of the unexplained differential is due to the discriminatory or sexist atmosphere which has characterized our society and culture up to the present time. (p. 50)

Tsuchigane and Dodge's analysis of the earnings gap revealed a paradox in the conditions of women in the skilled trades. These women earn more, on the average, than do other working women; the "earnings gap" between women and men in the skilled trades is less than the gap between women and men in the total labor force. But, if the analysis is valid, it appears that a greater proportion of "earnings gap" between women and men engaged in the skilled trades is attributable to bias, discrimination, and prejudice. Tsuchigane and Dodge based their analysis of the income differential between men and women--the "earnings gap"--on decennial census data for year-round workers (50-52 weeks) which included both full-time and part-time workers. (A more widely known analysis of the earnings gap, by the U.S. Women's Bureau, is based on data from a different source, that is, the U.S. Census Bureau's *Current Population Reports* statistics on year-round full-time workers.) Tsuchigane and Dodge (1974) demonstrated that in 1970 the median wage for all women workers was 53.9 percent of the median wage for all men workers; the Women's Bureau (1976) statistics put the percentage at 59.4. However, once the "hours worked" variable used by Tsuchigane and Dodge is added to the median female wage, the percentage increases to 60.3. This figure more nearly matches the Women's Bureau figure and is perhaps a more accurate index of the difference. The Women's Bureau figures make no correction for the number of hours worked even though, on the average, women working "full-time" work fewer hours than do men working "full-time."

Somewhat higher participation rates for women in a grouping called "craftsmen" were reported by the U.S. Equal Employment Opportunities Commission (1973) in a document analyzing the position of minorities and women in employment in twenty large cities in 1971. This data, derived from reports filed in 1972 by companies with 100 or more employees, show average participation rates by women in the crafts in the twenty cities in the following report years: 1970, 6.9 percent; 1971, 6.4 percent; 1972, 7.1 percent. The document also reported on the occupational distribution of women workers in the twenty cities. The average percentage of women workers in all twenty cities in the crafts in the same report years was 1970, 2.7; 1971,

2.5; 1972, 2.6. It is apparent that minority women consistently are more likely to be employed in the crafts than are Anglo women and that there are some regional differences in the occupational distribution of women workers. Table 3 presents the percentages of women craft workers, Anglo and minority, reported to the EEOC in 1972.

Table 3. Percentages of Female Labor Force in the Skilled Trades, 1972.

	Percent			Percent	
	Anglo	Minority		Anglo	Minority
United States	2.6	2.9	Miami	1.3	2.9
Atlanta	1.6	1.6	Newark	1.2	1.2
Baltimore	2.6	2.0	New Orleans	3.2	8.7
Boston	1.8	2.0	New York	1.3	2.3
Chicago	1.3	2.0	Philadelphia	2.8	4.2
Cleveland	2.0	3.0	St. Louis	1.8	1.5
Dallas	2.2	2.0	SF-Oakland	1.2	1.3
Denver	1.7	2.3	Seattle/ Everett	2.0	2.1
Detroit	1.0	1.0	Washington	1.2	1.6
Houston	1.2	1.8			
LA-Long Beach	2.4	4.4			
Memphis	1.2	2.9			

Source: As summarized EEOC (1973) reports filed in 1972 by covered employers (companies with 100 or more employees).

In summary, the literature on the participation of women in the skilled trades showed that the rate of participation by women increased appreciably between 1960 and 1970. However, the rate of increase in participation was not as large as could have been expected if women had entered the skilled trades at the same rate they entered the total civilian labor market. The gap between men's and women's median earnings was greater in 1970 than it was in 1960. In the skilled trades, however, although women's earnings decreased in proportion to men's just as they did in the total labor market, the decrease was smaller. The participation rate of women in the skilled trades appears to be higher in larger companies in large metropolitan areas than it is on the average nationwide. Also, proportionately more minority women are employed in the skilled trades by such companies.

