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Measuring Discrimination - Phyllis Wallace' symposium
1974-75
Research on Equal Employment
Opportunity

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RESEARCH WORKSHOP ON EQUAL EMPLOYMENT OPPORTUNITY

Monday and Tuesday
January 21 and 22, 1974

This research workshop on equal employment opportunity was funded by the National Science Foundation under the Research Applied to National Needs (RANN) program. We are also grateful for additional assistance from Arthur D. Little, Inc.

Alfred P. Sloan School of Management
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

RESEARCH WORKSHOP ON EQUAL EMPLOYMENT OPPORTUNITY
January 21-22, 1974
Sloan School of Management, M.I.T.

Monday, January 21, 1974

REGISTRATION
Kresge Auditorium
8:30 a.m.

OPENING PLENARY SESSION
Kresge Auditorium, Little Theater
Phyllis A. Wallace, Presiding

- 9:00 - Introductory Remarks
- Welcome - Dean William F. Pounds, Sloan School of Management
- 9:15 - 12:15 - PERSPECTIVES ON RESEARCH ON EQUAL EMPLOYMENT OPPORTUNITY
- 9:15 - Patricia Gurin, Ph.D. - University of Michigan
"Psychological Issues in the Study of Employment Discrimination"
- 9:40 - Ray Marshall, Ph.D. - University of Texas at Austin
"Black Employment in the South"
- 10:10 - Barbara Bergmann, Ph.D. - University of Maryland
"Planning for Affirmative Action"
- 10:30 - Comments and Questions
- 10:45 - Coffee Break
- 11:00 - Ernest Green and Lamond Godwin - Recruitment and Training, Inc.
"Equal Employment Opportunity in the Construction Industry"
- 11:20 - Judith Long Laws, Ph.D. - Cornell University
"Psychological Dimensions of Women's Work Force Participation"
- 11:40 - Bernard Cohen, Ph.D. - Queens College, City University of New York
"Equal Employment Opportunity in Local Government: A Case Study of the New York City Police Department"
- 12:00 - Comments and Questions
- 12:30 - Lunch: Faculty Club
Alfred P. Sloan Building, Sixth Floor
Introduction to Workshops

RESEARCH WORKSHOP ON EQUAL EMPLOYMENT OPPORTUNITY

2:00 - 5:00 - CONCURRENT WORKSHOPS

<u>Workshop</u>	<u>Room</u>	<u>Moderator</u>
Public Employment	E52-365	Dean Abraham J. Siegel
Educational Institutions	E52-450	Mary P. Rowe, Ph.D.
Private Employment	E52-363	Charles A. Myers, Ph.D.
EEO and Manpower	E52-232	Peter B. Doeringer, Ph.D.
Utilization of Research	E52-369	Bernard E. Anderson, Ph.D.

Alternates: Ruth G. Shaeffer, Ph.D. and
John J. Cardwell, Ph.D.

3:15 - Coffee Break, Schell Room, E52-461

RECEPTION AND DINNER AT CHARLES RIVER SUITE AT SONESTA HOTEL,
5 CAMBRIDGE PARKWAY, CAMBRIDGE

6:00 - 6:30 - Reception

6:30 - 8:00 - Dinner

Address: George B. Rockwell
President and Chief Executive Officer
State Street Bank and Trust Company
of Boston

Tuesday, January 22, 1974

SECOND PLENARY SESSION

9:00 - 12:15 - PERSPECTIVES ON RESEARCH ON EQUAL EMPLOYMENT
OPPORTUNITY

9:00 - Alice Kidder, Ph.D. - North Carolina A&T State
University
"Changes in Minority Participation in the Textile
Industry"

9:20 - Orley Ashenfelter, Ph.D. and James Heckman, Ph.D. -
Princeton University and University of Chicago
"Changes in Employment Patterns for Minorities and
Women, 1966-1970"

RESEARCH WORKSHOP ON EQUAL EMPLOYMENT OPPORTUNITY

- 9:40 - Solomon Polachek, Ph.D. - University of North Carolina at Chapel Hill
"Differences in Expected Post School Investment as a Determinant of Market Wage Differentials"
- 10:00 - Comments and Questions
- 10:15 - Coffee Break
- 10:30 - Charles Holt, Ph.D. - The Urban Institute
"Segmentation and Barriers in the Labor Market"
- 10:55 - Jerolyn Lyle, Ph.D. - The American University
"Occupational Discrimination on the Basis of Sex"
- 11:15 - Glenn Loury and Ronald Ferguson - M.I.T.
"The Dynamics of Employment Discrimination"
- 11:35 - Comments and Questions
- 12:10 - Lunch: Faculty Club
Alfred P. Sloan Building, Sixth Floor

THIRD PLENARY SESSION

- 1:30 - 3:30 - Reports from Workshops and Plenary Sessions
Schell Room, E52-461
Sloan Building

Discussants of Papers

Marcus Alexis, Ph.D. - Northwestern University
James E. Annable, Jr., Ph.D. - M.I.T.
David Copus, Esquire - EEOC
Bennett Harrison, Ph.D. - M.I.T.
Ronald Oaxaca, Ph.D. - University of Massachusetts at Amherst
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Rapporteurs

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Thomas Bentley
Annette LaMond
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File of Document

David Gordon

- Pay diff's + occ'l segreg'n on basis of
indiv shortcomings
Victor Fuchs refused to write up his paper

Overcrowding accepts all the rest of the neo
classical analysis
These all lead to fatalism -

Fatalism bec "we can't tamper with profitability etc"

- we must focus on quotas - zero sum game
to equilibrate

Reserve army: cap't. system tends to cont'l
reinforcement

exog: break down families etc

endog: subst K for L + unempl ↑

Cap't. Restructures work to reinforce ♀ role as
secondary workers (manpower etc)

Heidi
Hartman
household
work
Δ's

BFS - focus on instit'l structures - how ♀ allocated
acc to occ'l rules -

- Don't help peripheral mfg

- " " retail

- Clerical jobs arose in labor + Monop K - Braverman 1975

Needed - ① Change family relations - ♂ + ♀
② Reverse hierarchical structures
(end cap'm)

periph'l
mfg
24 retail
industrials
clerical
health + ed
h/hold
work
8 = 94% ♀

~~Michael~~ Kitelbaum.

~~Historical~~ ~~Sail~~ ~~Laputa~~

Why does discrimination persist?

♂ won't work w. ♀

E. J. D. S. of ...

KEY SHEET

1943 rates
from
Winn
Newman
IUEW

DAY WORK BASE RATES

<u>Labor Grade</u>	<u>Probationary Rate</u>	<u>Female</u> <u>Qualifying Rate</u>	<u>Standard Rate</u>	<u>Evaluation Point Range</u>
1	.615	.645	.675	0 - 49
2	.645	.675	.705	50 - 62
3	.675	.705	.735	63 - 78
4	.705	.735	.765	79 - 98
5	.735	.765	.795	99 - 123
<u>Male</u>				
<u>Common Labor</u>			.785	0 - 37
1 (6)	.785	.785	.815	38 - 49
2 (7)	.785	.815	.845	50 - 62
3 (8)	.815	.845	.875	63 - 78
4 (9)	.845	.875	.905	79 - 98
5 (10)	.875	.905	.955	99 - 123*
6 (11)	.905	.955	1.005	124 - 134
7 (12)	.955	1.005	1.055	155 - 199
8 (13)	1.005	1.055	1.155	198 - 239
9 (14)	1.055	1.155	1.255	240 - 299
10 (15)	1.155	1.255	1.405	300 -

Sources of
blue-collar
discrimin.

1. Fewer points for eq work top
2. less \$ per pt for ♀
3. Evalg job into 7 attributes = strength etc.
4. Higher grades set up w. machinery more easily handled by men

NOTE: 793 of 910 female employees (87%) were classified in labor grade 1-4.
7 of 697 male employees (1%) were classified in labor grade 1-4.

S E T T L E M E N T

	<u>JOB TITLE</u>	<u>OLD GRADE</u>	<u>OLD JOB RATE</u>	<u>NEW GRADE</u>	<u>NEW RATE</u>	<u>Amount of Increase</u>	<u>Female</u>	<u>Male</u>
				15	\$3.725	.34	51/0	3/23
1.	Surge Test	11	3.385					
	Surge Test	16	3.865					
				15	3.725	.26	25/0	0/17
2.	Repair Stator	12	3.465					
	Motor Parts	16	3.865					
	Repair							
				9	3.255	.115	10/0	0/3
3.	Lead Maker	7	3.14					
	Artos Lead	13	3.55					
	Maker							
				14	3.625	.37	54/0	0/43
4.	Assembly	9	3.255					
	Assembly	16	3.835					
				14	3.63	.165	2/0	
5.	Thermocouple	12	3.465					
	Test							0/2
	Plotter Test	19	4.40					
				13	3.55	.35	6/0	1/7
6.	Janitress	8	3.20					
	Janitor	13	3.55					
				14	3.625	.32	33/0	0/15
7.	Coil Winder	10	3.305					
	Stator Winder	14	3.625					
				12	3.465	.21	89/0	0/10
8.	Load Coils	9	3.255					
	Insulate Cores	13	3.55					
				15	3.725*		15/0	
9.	Stator Repair	12	3.465	16	3.865		0/5	
	Motor Repair	17	4.005					
				12	3.465	.21	19/2	0/32
10.	Motor Test	9	3.255					
	Motor Test	18	4.20					
				13	4.20	.735	3/0	0/9
11.	Receiving Insp.	12	3.465					
	Receiving Insp.	18	4.20					

Some of Grade 12 women raised to Grade 15, others to Grade 16

	<u>TITLE</u>	<u>OLD GRADE</u>	<u>OLD JOB RATE</u>	<u>NEW GRADE</u>	<u>NEW RATE</u>	<u>Amount OF Increase</u>	<u>Female</u>	<u>Male</u>
12.	Respoeler	12	3.465	15	3.725	.26	1/0	0/6
	Salvage	15	3.725					
13.	Stacking	9	3.255	12	3.465	.21	8/1	0/5
	Stacking	14	3.625	14	3.625			
14.	Compound Pourer	9	3.255	12	3.465	.21	5/0	0/2
	Pourer		3.725	14	3.625			
15.	Stockhelper	14	3.63				9/14	0/9
	Treater	16	3.865					
16.	Back Gear Wind	10	3.305	14	3.625	.32	9/0	1/3
	Type I Winding	16	3.835					
17.	Final Motor Insp.	11	3.385	15	3.725	.34	6/0	6/37
	Motor Insp. Parts	18	4.20					
18.	Motor Assembly	10	3.305	14	3.625	.32	3/0	0/43
	Motor Assembly	16	3.835					
19.	Stack Rotor Core	8	3.20	9	3.255	.055	3/0	0/11
	Stack Rotor Core	14	3.625					
20.	Lathe Operator	8	3.20	11	3.385	.185	5/0	0/28
	Lathe Operator	15	3.705					
21.	Packer Egg Crate	14	3.63				12/14	7/26
	Pack & Check	15	3.725					

SUMMARY ANALYSIS

OF

SEX DATA

LOCATION	<u>M A L E</u>			<u>F E M A L E</u>		
	Labor Grade 1-4	TOTAL	%	Labor Gr. 1-4	Total	%
ATTICA	ALL MALE (144)					
BALTIMORE	20	282	7%	104	204	51%
BELLEVILLE	1	140	.7%	68	74	90%
BLOOMFIELD (410)	7	697	1%	793	910	87%
BLOOMFIELD (412)	1	106	1%	2	201	1%
BUFFALO	87	2510	4%	662	748	89%
CLEVELAND	9	307	3%	48	57	84%
COLUMBUS	319	2896	11%	378	724	52%
EAST PITTSBURGH, PA.	158	7101	2%	130	393	33%
EDISON (401)	71	278	26%	310	357	87%
FAIRMONT	26	531	5%	871	1113	78%
JERSEY CITY (486)	182	773	24%	21	28	75%
MANSFIELD	624	2401	26%	501	558	90%
MUNCIE	ALL MALE (1183)					
NEWARK, N. J.	32	625	5%	204	284	71%
NEWARK, Ohio	7	78	9%	21	29	72%
TIFFON	49	2925	2%	165	208	80%
TRENTON	15	147	10%	366	406	90%
UNION CITY	51	246	21%	292	319	90%
<u>TOTAL:</u>	1659	22,043	7%	4936	6405	76%

*new hires
1973*

BALTIMORE

Local 130 - Hourly

<u>Labor Grade</u>	<u>Male</u>	<u>Female</u>
1	0	3
2	17	59
3	2	14
4	1	28
5	11	9
6	21	15
7	40	42
8	44	2
9	48	22
10	21	1
11	20	0
12	42	9
13	0	0
14	15	0
TOTALS	282	204

*Red.
5/24/73*

BELLEVILLE PLANT

Local 410

<u>Labor Grade</u>	<u>Male</u>	<u>Female</u>
1	0	6
2	0	16
3	0	34
4	1	12
5	2	6
6	3	0
7	6	0
8	16	0
9	1	0
10	15	0
11	44	0
12	0	0
13	46	0
14	6	0
	140	74

BLOOMFIELD PLANT

Local 410

<u>Labor Grade</u>	<u>Male</u>	<u>Female</u>
1	0	1
2	0	108
3	0	417
4	7	267
5	15	86
6	10	8
7	13	0
8	22	4
9	81	15
10	87	4
11	48	0
12	56	0
13	296	0
14	60	0
	<u>69750</u>	<u>910</u>

BUFFALO PLANT

<u>Labor Grade</u>	<u>Male</u>	<u>Female</u>
2	3	111
3	5	193
4	79	213
5	317	145
6	800	39
7	406	37
8	372	8
9	178	2
10	82	0
11	116	0
12	119	0
Special	<u>33</u>	<u>0</u>
	2510	748

Hourly

<u>Labor Grade</u>	<u>Male</u>	<u>Female</u>
1	3	2
2	2	41
3	4	5
4	0	0
5	51	4
6	106	5
7	34	0
8	46	0
9	27	0
10	6	0
11	6	0
12	5	0
13	3	0
14	14	0
Totals	307	57

COLUMBUS PLANT

<u>Labor Grade</u>	<u>Male</u>	<u>Female</u>
1	5	27
2	23	110
3	78	130
4	213	111
5	1098	303
6	304	15
7	400	4
8	246	7
9	93	5
10	38	7
11	32	0
12	46	4
13	111	0
14	26	0
15	26	1
16	26	0
17	37	0
18	30	0
19	29	0
20	20	0
	2896	724

FAIRMONT PLANT

<u>LABOR GRADE</u>	<u>MALE</u>	<u>FEMALE</u>
1	3	209
2	6	286
3	2	186
4	15	190
5	0	214
6	79	20
7	5	0
8	15	1
9	21	2
10	13	0
11	34	4
12	219	1
13	117	0
14	2	0
TOTALS	531	1113

NEWARK, N. J.

	<u>Hourly</u>	
<u>L.G.</u>	<u>M</u>	<u>F</u>
1	5	39
2	0	79
3	3	49
4	24	37
5	47	15
6	45	14
7	65	13
8	59	14
9	111	15
10	107	8
11	70	1
12	32	0
13	0	0
14	41	0
15	1	0
16	15	0
Total	625	284

SHARON

	<u>Hourly</u>	
<u>L.G.</u>	<u>M</u>	<u>F</u>
1	0	6
2	1	67
3	29	89
4	19	3
5	176	29
6	374	9
7	615	4
8	640	1
9	311	0
10	340	0
11	288	0
12	132	0
Total	2,925	208

SAMPLES OF DEPARTMENT OF LABOR SURVEYS

Taken from Daily Labor Report

ANAHEIM, CALIFORNIA - October 1974 - May 5, 1975

	<u>Men</u>	<u>Women</u>
Order Fillers	\$ 5.48	\$3.55
Packers	4.21	3.68

GREENSBORO-WINSTON-SALEM, NORTH CAROLINA - August 1974 - 2/10/75

Typists, Class B	153.00	119.50
Computer Programmers	216.00	186.50

LOS ANGELES-LONG BEACH, CALIFORNIA - October 1974 - 5/13/75

Payroll Clerks	209.50	168.00
Drafters, Class A	236.50	218.50
Computer Systems Analysts (ClassA)	335.50	302.00
(ClassB)	296.00	274.50

MIAMI, FLORIDA - October 1974 - 3/21/75

Accounting Clerks, Class A	185.50	161.00
Computer Operators, Class B	174.50	148.00

BALTIMORE, MARYLAND - August 1974 - 2/13/75

Order Clerks	164.50	118.00
Computer Programmers (Class B)	225.50	204.50

BOSTON, MASSACHUSETTS - August 1974 - 2/26/75

Order Fillers	4.22	2.86
Packers, Shipping	3.92	2.65

CHICAGO, ILLINOIS - May 1974 - 1/13/75

Packers, Shipping (Manufacturing)	4.01	3.18
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DAYTONA BEACH, FLORIDA - August 1974 - 2/24/75

Janitors, Porters, and Cleaners	2.56	2.16
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- Poir's evaln still blatantly cont'd in blue collar work
- Women as well still basically denied access to ~~top~~ higher grades

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May 21-23, 1975

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*File
Sc of Description*

Industrial Relations Section

June 18, 1974

The Reverend John Crocker, Jr.
The Technology and Culture Seminar
312 Memorial Drive
Cambridge, Massachusetts 02139

Dear Mr. Crocker:

I regret that the condition of faculty participation on the Merit and Equality in a Just Society seminar is so restrictive. Under a grant from the National Science Foundation I have conducted three research workshops at M.I.T. on equal employment opportunity. Many of the issues to be discussed in the Technology Seminar were noted by participants at the M.I.T.-Sloan School workshops.