APPRENTICESHIP

Briggs (1977) stated:

> It has been common knowledge among blue-collar level individuals that workers in the skilled trades commanded good wages...for high school graduates who did not have the financial resources to continue their education in the classroom, apprenticeship training in a trade was a bargain. It offered an unparalleled opportunity to learn while earning a wage, and at the end of the two- to five-year learning period, to be publicly recognized as having a valuable --if relatively low status--skill that would be rewarded with wages sufficient to keep a family at a satisfactory standard of living. (p. 226)

For women, apprenticeship has not been the avenue into the skilled trades as it has for men. Briggs (1977) cited 1976 data showing that women constitute only slightly over one percent of all registered apprentices. This figure would be even lower if the trades of barber and cosmetician were excluded; they represent eleven percent of all women apprentices and are the only trades in which women apprentices outnumbered men. A research and demonstration project funded in the early 1970s by the Manpower Administration attempted to isolate, analyze, and minimize the barriers to women's entry into the skilled trades via apprenticeship. The project was reported by Mapp (1973) and summarized by Briggs (1974a and 1974b). Briggs (1977) also summarized the project's findings, reported recent progress, and analyzed recent statistics.

The perceptions of women as workers has served to disadvantage them from becoming apprentices. Employers and apprentice supervisors have held stereotyped views of women's abilities which frequently conflicted with reality. For example, in fifty percent of shops with women on the shop floor, women were in jobs requiring mechanical ability; forty-four percent of survey (Briggs, 1977) respondents from all-male shops in the same communities did not know of women anywhere who were doing work that required mechanical ability. These misconceptions were not confined to employers and apprentice supervisors. Virtually every means by which women might approach or learn of apprenticeship opportunities constituted a barrier. This has included sex-segregated help-wanted columns in newspapers, discriminatory practices in employment service offices, stereotyped vocational counseling for non-college bound students, and government training programs which channeled women into dead-end jobs. Briggs (1974a) and Mapp

(1973) also found that the *Dictionary of Occupational Titles*, a Department of Labor publication widely used by public and private employment specialists, consistently underrated the skill and complexity levels of many traditionally female occupations. The practical effect of this is virtually to exclude the underrated jobs from consideration for apprenticeship; a job classified as requiring few or no skills is hardly a candidate for a system requiring a minimum of one year of 2,000 hours of on-the-job training. Witt and Naherny (1975) set forth the findings and recommendations of a two-year study of the handling of traditionally female occupations in the Department of Labor. The study covered the 1965 edition; a new edition was published in 1977.

The most recent writing on women in apprenticeship is an Rj Associates publication (1977), a survey of seventy-seven apprentices and thirty-three applicants. It was recognized, however, by its authors as a number not large enough to represent a statistically significant sample. They indicated that they utilized data only as it provided trends or as it highlighted ideas that were further substantiated by interviews. The interviews were with seventeen Joint Apprenticeship Committees or members of committees with which the apprentices and applicants had contact and with thirteen recruitment programs, state apprenticeship agencies, related instructors, and women apprentices. The women surveyed were in fifteen trades; the Joint Apprenticeship Committees with which they had contact were in sixteen cities. The authors included copies of the survey instrument in their report but did not report the interview methodology in detail. The report is divided into three sections: problems in apprenticeship, issues and conclusions, and recommendations. The recommendations are addressed to school systems, Joint Apprenticeship Committees, unions and employers, and to the Department of Labor. They also suggested a model recruitment program.

Until recently, the regulations regarding affirmative action in apprenticeship programs registered with the U.S. Department of Labor and in state apprenticeship programs set goals and timetables only for groups which had met discrimination based on race, color, religion or national origin.[2] Mapp and Briggs (1973, 1974 and 1977) noted this shortcoming and suggested extension of the regulations to women. On June 12, 1978, the regulations were amended to cover discrimination on the basis of sex.[3] This was in direct response to a petition previously filed by the League of Women Voters and other organizations. The regulations are based on the presumption that women will be interested in apprenticeships in proportion to their representation in the total workforce (40.5 percent as of 1976). Sponsors, however, are not required during the first year

to set goals for the admission of women into apprenticeships at this level. A more gradual approach is taken, that is, during the first year of applicability, sponsors' goals for the admission of women are not to be less than twenty percent and the goals are to be updated over a five-year period until workforce parity is reached. In the discussion preceding the published regulations, the Department of Labor noted:

> In the absence of any proof to the contrary, the Department assumes that the percentage of the female labor force capable of being trained in the skilled trades is approximately equal to the percentage of the male labor force with that capability.[4] (p. 20764)

This assumption is based on data cited from specific instances in which women have entered the skilled trades as a result of governmental action or court order. In the discussion cited, it was noted that, in the shipbuilding industry, when Executive Order 11245 was enforced by the Maritime Administration, the original twenty percent entry level goal for women was followed by the application of a large number of women. The female applicant flow in at least one shipyard matched the rate of the normal workforce of women in the area. Following a consent decree, entry level goals for women in the Bell System's skilled and semi-skilled jobs were set at nineteen percent or half the female workforce percentage when the decree was entered in 1973. Women gained in actual number (thirty-eight to 970) in these job categories over a four-year period despite the fact that Bell reduced its workforce in the same categories during this period. Other instances in which an increase in female participation in the skilled trades followed the adoption of closely monitored numerical goals were in the construction of the Alaska pipeline and in the armed services, particularly the Air Force.

Paralleling the new regulations relating to affirmative action in apprenticeship are regulations governing affirmative action by firms contracting with the federal government for construction projects or those participating in federally-assisted projects. These regulations were published April 7, 1978 by the Office of Federal Contract Compliance Programs, U.S. Department of Labor.[5] They required the Director of the Office to issue goals and timetables for minority and, for the first time, female utilization based on appropriate workforce, demographic, or other relevant data.[6] The timetables and goals (percentages)[7] for female utilization, published in the same issue of the Federal Register[8] were listed as follows:

April 1, 1978 - March 31, 1979	3.1%
April 1, 1979 - March 31, 1980	5.1%
April 1, 1980 - March 31, 1981	6.9%

Two sets of statistics were used by the Office in developing the goals, both of which are summarized in Table 2 on page 9. The Office, in the preamble to the order, noted that whereas the workforce classified by the 1970 census as craft and kindred workers in the construction industry is 1.2 percent female, women constituted 5.0 percent of *all* craft and kindred workers (according to the same 1970 census data). The preamble stated:

> This group consists of workers in occupations with working conditions similar to those found in the construction industry. These occupations require skills and abilities comparable to those required of employees working in the construction industry. These nonconstruction occupations are closely related to construction craft work, and demonstrate a comparatively higher female participation rate which also demonstrates a willingness on the part of women to undertake the types of work which include the occupation of construction craftsmen.
>
> It is reasonable to expect therefore that within a two-year period the construction industry, by undertaking affirmative action, could achieve a five percent female participation goal. This same effort would raise the goal to 6.9 percent in the third year.[9] (p. 14899)

The regulations establishing these goals and timetables contained two other provisions of importance to women contemplating careers in construction crafts. The preamble noted that the Department of Labor was aware of many egregious examples of harassment of female workers.[10] The regulations required that contractors and subcontractors ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites and in all facilities at which employees are assigned.[11] Where possible, two or more women must be assigned to each construction project.[12] In the preamble, it was recognized that the nature of construction work would not always accommodate the assignment of two or more women. However, it pointed out that no contractor could refuse to assign a woman to a project because there were not two openings.

The points made by the Department of Labor in promulgating the amended versions of its apprenticeship regulations and its contract compliance regulations are not new. Those responsible for the Women in Wisconsin Apprenticeship Project long urged the adoption of amended versions as part of an integrated, across-the-board governmental thrust to eliminate the stereotyping of occupations by sex (Mapp, 1973; Briggs, 1974a, 1974b, 1977). Further, Bem and Bem (n.d.) demonstrated that the number of women applying for jobs in the construction trades would increase substantially if there were goals for the employment of women in these skilled occupations. They asked 200 women in a California job service office to rate their interest in three detailed job descriptions. Two were of traditionally female work; the third was one of ten different construction jobs. Half of the construction job descriptions contained a statement declaring that federal law required a certain percentage of women to be trained and hired for that job each year. This statement increased by fifty percent the number of women who indicated an interest in the construction job, that is, to a level above the interest expressed in the jobs traditionally held by women. What remains to be seen is whether the regulations, in fact, will stimulate the entry of women into the skilled trades at levels comparable to their participation in the overall workforce.

VOCATIONAL AND TECHNICAL EDUCATION

Apprenticeship, of course, is not the only route to employment in the skilled trades. Training in vocational and technical institutions, whether part of an apprenticeship or in programs leading to a degree or diploma, is also of critical importance. As with apprenticeships, the available data indicate that women are seriously underrepresented. Table 4, cited by Roby (1977) summarized the distribution of men and women in the major program areas of vocational and technical education. The trade and industrial area was then composed of 2,397,968 students, 2,118,288 of whom were men. The 279,680 women enrolled in this area constituted four percent of all female vocational and technical students. When those women in homemaking and home economics programs not leading to gainful employment are excluded, the figure rose to eight percent. Forty-three percent of male students were enrolled in the trade and industrial area. The following table was cited by Roby (p. 206).