I am enclosing a copy of the program, summaries of papers, research recommendations from the first two workshops. If participation in the faculty discussion sessions could be considered on a part-time basis, I would be pleased to attend.

Sincerely,

Phyllis A. Wallace

Phyllis A. Wallace
Visiting Professor of
Management

PAW/fm

Enclosure



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Industrial Relations Section

February 14, 1974

RESEARCH WORKSHOP ON EQUAL EMPLOYMENT OPPORTUNITY

We promised to make available at an early date the recommendations from the workshops of the recent conference on equal employment opportunity. Since participants at the final plenary session did not have an opportunity to comment on the recommendations, you may wish to do so now. Many of the recommendations will need to be examined in the succeeding workshops.

In addition to the recommendations from this conference, we have listed the priority recommendations from Working Group II, Committee on Economic Discrimination Against Minorities. This interagency committee was chaired by Frank M. Dunbaugh, Deputy Assistant Attorney General, Civil Rights Division, Department of Justice.

Phyllis A. Wallace

A handwritten signature in cursive script that reads "Phyllis A. Wallace".

Abraham J. Siegel

The participants in the Workshop on Equal Employment Opportunity in Public Employment generated the following list of questions which in their view constituted a feasible research agenda in this area. The questions focused on issues of both strategic and tactical significance.

1. Are there areas or agencies in public employment where minorities and/or women are concentrated or employed in substantial numbers? What factors might account for this? How strategic are these factors in shaping the progress to be made in improving employment for minorities and/or women in the public sector?

2. What will be the impact of public employee unionism on hiring and advancement of minority groups? What has the impact been up to now? In reviewing past experience, could we also seek to relate variations in experience in the private sector as between craft and industrial unions? What sorts of union structures might be most effective in encouraging minority employment in the public sector?

The group recognized that a caveat needs to be kept in mind in trying to draw any implications concerning the relation of particular collective bargaining structure to a good EEO record. That is to say, it was realized that such good performance might be more fundamentally generated by some common underlying factor rather than attributable directly to a causal relationship running from union structure to EEO performance.

3. What will be the impact of shifting from the "great society" to the "new federalism" mode of allocating resources? In the former style, substantial increases in the numbers of minorities in public employment were directly attributable to the generation of new federal agencies focusing on social and communal problems which employed minorities in large numbers. Under the latter style, a relevant question arises concerning the shifts in employment which may accompany the shift from federal to more local administrative centers for dealing with some of these social issues.

4. How significant is the "great man" as against the "institution"? That is, does it make any difference in the speed of progress with which equal employment opportunity is advanced or not to have a strong attitude concerning this issue at the top of an organization or will penetration rates be more affected by the nature of the organization? (In a sense this may be a version of one question implied in the first issue which was raised by the group concerning an appropriate model for accounting for high concentration of minority and/or female employment in different portions of the public sector.)

5. How strong are patterns of informal organization groupings in nurturing or maintaining a variety of patterns of job discrimination?

6. Who should bear the real resource cost of "gambling" on a variety of statistical predictors with people hired on non-Civil Service

or merit basis? Is valid statistical discrimination allowable? Who suffers because of statistical discrimination and what is the real cost to the taxpayer of adopting statistical predictors as guideposts in the selection of employees?

7. Are selection tests for public employment valid in the sense that they have a clear relationship to subsequent performance on the job? I.e., there was a suggestion for more of the sort of study which Mr. Cohn described in connection with the New York police case which he described to the group yesterday.

8. What has been the character and effectiveness of the organizational socialization process where affirmative employment action has been attempted and succeeded? What steps may be taken to abet an effective socialization process?

9. What is the effect of either an absolute preference or a point system of veterans' preference on public employment of minorities and women?

National Science Foundation Workshop on
Economics of Discrimination, January, 1974

Report of Workshop II - EEO in Educational Institutions

Mary P. Rowe, Ph. D.

FEB - 6 1974

Overview

The group was strongly in favor of further research in the area of EEO in education, saying, for instance, "It is extraordinary how little is known after half a decade of urgency in affirmative action." Several participants felt there should be more quantitative study. Case studies of success and failure were even more strongly pushed:

- in order to make explicit what "success" and "failure" may be;
- in order to track process as well as "output";
- in order better to understand the psychological as well as economic processes;
- in order to see a complex process for the complex process it really is, and illustrate alternatives for action that are appropriate to institutions which differ greatly from each other. Several participants suggested this would best be done with a critical incident study ("what happens just after a university receives its first affirmative action letter/ first rejection of AAP, etc. ?")

This workshop had no formal papers to discuss. We had, therefore, a blackboard with questions suggested on each of the three workshop topics.

These topics were discussed and amended. Questions marked with an asterisk were those most discussed.

Workshop Topics

I. Affirmative Action Planning

• Do AAPs cover the right subjects? What about addressing segregation by occupation systematically, as in recruiting men into "female" occupations, and whites into "minority occupations"? What about paternity leave, gliding work schedules for men as well as women?

* • Does AA cover things in the right way? Are rules set up for business appropriate to education? For example, is utilization analysis appropriate for tenured professions where the pool is miniscule and may be "one" or "none"? ^{And} (With or without utilization analysis for top positions, will progress at the bottom continue up?)

Isn't AA a pretty heavy, clumsy tool to address the ranges of problems of discrimination? How about ranges of action for ranges of problems?

Is the legislation properly cast? How about "carrots" rather than sticks - can AA be less punitive?

Is it appropriate to put the onus for suits on aggrieved persons; is it just to force the victim to fight for redress? Are there alternatives?

• Will AA be successful? How would we measure success? Where success occurs, why and how does it? This was felt to be the question most in need of a case study, to get operational, de facto data rather than rhetoric. Also, this kind of study might help us understand effective technical assistance possibilities.

• What about backlash, and subversion of AA? What is the effect on minority and women students (now increasingly being accused of "competing unfairly")?

* • How do we feel about the back-up and legal machinery? Should we rely more/less on judicial process? For example, do we need EEOC Guidelines immediately or should we build in areas other than judicial redress?

* • What about academic freedom, effect on tenure possibilities? Are there alternatives to government action in academe (e.g., intra-academic arbitration systems)? What are the alternatives to tenure and what do we think about them? Can academe govern itself better?

II. The Effects of Adding in Sexism to AA

• Competition between minorities and women - is it real? If so what to do?

• What to do about the minutiae of sexism as well as racism?

• Discrimination in elementary schools and high schools - the likely effects of their having been included into AA.

• Differential effects of sexism vs. racism, with respect to integrating formerly sex-segregated occupations. Short and long-run effects of desegregating formerly female as well as male occupations. Different recruitment patterns and different political questions attached to rectifying sexism.

• Should AA monitors and EEOs always be minority, and female, for their respective concerns? If so must an organization have both minority and female representatives? If so will these persons have the clout they need

if they are chosen on the basis of race and sex; is it better to have EEOs and monitors who also have other functions? And is it racist/sexist to insist that EEOs be of "appropriate" race and sex?

* • Do we agree that EO for women and minorities represents a zero sum game for society? Is this question different for women than for minorities? If EO is seen as a zero sum game in long-run or short-run, does this imply anything for what we think education is all about? How about the implication that (women's) non-monetized work is without value?

III. Education, Employment and AA

• The need for better data; research on expected returns to education in different fields;

* • Is it easier/harder to achieve EO in time of economic expansion? The answer seems obvious, but how about the widening wage gaps between men and women in the late 1960's? How should the answer(s) to this question affect our basic outlook on priorities for EO (e.g. concentration on expansion; many more shared jobs, gliding work schedules)?

* • We need to study situations where EO means expanding supply (e.g., engineering) vs. expanding demand (as above).

* • What are the effects of population change and changing technology? Should we be counselling people away from academe? More toward various kinds of shorter work week, unpaid employment? What can we do right away about vocational counselling for both men and women, to see opportunities in unpaid and paid employment?

Report of the Workshop on the Private Sector

Charles A. Myers, Moderator
Ruth G. Shaeffer, Co-Moderator
Robert Moser, Rapporteur

Representatives of the private sector were joined in this workshop by those from EEOC, OFCC, and other groups (mainly non-governmental) as well as by several academic scholars who gave papers earlier. The following conclusions emerged from the discussions which covered a wider range of topics:

1. Research already reported at the morning session has pinpointed the general problem of racial and sex discrimination but it is not geared to what private employers or doing or should be doing in achieving affirmative action or equal employment opportunity goals. More specifically, there has been little or no research on different strategies of implementation of these goals, through acceptable techniques of underutilization analysis or goal setting. There is inadequate standardization of terminology, especially as used by different compliance agencies. Research is needed on the results of agreements reached between private firms and EEOC or OFCC. Some internal studies are being done by the Bell System, which may be released, and at least one sociologist as consultant to New England Telephone hopes to complete an evaluation of the implementation of the EEOC agreement in that Bell System Company.

2. Psychological research on effective methods of achieving EEO goals would emphasize the nature of the internal reward system which affects line managers and supervisors. For example,

methods of evaluating managerial and supervisory performance which include achieving "affirmative action" targets; bonuses tied to this achievement, other non-financial incentives, and bottom-up target setting by employee groups are all worth specific study.

3. The value of employer participation with enforcement agencies (EEOC-OFCC) in setting affirmative action goals, as in the Bell System agreement, have positive values in recognizing the need for participation, as opposed to litigation and court orders, in achieving meaningful change. The time may now be ripe for voluntary compliance through EEOC, which has now established an Office of Voluntary Compliance, and has issued a two-volume manual for employers on "Affirmative Action and Equal Employment Opportunity." The U.S.E.S. also has a package of methods of underutilization analysis and goal setting for use by employers seeking to be in voluntary compliance. If these efforts succeed, research could be directed to the effectiveness of such voluntary compliance, as employers seek this route-with all the help and guidance they can get from the enforcement agencies.

4. Professor Patricia Gurin pointed out that if EEOC or OFCC could provide researchers with two sets of firms, those which have used innovative and successful methods of achieving targets, and those which have been less successful, then research could compare the experience in these two groups, with no specific firms identified as such. Research should concentrate on the organizational factors which explain the

difference between the two groups of firms. Most present research hasn't been designed to get at this kind of analysis of firm differences. Research which is intended to find "victims" will not succeed.

5. Research on experience of particular firms by outside researchers is subject to lack of confidence and lack of trust if the firm is identified and may be subject to further litigation, or believes that this will be a risk. Thus Professor Gurin's suggested research method has much to commend it.

Professor Myers concluded with a comment as a colleague of Professor Phyllis Wallace - a comment which he had not been able to make in the brief morning introductions prior to the presentation of research papers. While Phyllis Wallace had acknowledged the help of her colleagues in the Industrial Relations Section and the Sloan School, this research workshop conference, Myers pointed out, is the result of her hard work, outstanding ability, and wide circle of contacts which she has in the field of employment discrimination. We are pleased that the Sloan School has been host for this conference, but the real credit should go to Dr. Wallace, and Myers initiated the applause she deserved.

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PETER B. DOERINGER

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January 31, 1974

To: Professor Phyllis Wallace

From: Peter B. Doeringer

Re: Report of Workshop on Manpower and Equal Employment Opportunity

FEB - 6 1974

The discussion in the Workshop was far-ranging -- covering topics of research, experimentation, public administration, and research implementation. In developing a proposed research agenda, I have sought to organize and consolidate the materials discussed under four separate headings, and to use the specific examples of research mentioned to illustrate more general areas of research interest. Such an exercise inevitably entails some editorial comment and interpretation. Although I may have occasionally strayed beyond the boundaries of the workshop discussion, I have sought to preserve its sense and spirit.

I. Areas of Pure Research

1. There was considerable discussion on labor market segmentation of a variety of kinds -- the channeling activities of labor market and social institutions, the effect of competitive labor market processes upon earnings, and the general area of barriers to employment. More generally, these propositions are related to the question of what factors determine career employment patterns and what factors determine dead-end employment patterns. Related issues include:

What are the market and institutional influences shaping observed career patterns in the labor market?

/Continued

What accounts for the persistence of certain career employment patterns over long periods of time?

What are the factors that lead to the decay or breaking apart of career patterns and the formation of new career patterns?

To what extent are careers formed through external labor market mobility, and to what extent through internal labor market mobility?

Can the career paths characterizing the dominant section of the American work force -- better educated, white males -- be reproduced for women and minorities?

What differences between men and women, or between whites and blacks, will require modification of traditional male career routes?

More specific research topics include:

- a) To what extent does the family, the school system, formal and informal labor market information systems, licensure arrangements, and enterprise practices, create channels in the labor market? At what point is such channeling critical to career formation, and at what point or points in the channeling process should policy intervention occur?
- b) What does work experience mean? Is it possible to get a fuller understanding of how factors such as job content, supervisory behavior, personnel policies, and co-worker attitudes are likely to affect career development at the workplace?
- c) What factors determine the formation of attitudes and expectations in the labor force? How do these vary by race and sex?

2. A second area of research interest involved the possibility of "rehabilitating" some of the lower paying or dead-end labor markets within which women and minority groups seem to be crowded. Can we better understand the forces operating in casual labor markets, in domestic service, and in the area of the self-employed, to see whether intervention in such markets can improve the career and earnings potential of sectors where workers facing discrimination are

traditionally employed?

3. Finally, there was some sentiment for developing programs for the assessment and evaluation of regulatory activities in the labor market, to shed light both on the influence of labor market regulation and on the longer term effect of regulatory activities. Examples mentioned included the follow-up of EEO enforcement activities, the effect of minimum wage legislation, overlap of compliance activities including court actions, voluntary affirmative actions programs, and training programs directly related to EEO activities. There was also mention of analyzing the strategic role of EEO pressure in manpower development and personnel assessment within the firm. Essential to such analysis is, of course, the question of the long-term internal adjustment process to manpower training and affirmative action programs. Do employers and unions reject or accept compliance arrangements? Do they seek to further objectives that are unrelated to EEO? To what extent does the manpower development and utilization system within the firm become altered as a result of EEO activities? Are there unintended or long-range results of EEO activities that were not contemplated at the time of the initial compliance activity?

4. These research suggestions, I believe, imply that this Workshop would second the general plea for greater diversity among the social science disciplines studying EEO and Manpower problems. One approach is to encourage wider participation by under-represented disciplines and this already seems to be occurring. An alternative, and one perhaps favored by the National Science Foundation, is to encourage more interdisciplinary team research in order to broaden the disciplinary research

base. A third approach is to use research funds selectively to encourage projects that will operate at the edge of a discipline rather than at its central core.

II. Research, Experimentation, and Program Development

There was some discussion of the need to stimulate social science experimentation in policy areas related to EEO activities that can be accompanied by a carefully designed research component. Candidates for such experimentation included: the effect of various day-care arrangements upon female labor supply, testing alternative placement mechanisms and the restructuring of procedures and incentives for personnel development within the enterprise.

III. Research and Technical Assistance

The workshop considered a variety of quasi-research activities that would provide assistance to EEO efforts. Among these were technical issues such as criteria and standards for compliance, projections of supply and demand by occupation, and the development and validation of improved testing procedures. More generally there seemed to be a need for more enterprise and union-based case studies codifying and analyzing the "best practice" experience with employment programs for women and minorities, particularly for managerial positions. Mention was also made of the need to examine organizational structures and organizational incentives that lead to the perpetuation of traditional job assignment patterns by race and sex.

Finally it was suggested that consideration should be given to the development of university-based groups for providing various kinds

of manpower and EEO consulting services to manpower agencies and small business concerns. These groups could assist in the preparation and training of personnel, and also in the development of techniques and methods to better effect equal employment opportunity objectives.

IV. Research Implementation

The workshop debated the question of why so little academic research gets translated into improved public policies. The debate divided into two separate explanations: (a) that too often academic research is impractical, detached from the actual functioning of labor markets, and perhaps not sufficiently timely to be useful to policy-makers; and (b) that there is inadequate receptivity within government agencies to the information and analysis provided by academic researchers. Although the workshop did not come to a final conclusion as to a balance between these two views, it is clear that they both have some merit and that attention should be paid to resolving these problems if new research is to be fruitfully applied.

While this issue clearly lies within the jurisdiction of another workshop two personal observations may be in order. First, a substantial fraction of new research dollars should be used to stimulate researchers to disaggregate their analyses. This implies a greater emphasis on field work, case studies, and other micro-focussed activities. This approach is necessary if we are to develop more robust hypotheses, obtain independent verification of causality, and acquire information needed to design better quantitative models for testing market behavior. Secondly, it seems that there is much research to be done into the incentives and obstacles, the training needs, and perhaps

the organizational needs, within government, business and trade unions
for the more effective utilization of manpower and EEO research.