Table 4. Distribution of Females and Males in Vocational Education for Each Program Area, 1972.

	Females			Males		
	Gainful (excluding homemaking) %	Including homemaking %	Number	Gainful %	Incl. homemaking %	Number
Agriculture	1	1	48,153	17.0	17.0	848,307
Distributive education	8	5	290,020	7.0	7.0	350,403
Health	8	4	285,071	1.0	1.0	51,581
Home econ. gainful	7	4	240,948	.1	.1	39,018
Office	51	28	1,796,387	11.0	11.0	555,491
Technical education	1	1	33,005	6.0	6.0	304,063
Trades industry	8	4	279,680	43.0	43.0	2,118,288
Special program*	17	9	582,715	15.0	15.0	721,904
Total Gainful Only	101		3,505,128	100.0		4,931,284
Home economics: homemaking		45	2,915,987		.5	248,745
Total Gainful and homemaking		101	6,422,115		101.0	5,180,029

*Includes prevocational, prepostsecondary, and remedial programs.

Source: Calculated from Bureau of Adult, Vocational and Technical Education Summary Data: Vocational Education, Fiscal Year 1972 (Washington, D.C.: U.S. Department of Health, Education, and Welfare, Office of Education, May 1973) p. 2.

Roby stated:

> "As more and more women need to earn enough to support themselves and their families, and as it becomes clear that their low wages result largely from their being restricted to lower paying jobs, vocational education has failed to move significantly to prepare them for the wider range of occupations that pay higher wages." (p. 208-209)

She noted that the barriers to the entry of women into trade and industry programs in vocational schools often are imposed from within the system either by overt or subtle discouragement or by outright refusal to allow women to enter traditionally male programs and that counselors too often have reinforced women students in unrealistic lifestyle expectations. She noted, specifically, that some people feel that women do not need to work when, in fact, many are the sole support of their families or who must supplement the husband's wages in order to keep the family solvent. The chapter on "Women's Income and Earnings" (Women's Bureau, 1976a) noted that in 1974, forty-one percent of the women in the workforce were single, widowed, divorced, or separated and that twenty-nine percent had husbands who earned less than $10,000 the previous year.

Federal law now mandates that equal access to all aspects of vocational education be afforded to women as well as men. Title IX of the 1972 U.S. Educational Amendments (P.L. 92-318) covering all federally funded educational institutions including vocational schools prohibited discrimination on the basis of sex. More recently, federal law applying specifically to vocational education was amended to provide for equal access. The 1976 U.S. Education Amendments, completely revising the Vocational Education Act of 1963, called for a variety of measures to this end. As a result, women were to be represented on state advisory councils in proportion to their representation in the state's population or workforce.[13] One or more women members of the state advisory council was to be specially knowledgeable of and experienced in sex discrimination in job training and employment.[14] A national vocational educational data reporting and accounting system was to be established in order to facilitate research on, among other things, women's role in vocational education.[15] The five-year State plan for vocational education must include a detailed description of measures to be

taken by the State to assure equal access by women and men to vocational education.[16] Annual program plans must set forth results achieved by such measures.[17] In accordance with the five-year and annual plans, the State may now use basic grant funds for support services for women,[18] for day care services for children of students,[19] and for increasing the number of women instructors in programs which have been traditionally male.[20] Basic grant funds must be used in accordance with the plans to provide programs for displaced homemakers, single heads of households, homemakers employed part-time who wish to secure full-time jobs, and women and men employed full-time in fields traditional to their sexes who wish to seek employment in fields traditional to the other sex.[21] Categorical grant funds now may be used to train vocational guidance counselors to work effectively with women students.[22] Special grant funds are available for the same purpose, as well as for other activities which show promise of overcoming sex bias and sex stereotyping in vocational education.[23]

Only one study of women in vocational and technical education is devoted solely to the problems of women preparing for careers in the skilled trades. Rj Associates (1976) used the terms "traditional," "non-traditional" and "mixed " to describe programs of postsecondary vocational and technical education. In their terms, a program in which seventy-five percent or more of the students are female is "traditional" and ones in which seventy-five percent or more are male is "non-traditional." Other programs are "mixed." The Rj Associates study had three objectives: (1) to define the characteristics of women in postsecondary area vocational technical schools who are presently preparing to enter employment in traditionally male occupations, (2) to identify the experiences that have influenced their decisions to enter such training, and (3) to determine the problems and difficulties they have experienced in their training. The authors, using enrollment data from the 1974 survey of area vocational technical schools conducted by the Office of Civil Rights (DHEW), disclosed the fact that of the schools which prepared all their students for employment, 280 had at least ten women enrolled in non-traditional programs. A sample of these schools was studied further; ninety-four schools in twenty-six states participated. All women students in non-traditional programs at each school received questionnaires as did a random sampling of women students in traditional and mixed programs. Eight hundred and sixty questionnaires were received from students in traditional programs. After random reduction to achieve a balanced sample, 452 questionnaires from students in mixed programs and 612 from students in traditional programs were analyzed. Demographically, women students in non-traditional programs were not differentiated from women students in traditional and mixed programs except that they tended to be older, more urban and lived in Western states. Educational personnel influencing the program choices of women

students in non-traditional programs were mostly male postsecondary vocational education teachers. The authors concluded that, by the time they enroll in a non-traditional program, many women already have made at least a preliminary career decision on their own. To a great extent they were uninfluenced by counseling programs. Women students in non-traditional programs, for the most part, felt that they were unprepared by their high schools for postsecondary training. Students perceived three major problems: (1) that their fellow male students had difficulty in adjusting to women, (2) that men were better prepared, and (3) that men had taken more technical subjects. Women in their twenties tended to have more difficulties than did older or younger women. The more women students there were in a class, the smaller the proportion of women who had problems. Women students tended to be motivated by interest and ability, by the possibility of good working conditions, and by future earnings--in that order.

GOVERNMENT SPONSORED EMPLOYMENT AND TRAINING PROGRAMS

Women have been well-represented as participants in federal government manpower training programs since these programs began in the early 1960's. For example, in all programs from Fiscal Years 1965 through 1971, women were 43.9 percent of all enrollees. However, women were disproportionately concentrated in programs which led to low-paying and low-skill jobs. Less than twenty-five percent were enrolled in programs which put some emphasis on skill training or job development. (See Table 5.) The skill training and job development programs served more than three men for every two women.

Table 5. Manpower Programs, 1965-1972, Distribution of Enrollment Among Major Program Groups

(Numbers in thousands)

Program Group	Men		Women	
	No.	%	No.	%
Skill Training	1,090	21.8	720	18.4
Job Development	496	9.7	256	6.5
Employability Development	639	12.8	632	16.2
Work Experience	2,777	55.5	2,270	58.3
Total	5,002	100.0	3,908	100.0

Source: Derived from C.R. Perry, et al., *The Impact of Government Manpower Programs in General and on Minorities and Women* (Philadelphia: University of Pennsylvania Press, 1975).

The numbers and percentages of enrollees in the different categorical government employment and training programs, 1965 to 1972, by sex is shown in Table 6. The largest number of adult women, 530,000, were enrolled in Manpower Development and Training Act Institutional classroom training sequences. This led to jobs mainly in clerical and ancillary health occupations paying an average post-training hourly wage of $2.18 for white women and $2.13 for black women. (Men's post-training hourly average was $2.87 for whites, $2.63 for blacks). The second largest number of women, 256,000, were served through the Work Incentive Program (WIN). WIN enrollees clustered in low-paying clerical and service jobs. In 1972, the average hourly wage for women who completed training was $1.98; for men it was $2.43.

The one major job development program (from 1965 to 1972) that clearly led to work in the skilled trades served 22,000 men and no women. The Apprenticeship Outreach Program was designed to create equal opportunities for minorities by providing intensive tutoring programs up to ten weeks to prepare youths for entrance examination in a particular apprenticeable trade, mainly in construction. However, throughout its life under the Manpower Development and Training Act, the program was operated exclusively for males.

In 1973, most of the older categorical programs were merged into programs operated under the Comprehensive Employment and Training Act. The Work Incentive Program, one of the older categories which survived the passage of CETA, has not engaged in training since that time but has concentrated on work experience and job placement. Applicants for Aid to Families with Dependent Children must register for work under this program.

It is difficult to generalize about earned wage differentials or types or amounts of skilled training made available to men and women under the various CETA programs from 1973 to 1978, because there is no requirement that this information be recorded by sex and data, thus allowing comparisons to be made. There is, however, little to indicate that the general patterns of programs for each sex established under MDTA employment and training programs have been altered significantly under CETA, with one important exception: projects to prepare women for traditionally male jobs.