RESEARCH WORKSHOP ON EQUAL EMPLOYMENT OPPORTUNITY

Summary and Recommendations from Workshop No. V
Utilization of Research - January 21, 1974

Bernard Anderson - Moderator
Annette LaMond - Rapporteur

Seventeen persons were in attendance at the start of the workshop, and at least ten remained for the entire time. Most of the participants were representatives of private industry, public, and civil rights organizations; few academics participated in the workshop.

Two assumptions seemed to be held by most participants: 1) the goal of equal employment research should be the rapid and complete equalization of the socio-economic position of minorities and others, and of men and women in the labor market, and 2) more and better research, together with greatly improved utilization of research can greatly facilitate the achievement of goal number 1. Within the constraints imposed by time, and the necessity to provide a maximum opportunity for participants to air their views, the following concerns were expressed:

1. The utilization of research will depend in part on the improvement and continuation of major government statistical surveys. It seems at this time, however, that some of the surveys (like the annual poverty survey) have been or are being phased out. Moreover, the Office of Management and Budget does not appear inclined at this time to take a stronger hand in reconciling existing statistical surveys to make them more

compatible with the requirements of EEO research.

2. There are at least six end use categories for EEO research:

- a. Enforcement litigation
- b. Development of public policy
- c. Academic discussion and refinement
- d. General public information
- e. Development of strategies by action groups
- f. Development and implementation of affirmative action plans in private industry and public agencies

The parties in each of the listed areas have need for different types of research. A model for the efficient utilization of research must be based on a recognition of these multiple purposes.

3. There is no institutional framework for synthesizing and disseminating the results of research conducted in different sectors of the research community. There should be established a central clearinghouse for EEO research, much like the current NTIS which performs this function in the field of manpower research. The most appropriate agent to perform the function would seem to be the Research Department of EEOC. The workshop, however, was not firm in the view that EEOC should perform this role. Other possibilities include: 1) a special division of NTIS to deal exclusively with EEO research, 2) a branch of the U.S. Bureau of Census, or Bureau of Labor Statistics, 3) a newly created private, non-profit research institute with capability

both of conducting research and performing the clearinghouse function.¹

There was a view that research data accumulated by Women's and Black Caucuses within professional organizations should be brought within the circle of data available to the research community.

4. In order to facilitate the utilization of research results, research design might make better use of the case study method. This might reveal important behavioral and structural characteristics of discrimination not likely to be observed in more general survey research. A general feeling expressed by many participants was that more research is required on individual firms and other employers in order to discover how discrimination takes place and why.
5. Several modifications of the EEO-1 reporting system were recommended. First, the occupational detail should be increased, and wage data by occupation

¹Until a few years ago, a publication entitled "Fair Employment Report" was published at Fisk University. The publication was phased out because of the loss of funding from the Ford Foundation, and the unwillingness of any organization to pick up the circulation. At the present time, only the BNA, "Fair Employment Report" provides timely summaries of developments in EEO. The BNA publication, distributed bi-weekly, emphasizes new legal developments and by no means cover the major research in the field.

regularly collected. Second, the interest groups should be further disaggregated to permit separate identification of Chicanos, Puerto Ricans, and Cubans where such groups are even reasonably numerous in the labor market. Finally, the issue of confidentiality of data should be addressed and resolved in the direction of making more data collected on firms available to serious researchers.

6. More and better research is required on the efficacy of various intervention strategies for reducing discrimination. Research of the cost-benefit evaluation type would be especially welcome.
7. To facilitate research utilization, an autonomous EEO research institute might be established where academic scholars might be in residence for some period of time. Preferably, the membership in the Institute would be interdisciplinary, and the structure of the organization geared specifically to multi-discipline research. The institute would be specifically charged to engage in research and to insure that the research results were disseminated quickly and economically so that users might benefit from new ideas and insights into discrimination. The Institute might also provide in-service training for action group staff.

A very valuable task of the Institute would be the preparation and distribution of an annual report on the status of minorities and women in the American economy.

The report should provide not only basic statistical data, but also analysis of the data, with special emphasis on the role of public policy in advancing, or retarding, the progress of minorities and women toward equality in the labor market. Among the issues that might be explored are 1) differential impact of the energy crisis on minorities and women, 2) role of policies like Title VI of Civil Rights Act, and the impoundment of funds for urban renewal, or the employment and earnings of minorities and women, and 3) prospective impact of the annual budget on minority and female economic status.

8. Some interest was expressed in new dimensions of research applicable to equal opportunity goal achievements. One new direction was the work of the dual labor market advocates who have attempted to broaden the measures of economic welfare beyond unemployment and median earnings. Measures like the "subemployment index," which combine both work and income adequacy were recommended for more research and application in evaluating the impact of public policy on minority and female economic welfare.

A second area of inquiry that might prove useful for purposes of policy formulation is ethnicity studies. Research in this area might help reveal basic conditions necessary for reducing socio-economic disparities. The workshop was not unanimous in its perception of the

value of ethnicity studies, but there was significant interest in what such studies might tell us about the potential for black gains. Tom Sowell at the Urban Institute has been doing some work in this area, and might well have something to offer in a follow-up workshop.

Recommendations From Final Report of Working
Group II of Committee on Economic Discrimination Against
Minorities (August 1972)*

(1) Analytical Group - A permanent Analytical Group should be established to provide factual information and analytical studies of the economic status of minority groups. This group should perform both a library-clearinghouse function and an analysis-research function. Its mission would be to disseminate information about data sources and research findings having to do with discrimination, to develop the best use of existing data, to make recommendations for continuing development of statistical series, to provide analytical support to program managers in the government, and to design new reports and studies as needed. This should be a high level group both in terms of its position in the bureaucracy and in terms of the caliber of its personnel.

(2) Annual Interpretive Report - There should be a high level annual report on the economic status and progress of racial and ethnic minorities. The purpose would be to articulate policy with respect to eliminating racial disparities and to report on progress in carrying out the policy. In addition, it would report on and interpret major developments during the year as reflected in the available data, describe current and impending legislative, judicial, and administration actions, report on major relevant research, and contain a statistical appendix. Except for the policy statements, major responsibility for preparation of the report would go to the Analytical Group.

(3) Annual Statistical Report Series - There should be a new annual statistical report series which would focus in detail on the employment and earnings of racial and ethnic minorities. The design of this report would be the responsibility of the Analytical Group. Data would be provided by the Civil Service Commission, EEOC, BLS, Census and the Social Security Administration. The major focus would be on the earnings, occupations, industries, and education of regular full-time workers, at the national and regional level. In addition, attention would be focused on the extent of, reasons for, and impact of part-year and part-time work.

(4) Special Report on Industries - In order to facilitate targeting of compliance activities by industry, a statistical report should be prepared and updated periodically which would consolidate much of the available information on 3-digit and 4-digit industries. This report should be prepared by the Analytical Group in cooperation with BLS, OFCC, and USTES (the U.S. Employment Service). The report should include information on the level and growth of employment, and projected trends; turnover, job vacancies, and long-term replacement needs; size

distribution and geographic distribution of firms; occupational structure; wage rates; and union membership. Most of these data are available from BLS.

(5) Study of Special Problem Groups - There is a need for more understanding about several ethnic groups that have experienced economic discrimination at some point in their history, that are geographically concentrated, and are not readily identifiable in the CPS or other recurrent data systems. The major examples are the American Indians, the Orientals, and within the overall Spanish American group, the Puerto Rican and Mexican American subgroups.

*These are the high priority recommendations from the committee. The committee was chaired by Frank Dunbaugh, Deputy Assistant Attorney General, Civil Rights Division, Department of Justice.



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May 8, 1974

RESEARCH WORKSHOP ON EQUAL EMPLOYMENT OPPORTUNITY

Detailed notes from the second research workshop on equal employment opportunity are attached. The discussion on the recommendations from the January sessions and the report by Professor Walter Fogel on the Chicano worker have been reported. Please treat these materials as preliminary.

A concurrent workshop on the Parnes longitudinal data was also held on March 29. Copies of the notes from this workshop are available upon request.

Phyllis A. Wallace

Phyllis A. Wallace

PAW/fm

Enclosure

RESEARCH WORKSHOP ON EQUAL EMPLOYMENT OPPORTUNITY

March 29, 1974

The morning session of the second research workshop on equal employment opportunity began with a discussion of Mexican-American labor market experience by Walter Fogel, Professor of Economics at UCLA. Professor Fogel discussed some of his findings from his forthcoming study (co-authored with Vernon Briggs and Fred Schmidt) titled The Chicano Worker. He addressed the following concerns: measurement, population, immigration, labor force participation, income, occupations, and policy and research.

Notes from the Chicano Worker--Walter FogelA. Measurement (based principally on the Census)

1. Spanish surname
Permits comparisons over time--1950-70--for five States of the Southwest. (Texas, California, Colorado, Arizona, and New Mexico).
No data on areas outside of the Southwest.
2. Mexican origin (used by Census and CPS).
Enumerated for entire country and for several states outside of the Southwest.
Best concept for isolating the disadvantaged Chicano population.
Over time comparisons not now possible.
3. Spanish language-Spanish surname
Only available for Southwest.
Enlarges Chicano population and improves its economic status because many of the families picked up are headed by Anglos who have married Mexican American women.
4. The three measures produce different numbers and statuses:

	(Calif.)	
	<u>Population-1970</u>	<u>Med. Family Income-1969</u>
Spanish language-Spanish surname	3.1 million	\$8,800
Spanish surname	2.2	8,400
Mexican origin	1.9	8,050

B. Population--Change and Measurement

1. Population increase of 33 percent occurred for Spanish surname in the Southwest between 1960 and 1970. The increase in California was 53 percent. Spanish surname are now

from 14-18 percent of population in Southwest, depending upon which measurement concept is used. Some estimates are for a Chicano population in California in 1980 which is at least a fifth of the total population.

Research is needed on the sources of population growth, and on population and labor force projections.

2. Spanish origin population recently took a big jump due to measurement and technical reasons. The estimate of the Spanish origin population as of March 1973 is 10.6 million compared to an estimate of 9.2 by the Bureau of the Census in 1971 and a Census count in 1970 of 9.1 million. The Mexican origin population, the largest component of the Spanish origin group, increased from 4.5 million in 1970 to 6.3 million in 1973--an increase of 40 percent.
3. Reasons given by the Bureau of the Census for the increase:
 - a. Changed definition to include children in families where wife only was Spanish origin--picked up 400,000 persons.
 - b. Added "Mexican American" and "Mexicano" to the origin designations.
 - c. Improved and enlarged sample
 - d. Bureau of Census states that natural causes may account for two-thirds of the 1970-73 increase. That is probably too large a guess.
4. There should be a careful study of these matters.

C. Immigration

1. Legal was 65,000 in 1972, up from 45,000 in 1970.
2. Illegal immigration occurs in large, but unknown numbers. An INS officer estimated it at 300,000 to 500,000 alone in Los Angeles in 1973. There were 600,000 apprehensions of illegal aliens in the Southwest in 1973, up from 400,000 in 1972.
3. Most illegals are men of working age. They are a significant source of labor supply to many low wage firms of the Southwest and especially to farming.

D. Labor Force Participation

1. Males--quite similar to Anglos. Low where dependence on agriculture is strong.

2. Women. Participation rates are 5-6 percentage points behind Anglos and much behind blacks. In Calif., however, difference between Chicanos and Anglos is only two percent and gap seems to be closing.

E. Income

1. Relative family income of Spanish surname to Anglo was unchanged between 1959 and 69 at .65.
2. Relative family income rose in most of the Southwest, but fell in California. The latter was probably associated with the substantial migration of Chicanos to Calif. which occurred over the 10 years.
3. Small amount of analysis of these changes has been done.

The relative income changes seem not to be connected to changes in schooling.

- a. Relative income in California did not rise, but relative school years completed did.
- b. In Texas, relative income rose more rapidly than relative schooling.
- c. Relative income by schooling class is up considerably from 1959. It is over 1.00 through 8 years of schooling and is over .90 through 12. Results from pretty good job success in manual markets.
- d. A human capital wage equation underpredicted actual Spanish language wages by 14 percent with 1969 data, while over predicting black wages by 19 percent. Spanish groups earn more than would be expected from their amounts of schooling.

F. Occupations

1. Relative occupational position of Chicanos increased 1960-70:

Calif. .81 to .85	Texas .75 to .81
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2. Gains were made in craft and white collar employment. There was a relative movement away from unskilled occupations, especially farm work.
3. Labor market for Chicanos
 - a. Queue type processes allocate them to low wage firms because of 1) discrimination and 2) use of credentials and other formal selection criteria.

b. Evidence:

Inferential from research on blacks.
Negative relationship between Spanish surname proportion of industry employment and the industry wage level--controlling for industry occupational structure. Spanish surname are allocated to low wage industries.

This relationship does not exist for laborers - no discrimination and no qualification disadvantage.

Negative relationship between wage rate and Spanish surname employment across craft job classes (detailed occupations). Spanish surname are allocated to low wage craft occupations.

Within broad occupational categories, Spanish surname have high index of job position but low relative earnings. Probably produced because of low access to high wage firms.

In 1967 Spanish surname were less frequently employed in "prime" government contractors--high wage firms--than in other firms.

G. Policy and Research

1. Should face conflict between anti-poverty and immigration policy for Chicanos. Requires research on illegal immigration and its impacts.
2. Mobility within U.S. of Chicanos--especially out of South Texas--should be encouraged by various means.
3. Anti-discrimination efforts should be directed chiefly at large employers and government. Research needed on labor market processes by which Chicanos are allocated.
4. Need improvement in schooling quantity and quality, with bilingual assistance provided.
5. Much research needed to support and guide all of above.

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During the remainder of the session the following areas were identified for further exploration:

- (1) Specification of the role of unions in employment discrimination, and the participation of minorities and women as officers and members of executive boards of unions. The extent of affirmative action provisions in union agreements should be examined. What is the potential for the grievance and arbitration system to provide relief from discrimination? Need to examine the extent to which public unions are involved in assisting employees with the processing of equal opportunity complaints. Recommendation No. 2 from the Public Employment Workshop was identified as a priority item because of the growth of unionism in the Federal sector.

"What will be the impact of public employee unionism on hiring and advancement of minority groups? What has the impact been up to now? In reviewing past experience, could we also seek to relate variations in experience in the private sector as between craft and industrial unions? What sorts of union structures might be most effective in encouraging minority employment in the public sector?"

- (2) Questions of interpersonal relations as they relate to affirmative action programs. Where do you pay attention to informal processes as well as formal processes? How are affirmative action decisions made within the institutions?
- (3) Organization development approach to affirmative action as opposed to a personnel-legal division orientation. Research in organizational structure, organizational behavior and systems dynamics.
- (4) Need to re-examine the area of affirmative action from the perspective of the government institutions. Need to know more about feedback between national economic policies and affirmative action and how these policies (inflation, growth, etc.) affect affirmative action in different kinds of institutions and in different kinds of labor markets. It is important for affirmative action agencies to be aware of unfolding issues, and to be flexible.
- (5) Serious problem of dwindling resource base and tougher competition on a dwindling number of opportunities particularly in the attractive areas. The question of the zero-sum game needs to be examined perhaps from the perspective of the majority groups--for example, the competitive drives. Some competition may be

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fostered by the way some affirmative action programs are administered.

- (6) Need to be able to measure progress sector by sector and company by company. Need to know more about the characteristics of internal labor markets.
- (7) There was a lengthy discussion on the best model for encouraging the participation of the business community in research on equal employment opportunity (American Arbitration Association, The Conference Board, informal business association for sharing information). What about the industrial think tank model? One could facilitate research in a business-oriented environment through case studies of successful programs. Perhaps we might investigate how research on collective bargaining became a respectable activity--useful analogy.
- (8) One participant noted that we were attempting to define a model with a variety of participants (government, industry, etc.) and with different perspectives (academicians, lawyers)--trusting each other and working on an unique problem.
- (9) Need improvement of data on availability of minority groups.
- (10) Research on issues of qualifications and selection and projections of needs of institutions. Institutions have constantly reproduced their own kind, so if "qualified" minorities and women are not presently available, they need to be produced.
- (11) Several participants raised many questions about the powerful role of the Educational Testing Service.
- (12) How do supervisors evaluate people? Upward mobility is now a critical factor.
- (13) Attention to possibility of utilization of research by grass roots organizations was reiterated.
- (14) Consideration of the training of people in the area of EEO.
- (15) Use the Public Employment Program (PEP) to do some research. Some jurisdictions did alter their hiring requirements.
- (16) Bearing the cost of EEO is greatest problem that this society faces. The labor market should be opened to improve the structure of job opportunities. Opportunity structure must be opened up. What about

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redistribution of income--making earning levels more similar on jobs--freer entry into some professions.

(17) One participant suggested:

- (a) Need to do more research on religion, national origin, and age.
- (b) What about equal pay? Job analysis and strategies of enforcement?
- (c) Equal benefits or equal costs--fringe benefits in sex discrimination. Need for more research or work and fringe benefits.
- (d) Failure of educational institutions to provide training in equal employment opportunity--as a profession to train people for.
- (e) Uneven distribution of understanding of EEO. Need to equalize distribution of knowledge. Some research on extent of penetration and technique of distributing this information.

(18) Other suggestions were:

- (a) Develop a more effective compliance strategy.
- (b) Give priority to recommendation No. 6 of Workshop No. 5:

"More and better research on efficacy of various intervention strategies for reducing discrimination."