The U.S. Department of Labor Women's Bureau (1978) recently has published detailed descriptions of two CETA programs whose goal is

Table 6. Manpower Programs, 1965-1972, Number and Percent by Sex of Enrollees in Major Programs

(Numbers in thousands)

	All enrollees Total	Men		Women	
		No.	%	No.	%
Skill Training			60.3		39.7
MDTA*/Institutional	1,184	654	55.2	530	44.8
MDTA/On-the-Job-Training	626	436	69.6	190	30.4
Job Development			66.0		34.0
Job Opportunities in the Business Sector	313	214	68.4	99	31.6
Public Service Careers	112	40	35.7	72	64.3
Apprenticeship Outreach Program	22	11	100.0	0	0
Public Employment Program	305	220	82.1	85	27.9
Employability Development			50.3		49.7
Opportunities Industrialization Centers	163	49	30.1	114	69.9
Concentrated Employment Program	469	270	57.6	199	42.4
Work Incentive Program	406	150	36.9	256	63.1
Job Corps	233	170	73.0	63	27.0
Work Experience			55.6		44.4
Neighborhood Youth Corps In-School	4,070	2,230	54.8	1,840	45.2
Out-of-school	917	480	52.3	437	47.7
Operation Mainstream	90	67	74.4	23	25.6
All programs	8,910	5,002	56.1	3,908	43.9

*MDTA: Manpower Development and Training Act

Source: Compiled from C. R. Perry, et al., *The Impact of Government Manpower Programs in General and on Minorities and Women* (Philadelphia: University of Pennsylvania Press, 1975).

to prepare women for non-traditional jobs, under the general title *Women in Non-traditional Jobs: A Program Model*: Better Jobs for Women (BJW), serving metropolitan Denver, and Non-traditional Occupational Program for Women (NTO), serving the Boston area.

Better Jobs for Women, in operation for more than six years, seeks to place women in apprenticeships or similar unsubsidized on-the-job training programs in skilled trade occupations. A three-hour orientation session which applicants must attend in order to be scheduled for "intake" interviews informs prospective enrollees about the skilled trades. During 1976-77, 613 women completed such interviews; half attended an orientation session. A staff member assists the enrollee in forming an employability development plan and in assembling a packet of personal credentials which are ready to be sent to an employer at short notice. In the next phase, enrollees are provided with interview counseling to bring them to a level in order to compete with men for an apprenticeship or similar unsubsidized on-the-job training position. BJW has placed more than 400 women in over fifty skilled occupations with wage increases averaging 250 percent over previous earnings. BJW provides follow-up supportive services for six months.

Unlike BJW, NTO does not seek to place women into skilled trades, apprenticeships, or on-the-job training. Instead, it seeks to help low-income women acquire confidence and competence in basic skilled trades areas. In a sixteen-week program, enrollees are furnished with classroom instruction, work experience, counseling, physical fitness training, and placement services. Placement is in building maintenance, a field selected as the occupational focus because the skills involved have high transferability. NTO expects to place approximately 100 women a year in the first six months of the program's operation, with an increase in average wages from $2.89 to $4.43 per hour, that is, fifty-three percent.

The characteristics of BJW and NTO enrollees are similar. In each, about half the enrollees are between ages twenty-six and thirty-five; the rest between eighteen and twenty-six. Most women in each had at least a high school education or its equivalent (NTO--seventy-one percent; BJW--seventy-nine percent). In each, a small minority of enrollees was currently married (NTO--eleven percent; BJW--twelve percent). Many more had dependents (NTO--fifty percent; BJW--thirty-six percent). It is clear that both programs are setting and meeting worthwhile goals. NTO's are more modest but more costly. Its annual budget is approximately four times that of BJW, a difference accounted for by the fact that NTO recipients receive stipends and intensive practical training.

In 1971, BJW was the only-funded and operating non-traditional job and apprenticeship outreach center for women. In 1974, the Manpower Administration amended its apprenticeship outreach program to include special emphasis on recruiting, counseling and tutoring for women in six selected cities. The number reached twenty-seven in 1976 and, in 1978, approximately eighty.

A 1974 study of these programs by the U.S. Civil Rights Commission (1976) concluded that they produced only modest results because of inherent limitations. It listed what was then the continued lack of goals and timetables for women in the equal opportunity order governing apprenticeships and the lack of cooperation on the part of some joint apprenticeship committees.