- (c) Who will man the agencies involved in social programs under Comprehensive Employment and Training Act (CETA)? Who will serve the clients? Give priority to recommendation No. 3 of Workshop on Public Employment:

"What will be the impact of shifting from the 'great society' to the 'new federalism' mode of allocating resources? In the former style, substantial increases in the numbers of minorities in public employment were directly attributable to the generation of new federal agencies focusing on social and communal problems which employed minorities in large numbers. Under the latter style, a relevant question arises concerning the shifts in employment which may accompany the shift from federal to more local administrative centers for dealing with some of these social issues."

Summary

I

A broad description of the changes in minority and female employment that took place between 1966 and 1970 for a set of 40,445 establishments matched by employer identification number and county is as follows: the occupational position of black males was 77.8 percent of that of anglo males in 1966 and increased by 2.3 percentage points over the 1966 to 1970 period. For Spanish surnamed males, on the other hand, the overall change in the relative occupational position index was .2 percentage points. The occupational distribution of anglo females changed very little relative to the occupational distribution of anglo males. The relative occupational position of black females, on the other hand, increased from 84.7 percent of that of anglo females in 1966 to 88.9 percent of that of anglo females in 1970. Likewise, the relative occupational position of Spanish surnamed females increased by 1.3 percentage points over the 1966 to 1970 period.

Since it is difficult to gauge the size of the changes in occupational position just reported against each other or against what might be expected, it is useful to state them in a different form. If we suppose that the rate of change of each of the indexes we have just reported was maintained indefinitely, black and Spanish surnamed females would have the same occupational positions as anglo females in approximately 11 and 24 years respectively. Under the same conditions black males would have the same occupational position as white males in 35 years. The rate of change in the occupational position index of Spanish surnamed males was so small that it

would take several hundred years for this group to have an occupational position equal to anglo males.

II

We have used the detailed records for a matched sample of firms in 1966 and 1970 to estimate the extent to which the change in the position of black male workers relative to white male workers was greater among firms with contracts with the federal government than among firms without such contracts. Since all of the Office of Federal Contract Compliance efforts to improve the relative position of black workers operate on firms with federal contracts, and since the EEOC's efforts are presumably more successful with such firms, we concentrate on this issue because it presumably gives us some indication of the overall impact of government efforts on changes in the relative position of black workers.

First, we find that the relative employment of black male workers increased by 3.3 percent more over the period 1966 to 1970 in firms with government contracts than in firms without government contracts, and that this difference is statistically significant. Second, we find that the relative occupational position of black male workers increased by .2 percent more in firms with government contracts than in firms without contracts, but that this difference is not statistically significant. Taken together with the fact that approximately one-half of the firms in our sample had government contracts, these

results imply that the rate of change of the ratio of the share of black male wages to white male wages may have been 2 percent greater over the period 1966 to 1970 than would have been the case in the absence of the overall government effort. If, for example, the share of black male wages in the average firm was 10 percent of the share of white male wages in the average firm, then the government effort would have increased it to 10.2 percent. Alternatively, since the ratio of the share of black male wages to white male wages increased by 28 percent in the period 1966 to 1970, we may attribute approximately .6 percent of this to government efforts.

The most important factor affecting the change in the relative position of black male workers in these data appears to be the migration of black workers to the North Central region of the U. S. The employment of black workers relative to white workers increased by approximately 20 percent more in the North Central region than in any other region of the country. This migration also resulted in a smaller rate of increase in the relative occupational position of black male workers in the North Central region than in any other region, and undoubtedly resulted because the migration of workers was from the lowest paying occupational categories. This presumably increased the growth in the relative occupational position of black male workers outside the North Central region and decreased this growth inside that region.

Finally, we have investigated the factors that affected the probability that a firm with no black male worker in 1966 would have

hired at least one such worker by 1970. We find that the probability that a firm that was not "integrated" in this sense in 1966 was integrated in 1970 was nearly .1 higher in 1970 among firms with government contracts than in firms without them.

III

The basic data used in the analysis for this report was a sample of approximately 100,000 aggregated employment units created by employer identification number and county from EEOC data for 1966 and 1970. Approximately 40 percent of these units, representing 65 percent of all employees, were matched as between the two years. A crude survey of a small sample of firms suggested that (a) natural growth and decline about the employment level determining the reporting requirement, (b) errors, and (c) multiple employer identification numbers account for the bulk of EEO-1 reports that could not be matched between the two years.

In order to explore systematically the differences in employer characteristics associated with a successful match between the years 1966 and 1970 we computed a multiple regression using the 96,244 aggregate units for these two years. It is clear from these results that the aggregate units in our matched sample are not a random sample of the aggregates we created from the 1966 and 1970 data. If they were, there would be no significant differences between the matched and unmatched samples of firms associated with region, industry, etc. In fact, these

latter variables have a statistically significant effect on the probability of two reports being matched. At the same time, it would be easy to exaggerate both the size and the effect that these variables have on the probability of matching.

It seems likely that the most important systematic determinant of the non-random character of the matching is employment fluctuations about the basic reporting requirements. If this is the case, inferences drawn from our matched sample may not be too different from inferences that would have been drawn from the whole population of EEO-1 reports.

Conclusions

Our most important conclusion is that it is now computationally feasible to take advantage of the longitudinal character of the EEO-1 reporting system data in order to add significantly to our knowledge about the size and nature of the impact of governmental efforts to raise the relative economic position of minority and female workers. In particular, the unique longitudinal character of these microeconomic data can be used to help evaluate both the magnitude and the causes for any effect that may be attributed to governmental activities. The specific analyses that are feasible using the methods described in this report include the following:

1. To the extent that specific industries or geographic areas are subject to special efforts to increase the relative position of minority or female workers it should be possible to analyze the extent of success of these efforts using longitudinal data from the EEO-1 reporting system.

Data on the relative position of minority group workers prior to the government action are first selected for both the firms that are subject to and the firms that are not subject to the government effort. Data are then obtained for both sets of firms in the period after the government action. Comparison of the change in the relative position of minority or female workers as between firms affected and unaffected by the government action than gives an estimate of the effect of the program. An obvious candidate for this type of analysis would be the recent EEOC efforts to intervene in the Federal Communication Commission rate hearings in order to increase the employment opportunities of minority groups and women.

2. The same kind of analysis could be carried out using the EEOC data on compliance activities. Data on the relative position of minority and female workers in firms with and without subsequent compliance activities would first be collected. Then the difference in the change in the relative position of minority group workers between firms with and without compliance activities could be compared in order to estimate the average effect of compliance activities on the relative position of minority group workers. Moreover, it should be possible to shed some light on the effects of systematic factors determining the success of compliance activities.

3. Finally, it would be possible to obtain better information on the existing shortcomings of the EEO-1 data system if some sample of records from those firms obligated to file EEO-1 forms, but that did

not, were obtained and analyzed. If the EEO-1 data are increasingly shown to be useful for providing information on the evaluation of EEOC efforts it should be possible to justify the costs of such a sample by the benefits in reliability and confidence in the basic EEO-1 reporting system data that would result.

If properly followed up, the EEO-1 data system should begin to provide the information that both sound management and equal employment opportunity policy require on the actual, as opposed to the intended, effects of the 1964 Civil Rights Act. This unique opportunity should not be delayed.

Summary of
New York City's Police: The Background and
Performance of the Class of '57

by Jan M. Chaiken and Bernard Cohen

In light of the Police Commissioner's desire for recruiting a new type of policeman--better educated, less corruptible, more capable and sensitive, and the suits by organizations representing minority group policemen, charging discrimination in the present selection process for new officers, the procedures for selection and the type of policemen it produces, have become important issues.

The RAND authors examined the records of all the men who were appointed to the N.Y.C. Police Department in 1957. These records included a variety of background characteristics and test scores, a history of their assignments and promotions, and performance measures such as awards and disciplinary actions. The performance measures covered an 11 year period, for those who remained on the force, and were derived from data typically kept in personnel files by police departments.

From these data they were able to construct a portrait of the class of '57, to identify the background characteristics and test scores which appear to be related, positively or negatively, to later performance, and to identify attributes which are commonly accepted as indicators of future good or bad performance but do not appear from data to have the anticipated results.

The selection process for N.Y.C. policemen includes a written test, medical/physical exam, a long application form, a background investigation, and then appointment for those who have passed all the steps. Finally, there is training and study at the police academy, and a six-month probationary period.

The study revealed the following relationships:

1. The two most important predictors of later performance were the officer's recruit training score in the police academy and the officer's rating while on probation.

2. The same variables were important for both whites and blacks, suggesting that it is not necessary to adopt separate selection procedures for different races.
3. The N.Y.C. Police Department's background investigators are fairly skillful in deriving an overall appraisal of an applicant. In general, the men they rated highly, turned out to be above average, and many men they were negative about, were later found to be departmental discipline problems. However, since minority applicants were generally rated lower on the average than whites by the investigators, an adequate number of minority investigators should be assigned to this step of the selection procedure.
4. A truly accurate prediction on a candidate's potential performance can rarely be derived from information collected before acceptance into the police academy. The following entries were found unrelated to subsequent poor performance: arrest for a nonviolent crime, presence of a family mental disorder, record of summonses, or any answer whatsoever to questions about region of birth, number of siblings, father's occupation, applicant's number of jobs and last occupation, military service and commendations, number of residences, and aspects of early family responsibility such as marital status, number of children and debts. In addition, the civil service entry exam score above passing was not found to be related to any of our performance measures other than the ability to pass subsequent civil service exams.

The authors see as desirable a selection process which reduces the influence of these characteristics on a candidate's chances for appointment and places greater emphasis on his early performance in training and on probation.

Summary of

Police Civil Service Selection Procedures in New York City:
Comparison of Ethnic Groups

By Jan M. Chaiken and Bernard Cohen
The New York City Rand Institute

The attorneys for both sides in a lawsuit retained the New York City Rand Institute to conduct an independent, impartial analysis of the civil service examination scores of white and minority group applicants for the position of patrolman in the N.Y.C. Police Department and the effect of the written examination, as compared to other parts of the appointment process, on the number of men appointed from each ethnic group. The plaintiffs in this case, the Guardians Association and the Hispanic Society, alleged that the written entry-level civil service examination and other parts of the appointment process discriminated unlawfully against blacks and Hispanics. The defendants were the N.Y.C. Civil Service Commission, the Department of Personnel, and the Police Department.

Applicants who took the civil service exam were not asked to state their race or ethnicity on the application form or the exam paper. Thus, the Institute was requested to collect such information as was needed to determine the examination scores and progress through the appointment process for Hispanics, blacks and non-Hispanic whites, leaving the question of whether the results indicated racial discrimination to be resolved by the legal process. Two examinations were selected for analysis. One of them, given in 1970, was the most recent exam for the position of patrolman when the study began, and the other, given in 1968, was the oldest exam in which some men who passed were still awaiting appointment. In all 10,321 men took the two exams.

To conduct the study, the Institute collected data about the subjects from several sources. Census bureau data on Spanish surnames, 1970 census tracts, mailed questionnaires, telephone contact, and Police Department records were all used to track applicants and their ethnicity. Each source of data

about the racial/ethnic classification of the subjects had certain shortcomings, but when all of them were used together, accurate estimates could be made. The analysis showed that about 71 percent of those who took each exam were white. Of the remaining 29 percent, slightly over half were black for the 1970 exam, and two-thirds were black for the 1968 exam. Considering only N.Y.C. residents, the fraction of applicants who were black was about the same as the fraction of males aged 16-34 in the City who were black. The proportion of applicants who were Hispanic was slightly lower than their proportion of the population. Over 90 percent of applicants from outside the city were white.

In all, 57.5 percent of those who took the 1968 exam passed. The authors estimated that about 66 percent of the white examinees passed the test, about 36 percent of blacks passed, and 30 to 40 percent of Hispanics passed. Among those who passed, the minority group members scored lower, and ranked lower on the eligibility lists than whites.

The 1970 exam had a higher overall pass rate - 72.9 percent. On this exam, about 83 percent of whites passed, between 45 and 55 percent of blacks passed, and 45 to 50 percent of Hispanics passed. Aside from the fraction of examinees who passed, the distributions of grades for each ethnic group on the 1970 exam were statistically indistinguishable from those on the 1968 exam. Statistical tests showed that the scores of blacks were not significantly different from those for Hispanics, while the differences in scores between whites and minority group members were highly significant. Statistically, there was less than one chance in a billion that the observed differences among the score distributions for whites, blacks, and Hispanics could have occurred if grades had been randomly distributed among the examinees, independent of their race.

The analysis therefore confirmed the plaintiffs' allegations that minority group members were less likely than whites to pass the written exam and were ranked lower than whites on the eligible list. These findings were presented to the Court

for its determination of whether they are indicative of racial discrimination.

On balance, none of the procedures which followed passing the 1968 exam was found to have an appreciable effect on the fraction of blacks, whites, and Hispanics eventually appointed. Therefore, the proportions of each recruit class that were white, black or Hispanic were about the same as the proportions among the men who passed the written exam. The authors concluded that the primary explanations for the fact that Police Department recruit classes contained a smaller fraction of blacks and Hispanics than the City population were:

1. 10 to 15 percent of applicants reside outside New York City, and few of the them are black or Hispanic.
2. City Hispanics are slightly less likely than others to apply to become policemen.
3. Blacks and Hispanics fail the written entry-level civil service exam to a greater extent than whites.

SUMMARY

AN APPRAISAL OF SELECTED STRATEGIES TO INCREASE EMPLOYMENT OPPORTUNITIES FOR NEGROES IN THE SKILLED CRAFT OCCUPATIONS IN THE CONSTRUCTION INDUSTRY

By

Leonard Godwin and Ernest Green

The purpose of this discussion paper is to examine the relative effectiveness of Apprenticeship-Outreach Programs, the Philadelphia Plan, and Home Town Plans as strategies to reduce racial imbalance in the skilled construction trades with emphasis upon the following questions:

1. What have been the major results or accomplishments of these strategies and programs?
2. What are the strengths and weaknesses of these strategies?
3. What can be done to improve the effectiveness of these approaches?

This paper is divided into five sections. Section I discusses the nature and causes of racial imbalance in construction employment. Sections II, III, and IV present the major findings of our evaluations of apprenticeship outreach, the Philadelphia Plans and the Home Town Plans. Section V contains our conclusions and recommendations.

Section I. The Nature and Causes of Racial Imbalance in Construction Employment

The widespread existence of racial employment, occupational, and earnings differentials is documented with several types of evidence. Data obtained from the 1967 Summary of Economic Opportunity show that although the proportion of blacks employed in construction is roughly equal to the proportion of blacks in the labor force as a whole,

black construction workers are underrepresented in the skilled craft occupations. Only 36% of the 385,000 blacks employed in construction in 1967 were skilled craftsmen compared with 77% of the 2,699,000 whites employed in construction that year. Current population survey data show that blacks are a very small proportion of electricians, plumbers and pipefitters, structural iron workers, and sheet metal workers. Other data compiled by the Bureau of Labor Statistics and the Social Security Administration show that the average annual earnings of white construction workers are nearly double the average annual earnings of blacks employed in construction and that black construction workers experience significantly higher rates of unemployment.

The basic cause of these differentials and racial employment differentials generally is institutionalized racial discrimination which is defined as a system of cumulative and circular causation. The basic sources of institutionalized racial discrimination in construction labor markets are (1) construction employers, (2) white dominated unions, (3) white dominated governments. The motivations for employer, union, and government discrimination are examined. The basic goal of public policy should be to replace institutionalized racial discrimination with institutionalized equal opportunity. Much remains to be done before this goal can be achieved in the construction industry, but the general level of federal pressure for equal employment opportunity in construction increased substantially during the past decade, mainly because of the extensive racial conflict which occurred in this industry.

Section II. The Apprenticeship Outreach Strategy

The most significant progress towards the elimination of racial imbalance in the skilled construction craft occupations has been achieved through the federally funded apprenticeship outreach programs which are designed to assist nonwhites to enter apprenticeship training programs in the skilled building trades. Largely as a result of these programs, there has been a substantial increase in the number of nonwhite construction apprentices. In 1960 there were only 2,191 registered nonwhite apprentices in the United States. Between 1967 and July 1973 more than 26,000 nonwhite apprentices were placed through the outreach programs.

The major criticisms of the outreach programs are (1) that apprenticeship is an outmoded and inefficient method of training, (2) that the programs are too expensive, (3) that most of the placements made through the programs have not been in the mechanical crafts which have been the most racially exclusive. Each of these criticisms are examined in detail.

One of the key factors responsible for the success of outreach programs in increasing the number of nonwhite apprentices is the strong support and cooperation/^{received}from unions which is based upon a quid pro quo.

Outreach programs have not been uniformly successful in all places but this seems to be the result of faulty administration and personnel problems rather than to a fundamental defect in the strategy itself.