Preliminary data were developed during a study of women in CETA programs (Wisconsin, in preparation) suggesting that urban centers have women's non-traditional and apprenticeship outreach programs as well as city-wide goals and timetables for women on construction projects. They indicated that women were receiving skilled trades training at a higher rate in 1977 even during the AOP's start-up phase than would have been expected from total labor force statistics. The study found that in at least some cities, prior to the adoption of goals and timetables for women in apprenticeship on federally funded construction projects, the grafting of a component for women onto a long established AOP for minority males was a spectacular failure that has yielded no results for women at all.

In 1976, the Secretary to the Department of Labor created from Title III CETA discretionary funds the Skill Training and Improvement Program (STIP) in order to provide participants with combinations of classroom and on-the-job training of at least six months. The uses to which this money is being put vary. One prime sponsor is training women as welders. One area of Wisconsin plans to use STIP monies to develop a series of apprenticeship outreach projects for women and minorities.

FUTURE DEVELOPMENTS AND RESEARCH NEEDS

The inclusion of women in regulations requiring affirmative action goals and timetables for workers on federally financed construction projects and on government registered apprentice programs should substantially increase the numbers of women entering the skilled trades in the next few years. Research is needed to provide guidelines for the successful implementation of these regulations.

Clearly, there should be documentation of efforts that succeed as well as those that fail to facilitate women's entry into blue-collar and skilled trade jobs. Analyses of the significant factors involved must be carefully studied.

In recent years there has been a dramatic increase in the numbers of government funded outreach projects for women. Programs to prepare and place women in pre-apprenticeship, apprenticeship, and traditionally male blue-collar jobs have increased from one program in 1971 to over eighty in 1978. It is time to take a serious look at the effectiveness of a sample of these programs. It also is necessary to analyze which combination of factors is optimal, the project designs, the skills and characteristics of women selected, the support and training offered, and the follow-up services.

There are, however, a number of fundamental questions that need to be addressed. For example, what are the factors leading to the continued pervasiveness of occupational segregation? This has been documented by Gross (1968) to be remarkably stable over a period of sixty years. What are the advantages and costs to society and to sub-groups within it of occupational segregation by sex? Most traditionally male occupations have developed time commitments and performance levels for workers in the expectation that they are either single and free of family responsibilities or, if married, are secondary parents with a full-time homemaking partner who takes primary responsibility for family management. If it is seen as advantageous to integrate such occupations, what kinds of changes can or should be made to enable workers to "dovetail" their employment and family responsibilities satisfactorily? Until such changes are made, or until such time as parenting and homemaking responsibilities are shared equally by fathers and mothers, women will continue to be disadvantaged in the paid labor market. They also will be effectively barred from some privileged enclaves that remain the prerogative of those (mainly males) who are buffered from the non-employment related responsibilities of home management and child raising.

A more fundamental question that has received little attention is this: precisely what occupations *should be* considered skilled trades? If a skilled trade is an occupation requiring a broad range of experiences, knowledge, and skills learned primarily on the job, are there clusters of jobs recognized as skilled but which are currently being trained for in a classroom situation that could be prepared for as effectively through hands-on, on-the-job training? Are there jobs that, in fact, require a broad range of experiences, knowledge, and skills that have been underrated in terms of the skill and complexity demands made on the worker? Common sense and some very preliminary research by Witt

and Naherny (1975) suggest that this is so, namely, that jobs based on skills acquired in areas associated with home management and child raising have been underrated consistently. In part, this is no doubt due to the fact that these skills traditionally have been acquired informally and practiced by unpaid workers. By custom, women's work has been lower paid, not paid at all, or presumed to involve less skill than men's work. This equation has worked in reverse. If a job is perceived as involving little skill and is low paid, it has been considered women's work. Therefore, by definition, the well-paid trades recognized as skilled were men's work. (A few trades recognized as skilled that employed substantial proportions of women paid lower wages than those practiced almost entirely by men.)

Until there is a fundamental shift in our cultural attitudes toward women and men and toward the worth of the work each performs, trades that are perceived to be skilled and which command generous pay will continue to be the preserve of men only. The entry of women into a skilled field will be viewed as contaminating that field in direct proportion to the numbers of women who gain access to it.

This leaves us with the most significant and most practical research concern of all: what must we *do* and what must we *change* to enable curselves to see people as people, workers as workers, and skills as skills rather than to see these through the distorting prisms of society's differential expectations of each sex.