III. Federally Imposed Area-Wide Affirmative Action Programs: The Philadelphia Plan Strategy

The two Philadelphia Plans have been the most controversial of all the government efforts to expand construction employment opportunities

for nonwhites. The original Philadelphia Plan suffered from a number of serious weaknesses, was declared illegal and did not produce lasting results. The Revised Philadelphia Plan eliminated the major weaknesses of the original plan, its legality has been upheld by the courts, and it has been an effective weapon against employer discrimination. The major accomplishments of the Revised Philadelphia Plan are:

1. It has been successful in increasing the number of blacks employed in the six skilled craft occupations covered by the plan. In 1969, only 283 minority workers were employed in the six crafts. By September 1973, the number of minority workers in these crafts had increased to 1,137.
2. It has done much to clarify the affirmative action obligations of federal contractors under Executive Order 11246 and has demonstrated that the principle of affirmative action is not synonymous with preferential treatment.
3. The Goals and Timetables approach which was pioneered in the construction industry, has become the cornerstone of federal compliance efforts in non-construction employment.
4. The Plan has stimulated employers and unions throughout the nation to initiate or participate in voluntary affirmative action efforts.

The main weakness of the plan stems from the fact that the resources available to the Office of Federal Contract Compliance which is responsible for the administration of the plan are inadequate. This has restricted the ability of the OFCC to expand the plan to more than a few cities. The political unfeasibility of establishing federally imposed plans in a large number of cities

also has been responsible for the restricted use of this strategy.

IV. Voluntarily Negotiated Area-Wide Affirmative Action Agreements:
The Home Town Plan Strategy

Home Town Plans which are agreements between unions, employers, and representatives of minority groups to increase the utilization of nonwhite workers on local construction projects, have been established (with the encouragement of the OFCC) in more than 60 cities throughout the nation.

The Home Town strategy is based upon three key assumptions:

(1) that employers and unions will give greater commitment to voluntary affirmative action programs arrived at through negotiations, (2) that local parties are in better position to develop effective affirmative action solutions because they are more familiar with local problems, (3) that representatives from minority communities should participate in the development and administration of programs devised for the benefit of these communities.

Most of the Home Town plans have not been in existence long enough to be meaningfully evaluated, but the limited evidence available thus far shows that many of the plans have not lived up to expectations and some have been serious failures. The authors' examination of OFCC audits of home town plans in 34 cities revealed that only four of the plans have achieved their minority utilization goals on schedule.

The authors' case study of the two Home Town plans which were established in Chicago in 1969 and 1971 reveals most of the major weaknesses of the Home Town approach.

Summary of
Psychological Issues in the Study of
Employment Discrimination

by Patricia Gurin

The aim of Patricia Gurin's paper is to offer ideas about where we need evidence from social psychological research to understand whether and how discrimination operates against minorities and women. The central issues which she discusses arise out of the questions a psychologist sees in the economist's monopsonistic model. Briefly these are:

1. How do women and men, or blacks and whites, supply themselves differently even when equally trained and equally productive?
2. What is it about their perceptions of alternatives, beliefs about opportunities, differential mobility, that may make for different supply elasticities that can then be exaggerated by employers?
3. What is it about the beliefs of employers that rationalize the conviction that the productivity of men and women or whites and minorities do differ, even when those beliefs are counter to all evidence to the contrary?

In her paper, then, Gurin reviews the evidence with respect to each of these questions and suggests further research needs.

Gurin first reviews studies of worker occupational preferences, aspirations, achievement, and work motivation. With respect to the relevant race studies, she makes several basic points:

1. There is no support for the contention that black and white youngsters want different types of jobs or that black youngsters desire less education. Controlling socio-economic backgrounds, both black and white high school and college students state much the same career aspirations, with the exception of a greater preference among blacks for professional jobs and lower preference

for careers in business. Moreover, the sex differential in career aspirations is almost exactly the same among black and white college students.

2. Similarly, studies of achievement motives and values of black and white youngsters have, in general, turned out to be the same.
3. Blacks do not differ, moreover, in responding to the challenge provided them by their work.
4. Studies show, however, that the black sense of personal efficacy is somewhat lower--reflecting reality constraints, not different values or motives. Thus, differences between blacks and whites in achievement motivation may arise in the reality-based perception among blacks that their chances for success are not as optimistic.

Gurin thus concludes on the basis of the evidence cited that it is impossible to argue that occupational differentiation by race in any way represents different aspirations or even different patterns of motivation except as motivation refers to situationally-defined exceptancies.

With respect to the myth of the black woman's dominance, Gurin counters the myth of any employment edge held by black women.

1. Black women earn less than white women.
2. Moreover, while black women represent a larger proportion of all black professionals than white women do of white professionals, black like white women are concentrated in lower level professions.
3. Black and white women also show similar aspiration and motivation patterns on the college level, through black women more often expect to combine career and family responsibilities.
4. The male edge for "masculine" occupations and female edge for "feminine" occupations among black students closely parallels those of college students generally.

5. Finally, studies show that more aspects of black men's aspirations and performance were tied to typical measures of achievement motivation and that role anxiety was greater among black men than among black women, paralleling similar studies of white college students.

Gurin thus concludes that while black women have a unique perspective given their particular life experience, sex role demands and patterns of sex discrimination in the society at large determine role appropriate educational and occupational choices, be the women white or black.

In surveying sex studies, Gurin notes three findings in particular:

1. Career aspirations of males and females at the high school and college level show that women predominantly aspire to jobs which are presently held predominantly by women. Similarly academic careers in college are strongly sex-linked. Women also make their occupational decisions earlier than men, enter college with lower aspirations and when they shift during college, they change to a lower rather than a higher level of aspirations.
2. Yet, when men's and women's levels of expectancy are equated, it has been found that among women who judge their chances for getting "masculine" jobs as positively as men, preferences are equivalent.
3. Other studies show differences in the level of expectancy to account for sex differentials with respect to achievement and affiliative satisfactions of the work situation. When expectations with respect to challenge and possibility of promotion are controlled, sex differences in preferences or desire disappear.

Gurin concludes this survey of sex studies by noting that further psychological studies which seek to unravel the role of personal motivation in accounting for occupational differentiation by sex must distinguish between aspirations and

expectations as well as recognize their interactions.

Gurin next addresses the issue of expectancies and perceptions in explaining occupational differentiation by sex. She hypothesizes that even given equal training, equal career aspirations, and other equivalent productivity characteristics, women and men, or blacks and whites, may supply themselves differently, resulting in different elasticities in the various labor pools. Such differing supply elasticities might arise in the following sorts of situations where women and minorities:

1. believe their opportunities are fewer
2. are more willing to take lower paying jobs at the bottom of a work category because of feeling their alternatives are more limited
3. are geographically less mobile
4. have differential access to jobs because of knowing fewer women or blacks in a given job through which they could know about job openings.

Gurin thus invites further studies which focus on the expectancies and perceptions through which women and minorities view processes in the labor market.

Regarding the issue of family socialization, Gurin cites studies which negate the emphasis often placed on early socialization in preference formation. While it has been shown that the effect of family background is substantial, it is of far less importance than discrimination in explaining the black-white income gap. Gurin calls for similar studies of early sex-roles socialization in accounting for sex differences in aspirations, preferences, and productivity which in turn explain occupational differentiation and wage differentials by sex.

Gurin closes by looking at studies of employers. Rather than defining discrimination as a taste, she calls for study of employer beliefs with respect to cultural stereotypes. Important here are job qualifications required by employers which may justify exclusion of women or minorities as well as the extent to which employers take advantage of separate labor

pools, thus continuing occupational differentiation by sex and by race. Finally, Gurin notes the need for original studies that delineate how nondiscrimination practices can be encouraged. Nondiscrimination requires clear policies and clear procedures which can be carried out even by prejudiced personnel directors.

Summary of
Modeling a Segmented Labor Market
by Charles C. Holt

Job search-turnover theory of the labor market has attempted to go beyond static neo-classical microeconomic theory in coming to grips with labor market adjustment processes and frictions. As such it visualizes a complex set of dynamically interacting labor markets which are characterized by great heterogeneity of jobs and workers, massive turnover flows in and out of the labor force and between jobs, and limited information which leads to substantial investments in search. The aspirations of workers for income and satisfaction interact with those of employers for high output and low labor costs. Human capital is accumulated by a worker through his sequence of job experiences, both within and between firms. Wages and working conditions are bargained by workers individually and collectively through unions. The movements of workers are impeded by barriers which are often related to race, sex, geography, and occupation. The analytic study of the equilibrium and dynamic characteristics of such a complex nonlinear stochastic process is so unwieldy that computer simulation is indicated for any models incorporating realistic complexity.

Charles Holt's paper accordingly attempts to examine processes that are important in the labor market and the kinds of policy issues that could be clarified by a systems model. The paper's aim is to increase understanding of basic labor market relationships so that the effects--direct and indirect--of manpower programs may be better predicted.

Holt stresses that in building such a structural model the stochastic nature of labor market processes--e.g. how long it takes a person to find a job or drop out of the labor force and how many people flow into unemployment from jobs or by entering the labor force--must be explicitly taken into account. The importance of the probabilistic element in the structure of the model developed in the paper by Holt is heightened by the

shortness of the time period used with the consequence that the system is not likely to be in equilibrium as well as the varying sensitivities and averages of the different regions, occupations, and demographic groups which are the focus of policy-makers.

Before presenting his model, Holt discusses alternative approaches to building a recursive model loosely coupled through probabilistic relationships. The model types are five:

- 1) model composed of difference equations
- 2) model based on a Markov process with a constant matrix of transition probabilities
- 3) model based on Jay Forrester's Industrial Dynamics
- 4) microanalytic model as developed by Guy Orcutt
- 5) group-transition model

The fifth type which is that selected by Holt groups similar workers and firms and carries out the system simulation in terms of the sizes of these groups and the probabilities of transfers of individuals between them. This model which is an aggregated version of a microanalytical model is used by Holt with primary reliance on current Population Survey Gross Change data.

A broad outline of the system modeled by Holt is given in the following diagram.

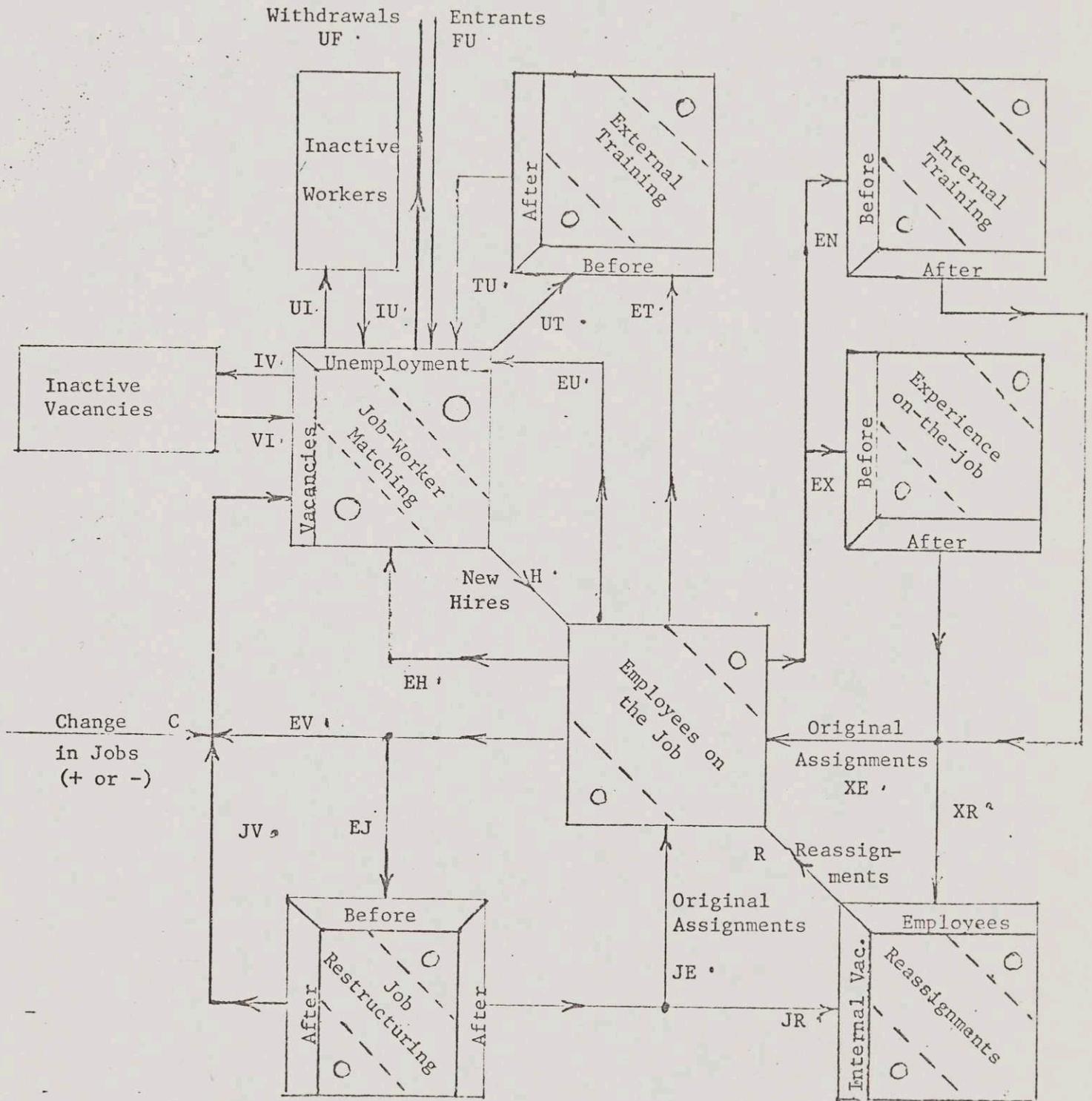
IV - Figure 1

Flow lines link source and destination:

- ET Employment to Training (External)
- EN Employment to Unemployment
- EH Employment to Employment
- H Unemployment to Employment
- UT Unemployment to Training
- UI Unemployment to Inactive Work Status
- TU Training (External) to Unemployment
- XR On-the-job Training to Upgraded Assignment
- XE On-the-job Training to Old Job
- JE On-the-job Experience to Restructured Job
- JR On-the-job Experience to Job Reassignment
- JV Restructured Vacancies to Fit Experience
- IN Inactive Work Status to Unemployment
- VI Vacancy to Inactive Vacancy
- IV Inactive Vacancy to Vacancy
- EV Employer-Initiated Quit
- JV Employee-Initiated Quit
- FN Family Employment to Unemployment
- UF Unemployment to Family Employment

Figure 1

Manpower Markets and Programs



Stocks

Vacancies
Inactive Vacancies
Unemployment
Inactive Work Status
Employment

Processes

External Training
Job-Worker Matching
Job-Restructuring
Internal Training
Experience on-the-job
Reassignments

The dynamic flows outlined should, in equilibrium, be reasonably consistent with cost and income motivations and clearing wages and prices predicted by neoclassical theory.

Holt notes that it is essential to recognize that workers are highly differentiated by skill ability, experience, location, preferences, race, and sex as well as the differentiation of jobs by skill requirements, inducements, location, and perhaps extraneous restrictions. Accordingly, there are many groups of workers and many groups of jobs. Interactions in the labor market that are influenced by these factors have the effect of segmenting the market. Hiring, reassignment employment, and separation involve worker--job pairing, while training, experience and restructuring involve transformations of workers and jobs from one type to another. In these terms, then, the productivity, satisfaction, earnings and labor costs of employment matches, and hence, the duration of employment relationships, depend on the interactions among the hiring, internal training, experience, job restructuring, and reassignment processes of the firm. The speed of placement depends on the interaction of search efficiency, external training, job restructuring and aspirations for earnings and labor costs.

Holt outlines a sequence of models based on this structure but with increasing detail and refinement.

- 1) Initial stress on differences in labor market experience and behavior by different age, sex, and race groups.
- 2) Further development with respect to occupational segregation arising out of upgrading and accumulation of human

capital.

3) Finally, the introduction of geographical segmentation.

The models will be driven by aggregate demand and its composition. The latter will be linked to the labor market. Holt states that all of these models should try to relate unemployment and its composition to inflation.

The uses of such models are several: First, forecasting labor market impacts of changes in demand and its composition. Second, prediction of indirect impacts of structural policies and programs. Third, identification of differential behavior and attributes that account for high unemployment rates and low earnings of women, blacks, and other groups.

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CHAPTER VIII

SUMMARY AND CONCLUSIONS *

The study finds that the textile industry in North and South Carolina stood at the end of the fifties as a symbol or archetype of the segregated patterns in Southern employment. Over the period of the sixties the industry has radically changed its attitudes toward racial hiring, but its image as a traditionalist employer remains, hindering its efforts to upgrade the black labor force on the basis of equal employment opportunity.

The fact that racial hiring patterns are different is reflected in the overall increase in black employment from less than 15,000 in 1960 to 61,055 in 1969. It is also reflected in the extent to which firms can and do hire black supervisors in positions of authority over whites. Finally, it is mirrored in the extent to which black workers have been promoted into jobs such as loom fixers, weavers, spinners and doffers.

The industry's image as a slow mover in the area of equal employment opportunity stems from its apparent inability to recruit, or indeed attempt to recruit,

* *Changes in Minority Participation In The Textile Industry of North and South Carolina*

Kidder

qualified black workers in positions of professional and managerial responsibility. The industry lacks an aggressive affirmative action strategy to come to grips with these manpower needs. Only a handful of companies attempt to recruit, let alone hire, through the channels most likely to generate black professionals. No textile management training programs are funded by organizations such as the American Textile Manufacturers Institute.

The lack of affirmative action strategies should not obscure the progress made by the industry. The industry has in effect brought its percentage of black participation in line with other manufacturing industries in the Carolinas, and is beginning the process of job upgrading.

Why did these changes occur in the industry? Most writers have attributed the change to the tightness of the labor market in the mid-sixties, pointing out that increases in hiring merely coincided with the passage of the Civil Rights Act and the subsequent enforcement of that Act by the Equal Employment Opportunity Commission.

The findings of this study are at variance with this hypothesis. The labor market no doubt played a significant role, but it is clear that the industry would not have been unable to find white workers to take the added 20,000 jobs in textiles, had it been determined to do so. Furthermore, the timing of the major breakthroughs in racial hiring occurred prior to 1966, the date when the labor market was the tightest and when enforcement of Title VII began.

Further evidence of the incompleteness of the labor market explanation comes from a study of relative wages over the period 1964-1969. Although it appears that textile rates were increasing in the mid-sixties, they were merely holding their own relative to other industries. Therefore, textiles could not be considered either a low-wage industry (relative to the other local forms of employment) or an industry suffering a more acute labor shortage because of exodus of workers to other industries. That this exodus occurred is unquestionably true for perhaps as many as 5,000 workers as shown by the increase in quit rates, but as a general

explanation for the need to hire the additional 26,400 black workers absorbed by the industry it falls short.

The regression analysis indicates that on a cross-section basis unemployment rates by county or county employment population rates (two measures of labor market tightness) are not significant predictors of change in black participation by reporting units. Actually counties with higher unemployment rates are more likely to show increases in black participation in textiles, since these counties also are more likely to have a higher black population percentage. Time series suggest that there were also periods of tight labor markets in the early fifties but these times were not accompanied by major breaking of black employment barriers.

What distinguishes the fifties from the sixties is, of course, the passage of civil rights legislation. Data from this study suggest that the presence of a climate of opinion favoring the extension of equal employment opportunity was a major causal factor. Government policy reflects this climate of opinion, and

operates on two levels through the Commission: the investigation and review of charges of discrimination (assumed to be a check upon conformity of employer behavior to legal requirements under Title VII) and a non-legal technical assistance program of "jaw-bone" exhortation to the industry, coupled with public awareness campaigns. Is there evidence that either or both of these techniques contributed to the explanation of why changes occurred in black participation, 1966 to 1969?

It appears unlikely that company behavior in granting more black workers jobs is a consequence of their fear of enforcement of anti-discrimination provisions of Title VII. The study showed that companies against which charges were filed in the period 1965 - 1966 were less likely than others to increase black participation thereafter. Furthermore, the chances that a company would be constrained by the legal machinery were small. Of the 118 cases brought against the textile companies of North and South Carolina in 1965 and 1966 only 17 or 14.5 per cent were carried through to a finding of probable cause.

Of these, only 10 had been successfully conciliated by the Commission as of 1971.

Many textile companies in North and South Carolina did not conform to legal requirements in the reporting to the Equal Employment Opportunity Commission, presumably out of ignorance of the law. About 78 in 600 of the potential reporting units in North Carolina and 51 in 299 of the possible reporting units in South Carolina failed to report as required by law, in 1966.

Many of the smaller companies interviewed expressed a lack of knowledge about the specific content of the law, and their legal obligations under the law. The larger corporations maintain legal staffs well versed in the intricacies of the legislation. However, since no clear definitions or criteria are available to distinguish a "discriminatory employer" from a "non-discriminatory" employer, particularly in discussions of the racial composition by department, it is unlikely that companies feel substantial pressure from the Equal Employment Opportunity Commission from the legal side.

On the other hand, it is interesting to note that the technical assistance programs of the Commission vis a vis textiles in the Carolinas do show positive correlation with subsequent change in black participation. Further, evidence suggests that technical assistance has been significant in expanding black employment in selected cases in the area of professional employment and in the field of employment of black women. In North Carolina, firms visited by the Good Neighbor Council were likely to have a 1.4 greater average percentage point gain in black participation than firms not so visited.

It appears that community pressure, and a network of informal contacts between the black community and the textile industry must be given greater credit for the change. Civil rights pressure initiated when students sat in at Greensboro lunch counters, and culminating in public testimony at the Textile Forum in Charlotte in 1967, created a climate in which it was no longer acceptable to the black labor force to conform to racially determined job categories and opportunities.

The worker interviews conducted in the course of the study reveal that workers are very sensitive to racially delimited opportunity, and are conscious and vocal about inequities they observe.

These workers are also skeptical about the enforcement powers of the Commission. Whereas forty percent gave expression to concern about discriminatory practices within the industry, none had brought charges through the Commission procedures, and most were unfamiliar with the procedures themselves. Their complaints about the industry mirror the pattern of complaints already on file: a preponderance of the charges in the latter period deal with alleged discrimination in promotions, or in job definitions which appear racially related.

The black workers in the survey appear less knowledgeable about training opportunities in the textile companies for which they work than do the white workers interviewed. Companies reported few formal training programs available; most skills are learned through observation and on-the-job experience. An analysis of

the job titles of black and white workers in selected companies revealed that black workers are less likely than white workers to be on jobs where such observational training is available. Departments such as weaving and finishing are less likely to have black workers than are the routine departments of spinning and maintenance.

Despite the fact that the Title VII enforcement procedures are weak and ill-defined, the industry seems to be responding across the board to the new requirements for extending equal employment opportunity in hiring, if not in promotion. The rural areas are not less apt to change than more densely populated areas; South Carolina firms have been overall increasing black participation faster than North Carolina reporting units, thus coming closer to the overall industry average. Furthermore, textiles as a whole are catching up to the black participation rates in other industries, such as furniture, paper and pulp products, chemicals, and other major industries. The rhetoric of the industry is positive in its commitment to the objectives of equal employment opportunity.

The interviews with company personnel suggest that the hiring of black workers into positions of responsibility, long feared as being impractical, has in fact proceeded smoothly, with little employee friction or other impediments to productivity. One wonders from talking with the personnel managers why it was not possible to have achieved this status perhaps even ten years ago.

It appears that the time may be ripe for greater emphasis on the need to expand black participation into professional and managerial areas. Two of the major textile companies have recently hired black managers, and recruitment of black students occurs in predominantly white universities offering textile curricula. Such overtures may be the beginning of a fruitful, and more extensive relationship in the future.

Summary of
Psychological Dimensions of Women's Work Force Participation*
by Judith Long Laws, Cornell University

Conventional analyses of the psychological aspects of women's occupational participation tend to focus on the characteristics of the female worker that are derived from her status as a female rather than her status as a worker. This emphasis has neglected other important dimensions such as the psychology of men about women, that of employers about employees, the features of jobs generally held by women and the labor market in which the women workers operate.

Sex segregation in the labor market has created wage differentials between male and female workers with the same qualifications. Occupations dominated by women are characterized by low pay, little on-the-job training, requiring little specialization and lack of career continuity. Sex-labelling of jobs has discouraged women from entering occupations that are characterized as "male's" and carry better career prospects and higher pay.

Surrounding the female worker, there are myths about her reliability as a worker, her capability as a supervisor, her economic needs as a wage earner, and her ability to combine her domestic and work roles. It is in this unfavorable social and work environment that the female worker has to operate.

Now we turn to the rationalizations commonly used to explain the differences between men's and women's positions in the labor market. It has been asserted that women do not have as high interests in work as men (Kuhlen, 1963). However, studies on work motivation strongly suggest that what we observe is a class effect rather than a sex effect (Blauner; Dubin; Morse and Weiss; Inkeles, 1960). Workers in higher occupations value more the intrinsic factors of their work while workers in lower occupations value more the extrinsic factors

*To appear in Phyllis A. Wallace (ed.) Some New Perspectives on Equal Employment Opportunity, M.I.T. Press (forthcoming).

of their work. If the model of the hardworking, intensely committed worker with the lifetime involvement with a career fits anyone, it fits the professional (Hall).

Women also are said to have lower career aspiration and achievement motivation compared to men. This again has neglected the complexities of the issues involved. The expectancy x value theory would help to clarify some of these issues. In line with the theory, we can separate a woman's career aspiration into two components: the value she places on a career and her expectancy of successfully achieving that career. The compromise at which she arrives taking both into consideration is what we see as her career choice. A common error is to regard this career choice as an index of her motivation for occupational achievement.

Many external constraints limit a woman's career choice in the labor market. In addition to these, she has to consider constraints placed on her by her role in the family. Studies done suggest women's occupational planning involves conscious weighing of many factors (Davis, 1964). It is the lower perceived probability of attaining a career goal that accounts for the observed lower career ambition of women, not the lower level of motivation for career achievement. Critical research on women's aspiration and occupational choice shows clearly that removal of occupational barriers brings about an immediate upward spurt in women's applications for "male" jobs and expression of career aspirations (Bem and Bem; Farmer and Bohn). This indicates that raising the expectancy factor does have an effect on the observed rising of career aspiration.

Aside from the constraints discussed above, it is also very important to look at the pressures within the female that conflict with her desires for achievement. Horner found in her study of college students that women have a motivation to avoid success, which stems from the fear of social rejection resulting from success. A common way to reduce the conflict taken was for the woman to lower her career aspiration. This conflict which is widely felt by women may account partially for the observed lower career aspiration of women.

Thus, it is important to study the process by which occupational aspirations of women are formed and shaped. At present, very little is known about this process itself and the external and internal pressures that operate in the process.

Many studies have been done to try to show sex differences in job performance. They attempt to match job characteristics with attributes of the two different sexes. However, studies have shown that women and men in the same occupation show much the same pattern of motivation and work behavior (White; Seder). There are relatively few known sex differences that appear to be connected with work motivation or job performance. In general, the distribution of abilities between the sexes is not sharply polarized. Focussing on sex differences seem to be misplacing the emphasis in attempts to match jobs to attributes of individuals.

One common observation of seemingly lower job performance of women workers compared to men can be explained in the light of the equity theory (Adams, 1963; Lawlwe, 1968). According to the theory, the individual compares the ratio of his inputs (including skill, education, etc.) to outcomes (or reward) with that of his neighbor. The work motivation (and consequent work output) of the individual is affected by his (her) judgment of the fairness of his rewards relative to other workers. If unfairness is perceived by the worker, he would adjust his input: output ratio until the equitable state is reached. For the underpaid worker, a common way to adjust is to lower his output. Another may be to seek a better bargain in another job. Women are generally underpaid for their qualifications especially with regards to education. The observed lower work motivation and higher turnover rates in some "female" occupations can be attributed to the perceived inequitable treatment.

In summary, analysis of the psychological aspects of the woman's occupational participation should look beyond her psychology as a woman, and examine other dimensions relevant to her as a worker such as social and work environment and external and internal pressures that affect her work motivation and job performance.

Summary of

Notes on a Dynamic Theory of
Employment Discrimination

by Glenn Loury and Ronald Ferguson*

This paper is concerned with an investigation of the mechanism by which past discrimination against blacks in the labor market impacts on the earning potential of current and future generations of black workers. It is conjectured that achievement of the goal of equal employment opportunity does not necessarily imply that current differences in the incomes of blacks and whites will disappear. This conjecture is supported by an analysis of the factors determining the distributions of blacks and whites across a set of occupational categories ranked by life-time earnings, which incorporates various social and psychological factors influencing the acquisition of skills by workers before entering the labor force. These factors include widespread residential segregation and the implication of local public finance of educational institutions for the quality of schools attended by prospective workers, as well as the importance of "role models" for young people in their formulation of aspirations, their perceptions of opportunities and consequently their acquisition of skills.

A model is constructed incorporating these factors, which assumes rational behavior by economic agents in the sense that individuals acquire training to maximize their expected net lifetime income. The result is that the skills with which an individual is equipped when he presents himself to the labor market depend to some extent on the income and occupational status of his parents. From this the paths of occupational distributions for blacks and whites over time may be generated by a non-linear stochastic process. The questions concerning the persistence of inequality between the races in the face of equal employment opportunity reduce to mathematical propositions about the asymptotic properties of this process. While no general results are presented, examples are constructed which

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demonstrate the possibility that inequality can persist indefinitely. Also, some computer simulations of this process are undertaken in which the sensitivity of the time paths of black and white incomes to discrete changes in their initial positions (such as would result from the imposition of employment quotas) are analyzed.

This paper concludes with a broader discussion of the policy implications and possible empirical extensions of this work. It is suggested that more emphasis should be put on correction of inequities in the availability of quality education to school children and opportunities to acquire marketable skills than is currently fashionable. The tendency to rely on the "market mechanism" to eliminate income inequality between the races is attacked as being potentially counter-productive in light of the "externalities" present in the model described above.

Summary of
Occupational Discrimination on the Basis of Sex:
A New Approach

by Jerolyn R. Lyle and Jane L. Ross

The findings presented in this paper are part of a larger study of the employment patterns of women in some 246 corporations. Two research priorities in the economics of discrimination emerged from our study:

1. much more work in the development of theories of sex discrimination is needed,
2. more firm specific research is needed.

Lyle and Ross concentrated on explaining why some firms discriminate more than others rather than on explaining why all firms tend to discriminate to some extent. Convinced that variations in employment patterns of women within industries are as important and as great as inter-industry variations, firms were selected as the unit of analysis.

A number of hypotheses relating to interfirm differences in occupational discrimination against women were tested:

1. Is the crowding of women into only jobs traditionally held by women an important mechanism among these firms?
2. Was any aspect of public policy related to the differences in the extent of occupational discrimination among firms?
3. Are there any systematic relationships between innovativeness of management practices, location of corporate headquarters, extent of urbanization of productive facilities and differences in the extent of occupational discrimination among firms?
4. Do structural variables relating to firms size, financial strength, market power, and technology of production explain interfirm differences in the extent of occupational discrimination against women?

Recently, American economists have proposed that firms in the American economy fit fairly well into a two-way classification scheme:

1. center firms: large as measured by total assets, employment, annual sales, vertically integrated, geographically dispersed, and with decentralized management.
2. periphery firms: relatively small, less geographically dispersed and less oligopolistic.

The theory of business dualism was applied to the exploration of interfirm differences in occupational discrimination. Lyle and Ross employed the automatic interaction detection technique (AID) to some 30 indicators of firm centrism, the crowding mechanism, public policy, and other aspects of firm behavior to test the four hypotheses.

The results showed that the theory of business dualism is helpful in accounting for the variance among industrial firms in the extent of occupational discrimination against women, as is the theory of occupational crowding. Both theories cannot be applied to non-industrial firms with commensurate success. In particular, the theory of business dualism breaks down outside the industrial sector. Indicators of the crowding process, whereby women are excluded from male dominated occupations, crowded into low productivity lines of work where their wages are consequently bid down, are significant among the samples of non-industrials. But important non-linearities exist in the data. Industrial firms may be grouped into absorbers (women having moderate to large share of all jobs), and creamers (women having a small share of the total jobs) of female labor in accounting for the variations among firms in the relative occupational standing of women.

These statistical results suggest some priorities for research. More efforts to apply theories about the structure of industry to the sex-specific employment patterns of firms should be made. More disaggregate research within major firms, following the now famous AT&T work done by the U.S. Equal Employment Opportunity Commission would be of great use. Developing remedies for pattern settlements of sex discrimination cases

within large firms requires more detailed studies. Finally, as many firm officials are interested in cost estimates for anti-discrimination employment policies, it is suggested research be carried out here.

Summary of
Black Employment in the South
by Ray Marshall

This paper summarizes the major findings of Marshall's Negro Employment in the South Project (NES). The main objective of the NES project was to analyze black employment patterns in 13 Southern states with a view to making policy recommendations to improve black employment opportunities. The specific questions raised were:

1. What are the black employment patterns and trends?
2. What are the main explanations for the patterns and trends?
3. What kinds of public policies are most effective in improving black employment opportunities?

The main subject matter areas studied were: rural and nonmetropolitan places, with special emphasis on agriculture; metropolitan areas, with detailed field work and analyses in Atlanta, Birmingham, Houston, Louisville, Memphis, Miami, and New Orleans; federal employment; state and local government employment; minority contractors in the construction industry; and comparisons between the South and the rest of the country.

The research procedures included a detailed review of the literature; statistical and econometric analyses using data from the Equal Employment Opportunity Commission, the Bureau of the Census, the Department of Labor, the 1 percent social security sample, and the Survey of Economic Opportunity; and field surveys in all of the major SMSA's.

Our main statistical measures of black employment patterns were penetration rates, expressing the extent to which blacks had entered various industries and occupations, and indexes of occupational position, measuring the extent to which blacks had moved up in those industries and occupations. In some cases we used other measures, like an index of tokenism and measures of segregation within a firm or industry.

This paper is divided into two main parts. The first deals with the conceptual framework we used for the NES project and the second with a summary of our empirical findings. The behavioral model we used is contrasted mainly with the neoclassical model of traditional economic theory, and to a lesser extent with multiple labor market theories.

A number of empirical and theoretical studies of employment discrimination were examined. Because of its wide acceptability among economists, the neoclassical model was examined in considerable detail. Marshall concludes that this provides some useful analytical insights although this model inadequately defines discrimination, and does not include enough variables either to provide sufficient understanding of the basic factors influencing black employment patterns or to form the basis for policy prescriptions to promote equal employment opportunities.