NOTES

1. U.S. Bureau of Labor Statistics. *Employment and Earnings* (January, 1978; Table 2, p. 137); *Employment and Training Report of the President* (1978: Table A-15, pp. 205-206). Data in both tables are derived from the Current Population Survey conducted monthly by the Bureau.
2. 29 CFR 30.
3. 43 FR 20760.
4. Id., 20764
5. Part 41 CFR 60-4 (43 FR 14888), issued pursuant to Executive Order 11246, as amended (30 FR 12319, 32 FR 14303).
6. Part 41 CFR 60-4.6 (43 FR 14897).,
7. These are percentages of each contractor's and subcontractor's aggregate on-site construction workforce "whether or not part of that workforce is performing work on a Federal or federally assisted construction contract or subcontract." 43 FR 14900.
8. 43 FR 14899.
9. 43 FR 14899.
10. 43 FR 14891.
11. Standard federal Equal Employment Opportunity Construction Contract Specification (Executive Order 11246), paragraph 7a, required by Part 41 CFR 60-4.3 (A). (43 FR 14895).
12. Ibid.
13. Id., Sec. 105 (a); 20 U.S.C. 2305; 45 CFR 104.92 (b) (3).
14. Id., Sec. 105 (a); 20 U.S.C. 2305; 45 CFR 104.92 (a) (17).
15. Id., Sec. 161 (a); 20 U.S.C. 2391; 45 CFR 104.116.
16. Id., Sec. 197 (b) (4); 20 U.S.C. 2307; 45 CFR 104.187.
17. Id., Sec. 108 (b) (1); 20 U.S.C. 2308; 45 CFR 104.222 (f) (2).
18. Id., Sec. 120 (b) (1) (J); 20 U.S.C. 2330; 45 CFR 104.601.
19. Id., Sec. 120 (b) (1) (K); 20 U.S.C. 2330; 45 CFR 104.612.
20. Id., Sec. 120 (b) (1) (J); 20 U.S.C. 2330; 45 CFR 104.603
21. Id., Sec. 107 (b) (4) (B), 120 (b) (1) (L); 20 U.S.C. 2307, 2330; 45 CFR 104.621.
22. Id., Sec. 134 (a); 20 U.S.C. 2354; 45 CFR 104.753 (d).
23. Id., Sec. 130 (b) (6), 136; 20 U.S.C. 2360, 2356; 45 CFR 104.792.

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APPENDIX

APPRENTICEABLE TRADES

Aircraft Fabricator
Airplane Mechanic
Arborist
Asbestos Worker
Automotive Body Builder-Repairer
Automotive Mechanic
Baker
Barker
Blacksmith
Boilermaker
Bookbinder
Brewer
Bricklayer
Butcher-Meatcutter
Cabinetmaker-Machinist, Wood
Candymaker
Canvas Worker
Car Repairer
Carpenter
Cement Mason
Chemical-Process Operator
Cook
Cooper
Cosmetician
Dairy Products Maker
Drafter-Designer
Dry Cleaner, Spotter, and Presser
Electrical Worker
Electroplater
Electrotyper
Engraver
Environmental Control Systems Craft Worker
Fabric Cutter
Farm Equipment Mechanic
Fire Fighter
Floor Coverer
Foundry Worker
Furrier
Glazier-Glass Worker
Heat Treater
Iron Worker
Jeweler
Laboratory Technician
Lather
Lead Burner
Leather Worker
Lithographer
Machinist
Mailer
Maintenance Mechanic-Repairer
Marking-Device Maker
Mattress Maker, Custom
Metal Polisher and Buffer
Miller
Millwright
Model Maker
Musical Instrument Mechanic
Operating Engineer
Optical Technician
Orthopedic-Prosthetic Technician
Paint Maker
Painter and Decorator
Patternmaker
Photoengraver
Photographer
Plasterer
Plate Printer
Plumber-Pipe Fitter
Pottery Worker
Printer
Printing Press Operator
Pumper-Gauger
Rigger
River Pilot
Roofer
Rotogravure Engraver
Sheet-Metal Worker

Sign, Scene-and-Pictorial Artist
Silversmith
Stationary Engineer
Stereotyper
Stone Worker
Stonemason
Stove Mounter
Surveyor
Tailor
Telephone Worker
Terrazzo Worker
Textile Setter
Tool-and-Die Maker
Upholsterer
Wallpaper Craft Worker
Wire Weaver
Wood Carver

Source: From *The National Apprenticeship System* (Washington, U.S. Department of Labor, 1976). Within each trade classification, there may be several discrete occupations, each separately apprenticeable. pp. 11-37.