Specifically, the alternative conceptual model that Marshall finds most useful was one which considered the motives and power relationships between various actors-employers, white workers, black workers, government agencies, and the environment within which these actors operate. These environmental influences include such factors as race relations in the community, business conditions, and product and labor market conditions. Hence, racial employment practices are products of prevailing racial institutions as modified or sustained by the power relationships between white workers and their organizations, employers, governments, and blacks and their organizations. This model is termed a bargaining model which specifies different variables for various kinds of discrimination and for different aspects of employment opportunity. Summary of major findings:

1. Agriculture is still more important than any four manufacturing industries for blacks in the South, though the number of black farmers and the size of black farms is declining. Rapid outmigration is continuing, especially with better educated blacks. Though manufacturing jobs have opened in rural areas, blacks and many rural whites have been ill prepared by education and

experience for most nonfarm jobs. Blacks have made inroads mainly where industry skill requirements were lowest. There have been both discrimination on the demand side and a lack of labor market attributes by blacks on the supply side.

2. In metropolitan areas, black women increased their share of total employment faster than black men, though for both, operative, labor and service jobs were bigger gainers for blacks than white collar positions. There was, however, noticeable improvement in the last half of the 1960s economically, as well as politically for blacks in the South.
3. Black women are more evenly represented across occupations than black men, but not across industries. Black women were virtually absent from white-collar jobs in major industries in some Southern SMSA's where larger numbers of white women were employed.
4. In government employment, blacks found better opportunities than in the private sector. The best relative occupational positions for blacks were in the federal government, and higher penetration rates were achieved in local than in state governments. There was considerable variation in black employment by agency in the federal government.
5. Relative to their proportion of the population, blacks are underrepresented in federal employment in the South and overrepresented in the rest of the country. However, in the South, blacks are overrepresented in Wage Board and underrepresented in General Schedule jobs.

In general, for private as well as public employment, black employment varies inversely with the ratio of white collar to total employment. The most highly correlative variables for black men were: percentage of manufacturing employment, education, and industry skill requirements. For black women, the most important variables were labor market size, economic growth, and education above 12 years.

Recommendations:

1. Rural employment: Programs to help small farmers need to be established, and NLRA and other protective coverage should be extended to agricultural workers.
2. Government employment: Outreach programs should be established to recruit, prepare, and place black workers in government jobs. The internal anti-discrimination machinery within the federal government could be strengthened in several areas.
3. Private employment: There should be outreach programs to place blacks in white collar jobs, especially in non-metropolitan areas. Job training and education are necessary to deal with the inadequate human resource development of individuals in predominantly black counties in the South.

Summary of

Differences in Expected Post-School Investment as a Determinant of Market Wage Differentials

by Solomon William Polachek

The problem of the distribution of earnings within the labor sector requires that labor be viewed as a heterogeneous group whose members have accumulated differing amounts of human capital. Economists have accordingly studied three forms of human capital with respect to earnings--formal education, pre-school investment, and post-school investment. Solomon Polachek's paper addresses the latter.

Polachek begins with a statement of the assumptions which have been central to the bulk of research on post-school investment. The main assumptions are two: (1) that the marginal cost of human capital produced in a given period is upward sloping, (2) that individual labor force participation over the life cycle is non-increasing so that post-school investment declines monotonically with age. Given these assumptions, post-school investment has been specified as some function of age yielding a characteristically concave age-earnings profile.

Polachek, however, questions the validity of declining post-school investment with age. He notes that such non-monotonicity of investment becomes important in explaining the earnings behavior of secondary workers who tend to have more intermittent life cycle labor force participation patterns than white married males to which most empirical studies apply.

Polachek thus outlines a theory of life cycle human capital accumulation when expected labor force participation is intermittent. He subsequently illustrates the hypotheses generated--namely that post-school investment functions differ according to sex and marital status. Expected post-school investment is computed here by differing individual marginal revenue given that individuals of the same schooling level have identical human capital production functions and hence that the marginal cost of investment across individuals is identical. Finally, Polachek uses the measurements of expected human capital investment to explain male-female and married-

single wage differentials.

In this paper, then, Polachek hypothesizes that there exists a relation between one's life cycle labor force participation, post-school investment, and wage rate. This relationship is derived theoretically by maximizing expected earnings over the life cycle and implemented empirically by determining the extent to which differing male-female (married-single) life cycle labor force participation explains male-female (married-single) wage differentials. Since these measures were obtained by assuming the same costs of investment for all groups, the differences in human capital investments can be attributed to differences in life cycle labor force participation when these derived roles of investment were used in regressions on wages, much of the original intra-group wage differentials were explained. The result is consistent with the hypothesis that differences in wages can largely be attributed to differences in expected labor force participation over the entire life cycle.

Polachek's paper thus goes beyond those studies of intra-group wage differentials which account only for quantity differences in labor force experience. He adds the quality dimension, defined as the difference in the rate of post-school investment. In attempting to account for the interaction of differing experience patterns and their associated rates of post-school investment, Polachek invites further work exploring the role of expected life cycle labor force participation behavior in the determination of both male-female and married-single wage differentials.

File ~~111~~
Measuring, in
Discrimination (new
file)

To: ~~Wiesner~~ ~~Gray~~ ~~James Richard~~ ~~Peter Richardson~~ ~~Clarence Williams~~ ~~John Turner~~ ~~Leslie Hruby~~ rer MPR

(In a hurry, read
Summary?)

Sex Bias in Graduate Admissions: Data from Berkeley

Measuring bias is harder than is usually assumed,
and the evidence is sometimes contrary to expectation.

P. J. Bickel, E. A. Hammel, J. W. O'Connell

Determining whether discrimination because of sex or ethnic identity is being practiced against persons seeking passage from one social status or locus to another is an important problem in our society today. It is legally important and morally important. It is also often quite difficult. This article is an exploration of some of the issues of measurement and assessment involved in one example of the general problem, by means of which we hope to shed some light on the difficulties. We will proceed in a straightforward and indeed naive way, even though we know how misleading an unsophisticated approach to the problem is. We do this because we think it quite likely that other persons interested in questions of bias might proceed in just the same way, and careful exposure of the mistakes in our discovery procedure may be instructive.

Data and Assumptions

The particular body of data chosen for examination here consists of applications for admission to graduate study at the University of California, Berkeley, for the fall 1973 quarter. In the admissions cycle for that quarter, the Graduate Division at Berkeley received approximately 15,000 applications, some of which were later withdrawn or transferred to a different proposed entry quarter by the applicants. Of the applications finally remaining for the fall 1973 cycle 12,763 were sufficiently complete to permit a

decision to admit or to deny admission. The question we wish to pursue is whether the decision to admit or to deny was influenced by the sex of the applicant. We cannot know with any certainty the influences on the evaluators in the Graduate Admissions Office, or on the faculty reviewing committees, or on any other administrative personnel participating in the chain of actions that led to a decision on an individual application. We can, however, say that if the admissions decision and the sex of the applicant are statistically associated in the results of a series of applications, we may judge that *bias* existed, and we may then seek to find whether *discrimination* existed. By "bias" we mean here a pattern of association between a particular decision and a particular sex of applicant, of sufficient strength to make us confident that it is unlikely to be the result of chance alone. By "discrimination" we mean the exercise of decision influenced by the sex of the applicant when that is immaterial to the qualifications for entry.

The simplest approach (which we shall call approach A) is to examine the aggregate data for the campus. This approach would surely be taken by many persons interested in whether bias in admissions exists on any campus. Table 1 gives the data for all 12,763 applications to the 101 graduate departments and interdepartmental graduate majors to which application was made for fall 1973 (we shall refer to them all as departments). There were 8442 male applicants and 4321 female applicants. About 44 percent of the males and about 35 percent of the females were admitted. Just this kind of simple calculation of proportions impels us to examine the data further. We will pursue the question

by using a familiar statistic, chi-square. As already noted, we are aware of the pitfalls ahead in this naive approach, but we intend to stumble into every one of them for didactic reasons.

We must first make clear two assumptions that underlie consideration of the data in this contingency table approach. Assumption 1 is that in any given discipline male and female applicants do not differ in respect of their intelligence, skill, qualifications, promise, or other attribute deemed legitimately pertinent to their acceptance as students. It is precisely this assumption that makes the study of "sex bias" meaningful, for if we did not hold it any differences in acceptance of applicants by sex could be attributed to differences in their qualifications, promise as scholars, and so on. Theoretically one could test the assumption, for example, by examining presumably unbiased estimators of academic qualification such as Graduate Record Examination scores, undergraduate grade point averages, and so on. There are, however, enormous practical difficulties in this. We therefore predicate our discussion on the validity of assumption 1.

Assumption 2 is that the sex ratios of applicants to the various fields of graduate study are not importantly associated with any other factors in admission. We shall have reason to challenge this assumption later, but it is crucial in the first step of our exploration, which is the investigation of bias in the aggregate data.

Tests of Aggregate Data

We pursue this investigation by computing the expected frequencies of male and female applicants admitted and denied, from the marginal totals of Table 1, on the assumption that men and women applicants have equal chances of admission to the university (that is, on the basis of assumptions 1 and 2). This computation, also given in Table 1, shows that 277 fewer women and 277 more men were admitted than we would have expected under the assumptions noted. That is a large number, and it is unlikely that so large a bias to the disadvantage of women would occur by chance alone. The chi-square value for this table is 110.8, and the probability of a chi-square that large (or larger) under the assumptions noted is vanishingly small.

We should on this evidence judge

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that bias existed in the fall 1973 admissions. On that account, we should look for the responsible parties to see whether they give evidence of discrimination. Now, the outcome of an application for admission to graduate study is determined mainly by the faculty of the department to which the prospective student applies. Let us then examine each of the departments for indications of bias. Among the 101 departments we find 16 that either had no women applicants or denied admission to no applicants of either sex. Our computations, therefore, except where otherwise noted, will be based on the remaining 85. For a start let us identify those of the 85 with bias sufficiently large to occur by chance less than five times in a hundred. There prove to be four such departments. The deficit in the number of women admitted to these four (under the assumptions for calculating expected frequencies as given above) is 26. Looking further, we find six departments biased in the opposite direction, at the same probability levels; these account for a deficit of 64 men.

These results are confusing. After all, if the campus had a shortfall of 277 women in graduate admissions, and we look to see who is responsible, we ought to find somebody. So large a deficit ought not simply to disappear. There is even a suggestion of a surplus of women. Our method of examination must be faulty.

Some Underlying Dependencies

We have stumbled onto a paradox, sometimes referred to as Simpson's in this context (1) or "spurious correlation" in others (2). It is rooted in the falsity of assumption 2 above. We have assumed that if there is bias in the proportion of women applicants admitted it will be because of a link between sex of applicant and decision to admit. We have given much less attention to a prior linkage, that between sex of applicant and department to which admission is sought. The tendency of men and women to seek entry to different departments is marked. For example, in our data almost two-thirds of the applicants to English but only 2 percent of the applicants to mechanical engineering are women. If we cast the application data into a 2×101 contingency table, distinguishing department and sex of applicants, we find this table has a chi-

Table 1. Decisions on applications to Graduate Division for fall 1973, by sex of applicant—naïve aggregation. Expected frequencies are calculated from the marginal totals of the observed frequencies under the assumptions (1 and 2) given in the text. $N = 12,763$, $\chi^2 = 110.8$, d.f. = 1, $P = 0$ (.18).

Applicants	Outcome				Difference	
	Observed		Expected		Admit	Deny
	Admit	Deny	Admit	Deny		
Men	3738	4704	3460.7	4981.3	277.3	- 277.3
Women	1494	2827	1771.3	2549.7	- 277.3	277.3

square of 3091 and that the probability of obtaining a chi-square value that large or larger by chance is about zero. For the 2×85 table on the departments used in most of the analysis, chi-square is 3027 and the probability about zero. Thus the sex distribution of applicants is anything but random among the departments. In examining the data in the aggregate as we did in our initial approach, we pooled data from these very different, independent decision-making units. Of course, such pooling would not nullify assumption 2 if the different departments were equally difficult to enter. We will address ourselves to that question in a moment.

Let us first examine an alternative to aggregating the data across the 85 departments and then computing a statistic—namely, computing a statistic on each department first and aggregating those. Fisher gives a method for aggregating the results of such independent experiments (3). If we apply his method to the chi-square statistics of the 85 individual contingency tables, we obtain a value that has a probability of occurrence by chance alone, that is, if sex and admission are unlinked for any major, of about 29 times in 1000 (4). Another common aggregation procedure, proposed to us in this context by E. Scott, yields a result having a probability of 6 times in 10,000 (5). This is consistent with the evidence of bias in some direction purportedly shown by Table 1. However, when we examine the direction of bias, the picture changes. For instance, if we apply Fisher's method to the one-sided statistics, testing the hypothesis of no bias or of bias in favor of women, we find that we could have obtained a value as large as or larger than the one observed, by chance alone, about 85 times in 100 (6).

Our first, naïve approach of examining the aggregate data, computing expected frequencies under certain assumptions, computing a statistic, and

deciding therefrom that bias existed in favor of men has now been cast into doubt on at least two grounds. First, we could not find many biased decision-making units by examining them individually. Second, when we take account of the differences among departments in the proportions of men and women applying to them and avoid this problem by computing a statistic on each department separately, and aggregating those statistics, the evidence for campus-wide bias in favor of men is extremely weak; on the contrary, there is evidence of bias in favor of women.

The missing piece of the puzzle is yet another fact: not all departments are equally easy to enter. If we cast the data into a 2×101 table, distinguishing department and decision to admit or deny, we find that this table has a chi-square value of 2195, with an associated probability of occurrence by chance (under assumptions 1 and 2) of about zero, showing that the odds of gaining admission to different departments are widely divergent. (For the 2×85 table chi-square is 2121 and the probability about zero.) Now, these odds of getting into a graduate program are in fact strongly associated with the tendency of men and women to apply to different departments in different degree. *The proportion of women applicants tends to be high in departments that are hard to get into and low in those that are easy to get into.* Moreover this phenomenon is more pronounced in departments with large numbers of applicants. Figure 1 is a scattergram of proportion of applicants that are women plotted against proportion of applicants that are admitted. The association is obvious on inspection although the relationship is certainly not linear (7). If we use a weighted correlation (8) as a measure of the relationship for all 85 departments in the plot we obtain $\hat{\rho} = .56$. If we apply the same measure to the 17 departments with the largest numbers of applicants (accounting for two-

thirds of the total population of applicants) we obtain $\hat{p} = .65$, while the remaining 68 departments have a corresponding $\hat{p} = .39$. The significance of \hat{p} under the hypothesis of no association can be calculated. All three values obtained are highly significant.

The effect may be clarified by means of an analogy. Picture a fishnet with two different mesh sizes. A school of fish,

all of identical size (assumption 1), swim toward the net and seek to pass. The female fish all try to get through the small mesh, while the male fish all try to get through the large mesh. On the other side of the net all the fish are male. Assumption 2 said that the sex of the fish had no relation to the size of the mesh they tried to get through. It is false. To take another

example that illustrates the danger of incautious pooling of data, consider two departments of a hypothetical university—machismatics and social warfare. To machismatics there apply 400 men and 200 women; these are admitted in exactly equal proportions, 200 men and 100 women. To social warfare there apply 150 men and 450 women; these are admitted in exactly equal proportions, 50 men and 150 women. Machismatics admitted half the applicants of each sex, social warfare admitted a third of the applicants of each sex. But about 73 percent of the men applied to machismatics and 27 percent to social warfare, while about 69 percent of the women applied to social warfare and 31 percent to machismatics. When these two departments are pooled and expected frequencies are computed in the usual way (with assumption 2), there is a deficit of about 21 women (Table 2). A discrepancy in that direction that large or larger would be expectable less than 2 percent of the time by chance; yet both departments were seen to have been absolutely fair in dealing with their applicants.

The creation of bias in our original situation is, of course, much more complex, since we are aggregating many tables. It results from an interaction of the three factors, choice of department, sex, and admission status, whose broad outlines are suggested by our plot but which cannot be described in any simple way.

In any case, aggregation in a simple and straightforward way (approach A) is misleading. More sophisticated methods of aggregation that do not rely on assumption 2 are legitimate but have their difficulties. We shall have more to say on this later.

Disaggregation

The most radical alternative to approach A is to consider the individual graduate departments, one by one. However, this approach (which we may call approach B) also poses difficulties. Either we must sample randomly from the different departments, or we must take account of the probability of obtaining unusual sex ratios of admittees by chance in a number of simultaneously conducted independent experiments. That is, in examining 85 separate departments at the same time for evidence of bias we are conducting 85 simultaneous experiments,

Table 2. Admissions data by sex of applicant for two hypothetical departments. For total, $\chi^2 = 5.71$, d.f. = 1, $P = 0.19$ (one-tailed).

Applicants	Outcome				Difference	
	Observed		Expected			
	Admit	Deny	Admit	Deny	Admit	Deny
	<i>Department of machismatics</i>					
Men	200	200	200	200	0	0
Women	100	100	100	100	0	0
	<i>Department of social warfare</i>					
Men	50	100	50	100	0	0
Women	150	300	150	300	0	0
	<i>Totals</i>					
Men	250	300	229.2	320.8	20.8	-20.8
Women	250	400	270.8	379.2	-20.8	20.8

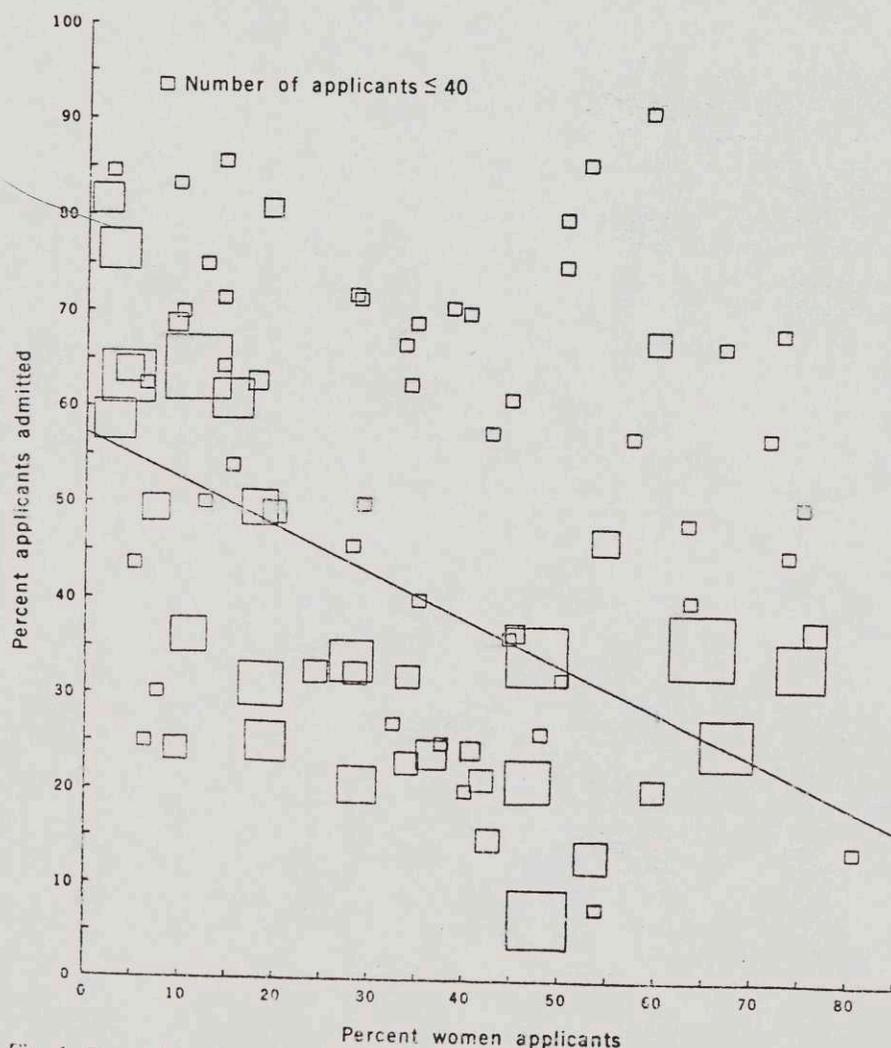


Fig. 1. Proportion of applicants that are women plotted against proportion of applicants admitted, in 85 departments. Size of box indicates relative number of applicants to the department.

and in that many experiments the probability of finding some marked departures from expected frequencies "just by chance" is not insubstantial. The department with the strongest bias against admitting women in the fall 1973 cycle had a bias of sufficient magnitude to be expectable by chance alone only 69 times in 100,000. If we had selected that department for examination on a random basis, we would have been convinced that it was biased. But we did not so select it; we looked at 85 departments at once. The probability of finding a department that biased against women (or more biased) by chance alone in 85 simultaneous trials is about 57 times in 1000. Thus that particular department is not quite so certainly biased as we might have first believed, .057 being a very much larger number than .00069, although still a small enough probability to warrant a closer look. This department was the worst one in respect of bias against women in admissions; the probability of finding departments less biased by chance alone is of course greater than .057. We can also examine events in the other direction. The department most biased against men had a bias sufficiently large to be expectable by chance alone about 20 times in a million, and the chance of finding a department that biased (or more biased) in that direction by chance alone in 85 simultaneous trials (9) is about .002.

There is a further difficulty in approach B. Although it makes a great deal of sense to examine the individual departments that are in fact the independent decision-making entities in the graduate admissions process, some of them are quite small, and even in some that are of ordinary size the number of women applying is very small. Calculation of the probability of observed deviations from expected frequencies can be carried out for such units, but when the numbers involved are very small the evidence for deciding whether there is no bias or gross bias is really worthless (10). This defect is evident not only in approach B but also if we use some reasonable method of aggregation of test statistics to avoid the pitfalls of approach A such as that of Fisher, or even the approach we suggest below. That is, large biases in small departments or in departments with small numbers of women applicants will not influence a reasonable aggregate measure appreciably.

Pooling

The difficulty we face is not only technical and statistical but also administrative. In some sense the campus is a unit. It operates under general regulations concerning eligibility for admission and procedures for admission. It is a social community that shares certain values and is subject to certain general influences and pressures. It is identifiable as a bureaucratic unit by its own members and also by external agencies and groups. It is, as a social and cultural unit, accountable to its various publics. For all these reasons it makes sense to ask the question, Is there a campus bias by sex in graduate admissions? But this question raises serious conceptual difficulties. Is campus bias to be measured by the net bias across all its constituent subunits? How does one define such a bias? For any definition, it is easy to imagine a situation in which some departments are biased in one direction and other departments in another, so that the net bias of the campus may be zero even though very strong biases are apparent in the subunits. Does one look instead at the outliers, those departments that have divergences so extreme as to call their particular practices into question? How extreme is extreme in such a procedure, and what does one do about units so small as to make such assessment meaningless?

We believe that there are no easy answers to these questions, but we are prepared to offer some suggestions. We propose that examination of campus bias must rest on a method of estimation of expected frequencies that takes into account the falsity of assumption 2 and the apparent propensity of women to apply to departments that are more difficult to enter.

We reanalyze Table 1, using all the data leading to it, by computing the expected frequencies differently than in approach A, since we now know the assumptions underlying that earlier computation to be false. We estimate the number of women expected to be admitted to a department by multiplying the estimated probability of admission of any applicant (regardless of sex) to that department by the number of women applying to it. Thus, if the chances of getting into a department were one-half for all applicants to it, and 100 women applied, we would expect 50 women to be

admitted if they were being treated just like the men. We do this computation for each department separately, since each is likely to have a different probability of admission and a different number of women applying, and we sum the results to obtain the number of women expected to be admitted for the campus as a whole (11). This estimate proves to be smaller by 60 than the number of women observed to have been admitted (Table 3).

The computation of Table 3 is as follows: For a four-cell contingency table of the following format:

	Admit	Deny
Men	a_i	b_i
Women	c_i	d_i

the particular cell of interest is c_i , containing the number of women admitted. The expected frequency under the hypothesis of no bias is $E = w_i p_i = (c_i + d_i)(a_i + c_i)/N_i$, where N_i is the total of applicants to department i . The observed number, O , is the number in c_i . The difference between these two quantities, $O - E$, summed over n departments is

$$\sum_{i=1}^n (O - E) = DIFF$$

Then,

$$\chi^2 = \frac{(DIFF)^2}{\sum_{i=1}^n (a_i + b_i)(a_i + c_i)(c_i + d_i)(b_i + d_i) / N_i^2 (N_i - 1)}$$

with d.f. = 1. Ninety-six departments were included in the computation, since 5 of the total 101 each had only 1 applicant. If $N_i - 1$ is replaced by N in the denominator, all 101 departments can be included, yielding $\chi^2 = 8.61$; $O - E$ remains 60.1 and the expected and observed female admittees are each increased by 1. (This statistic makes it possible to include contingency tables having an empty cell, so that no information is lost; there is thus an advantage over methods that pool the chi-square values from a set of contingency tables.)

The probability that an observed bias this large or larger in favor of women might occur by chance alone (under these new assumptions) is .0016; the probability of its occurring if there were actual discrimination against women is, of course, even smaller. This is consistent with what we found using Fisher's approach and aggregating the test statistics: there is evidence of bias in favor of women. [The test used here was proposed in

another context by Cochran (12) and Mantel and Haenszel (13).]

We would be remiss if we did not point out yet another pitfall of approach A. Whereas the highly significant values of the Mantel-Haenszel or Fisher statistics just mentioned for 1973 are evidence that there is bias in favor of women, the low values obtained in other years (see below) do not indicate that every department was operating more or less without bias. Such low values could equally well arise as a consequence of cancellation. We illustrate with the hypothetical departments of machismatics and social warfare. If machismatics admitted 250 men and 50 women, creating a shortfall of 50 women, while social warfare admitted 200 women and no men, creating an excess of 50 women, the aggregate measure of bias we have introduced would be zero. We only argue that if an aggregate measure of bias is wanted the one we propose is reasonable. Of course, if we combine two-sided statistics by the Fisher method this phenomenon does not occur.

We would conclude from this examination that the campus as a whole did not engage in discrimination against women applicants. This conclusion is strengthened by similarly examining the data for the entire campus for the years 1969 through 1973. In 1969 the number of women admitted exceeded the expected frequency by 24; the probability of a deviation of this size or larger in either direction by chance alone is .196. In 1970 there were four fewer women admitted than expected, the probability of chance occurrence being .833. In 1971 there were 25 more women than expected, with a probability of .249. In 1972 there were seven more women than expected, the probability being .709. For 1973 as shown above the deviation was an excess of 60 women over the expected number; the probability of a chance deviation that large or larger in either direction is .003. These data suggest that there is little evidence of bias of any kind until 1973, when it would seem significant evidence of bias appears, in favor of women. This conclusion is supported by all the other measures we have examined. For instance, pooling the chi-square statistics by Fisher's method yields a probability of .99 in 1969, 1970, and 1971, a probability of .55 in 1972, and a probability of .029 in 1973 (14).

We may also take approach B and

Table 3. Sum of expected departmental outcomes of women's applications compared with sum of observed outcomes, Graduate Division, Berkeley, fall 1973. $\chi^2 = 8.55$, d.f. = 1, $P = .003$ (two-tailed).

Expected female admittees	1432.9
Observed female admittees	1493.0
Difference ($O - E$)	60.1

look for individual department outliers. Because the numbers of women students applying to some of them in any one year are often small, we aggregated the data for each department over the 5-year span, using the method just explained. (This procedure of course hides the kind of change that the aggregating approach reveals when pursued through time, but it enables us to focus on possible "offenders" in either direction in a campus that is on the average behaving itself.) During the 5-year period there were 94 units that had at least one applicant of each sex and admitted at least one applicant and denied admission to at least one in at least one year. Two of the 94 units, one in the humanities and one in the professions, show a divergence from chance expectations sufficient to arouse interest. One of these admitted 16 fewer women than expected over 5 years, a shortfall of 29 percent; the probability of such a result by chance alone in 94 trials is about .004. The other unit admitted 40 fewer women than expected over the 5-year period, a shortfall of 7 percent, with a probability in 94 trials of about .019. The next most likely result by chance was at a level of .094 and the next after that at .188. Conversely there were two units significantly biased in the opposite direction, with chance probabilities of occurrence of .033 and .047, accounting for a combined shortfall of 50 men, 13 and 24 percent respectively of the expected frequencies in the individual units.

The kinds of statistics we may wish to use in examination of individual departments may differ from those employed in these general screening processes. For example, in one of the cases of a shortfall of women cited above, it seems likely that an intensified drive to recruit minority group members caused a temporary drop in the proportion of women admitted, since most of the minority group admittees were males. In most of the cases involving favored status for women it appears that the admissions committees

were seeking to overcome long-established shortages of women in their fields. Overall, however, it seems that the admissions procedure has been quite evenhanded. Where there are divergences from the expected frequencies they are usually small in magnitude (although they may constitute a substantial proportion of the expected frequency), and they more frequently favor women than discriminate against them.

More General Issues

We have already explained why assumption 1—the equivalence of academic qualifications of men and women applicants—is necessary to the statistical examination of bias in admissions. But the assumption is clearly false in its most extensive sense; there are areas of graduate study that men and women simply have not hitherto been equally prepared to enter. One of the principal differentiators is preparation in mathematics, which is prerequisite in an elaborate stepwise fashion to a number of fields of graduate endeavor (15).

This differentiation would have little effect on women's chances to enter graduate school if it were unrelated to difficulty of entry. But it is not. Although it would appear in a logical sense that the departments requiring more mathematics would be more difficult to enter, in fact it appears to be those requiring less mathematics that are the more difficult. (For the 83 graduate programs with matching undergraduate majors, the Pearson r between proportion of applicants admitted and number of recommended or required undergraduate units in mathematics or statistics is .38.) In part this may be because departments requiring less mathematics receive applications from persons who might have preferred to enter others but cannot for lack of mathematical (or similar) background, as well as from persons intrinsically inclined toward nonmathematical subjects. In part it is because in the nonmathematical subjects (that is, the humanities and social sciences) students take longer to get through their programs; in consequence, those departments have lower throughput and thus less room, annually, to accept new students. Just why this is so is a matter of debate and of great complexity. Some of the problem may lie in the very lack of a chain of prerequisites

such as that characterizing graduate work in, let us say, the physical sciences. Some may lie in the nature of the subject matter and the intractability of its data and the questions asked of the data. Some may lie in the less favorable career opportunities of these fields and in consequence a lower pull from the professional employment market. Some may lie just in the higher proportion of women enrolled and the possibility that women are under less pressure to complete their studies (having alternative options of social roles not open generally to men) and have less favorable employment possibilities if they do complete, so that the pull of the market is less for them. Whatever the reasons, the lower productivity of these fields is a fact, and it crowds the departments in them and makes them more difficult to enter.

The absence of a demonstrable bias in the graduate admissions system does not give grounds for concluding that there must be no bias anywhere else in the educational process or in its culmination in professional activity. Our intention has been to investigate the general case for bias against women in a specific matter—admission to graduate school—not only because we had the data base to do so but also because allegations of bias in the admissions process had been aired. Our approach in the beginning was naive, as befits an initial investigation. We found that even the naive question could not be answered adequately without recourse to sophisticated methodology and careful examination of underlying processes. We take this opportunity to warn all those who are concerned with problems of bias about these methodological complexities (16).

We also find, beyond this immediate area of concern in graduate admissions, that the questions of bias and discrimination are more subtle than one might have imagined, and we mean this in more than just the methodological sense. If prejudicial treatment is to be minimized, it must first be located accurately. We have shown that it is not characteristic of the graduate admissions process here examined (although this judgment does not eliminate the possibility of individual cases of prejudicial treatment, and it does not deal with politically or morally defined null hypotheses). The fairness of the faculty in admissions is an important foundation for further effort. That effort can be made directly by univer-

sities in seeking to equalize the progress of men and women toward their degrees (17). A university can use its powers of suasion to equalize the preparation of girls and boys in the primary and secondary schools for entry into all academic fields. By its own objective research it may be able to determine where and how much bias and discrimination exist and what the suitable corrective measures may be.

Summary

Examination of aggregate data on graduate admissions to the University of California, Berkeley, for fall 1973 shows a clear but misleading pattern of bias against female applicants. Examination of the disaggregated data reveals few decision-making units that show statistically significant departures from expected frequencies of female admissions, and about as many units appear to favor women as to favor men. If the data are properly pooled, taking into account the autonomy of departmental decision making, thus correcting for the tendency of women to apply to graduate departments that are more difficult for applicants of either sex to enter, there is a small but statistically significant bias in favor of women. The graduate departments that are easier to enter tend to be those that require more mathematics in the undergraduate preparatory curriculum. The bias in the aggregated data stems not from any pattern of discrimination on the part of admissions committees, which seem quite fair on the whole, but apparently from prior screening at earlier levels of the educational system. Women are shunted by their socialization and education toward fields of graduate study that are generally more crowded, less productive of completed degrees, and less well funded, and that frequently offer poorer professional employment prospects.

References and Notes

1. C. R. Blyth, *J. Am. Stat. Assoc.* **67**, 364 (1972).
2. J. Neyman, *Lectures and Conferences on Mathematical Statistics and Probability* (U.S. Department of Agriculture Graduate School, Washington, D.C., ed. 2, 1952), p. 147.
3. R. A. Fisher, *Statistical Methods for Research Workers* (Oliver and Boyd, London, ed. 4, 1932).
4. Fisher's statistic is

$$F = -2 \sum_{i=1}^n \ln p(T_i)$$

where $p(T_i)$ is the P value of the test statistic calculated for the i^{th} experiment (department).

F is referred to the upper tail of a chi-square distribution with $2n$ degrees of freedom where n = number of experimental results to be aggregated, here 85. In our application here, T_i is the usual contingency table chi-square statistic, with P value obtained from a table of the chi-square distribution with 1 degree of freedom.

5. This method uses as a statistic

$$\sum_{i=1}^n \chi_i^2$$

having a chi-square distribution with d.f. = n (= 85 here). χ_i^2 is the usual χ^2 statistic in the i^{th} 2×2 table.

6. In this application of Fisher's statistic (4), T_i is \pm the square root of the chi-square statistic with sign plus if there is an excess of men admitted and sign minus otherwise; the P value is the probability of a standard normal deviate exceeding T_i .
7. Transformation to linearity by simple changes of variable, for example to log (odds), is also not successful.
8. If π_i , p_i , and p'_i represent, respectively, the probability of applying to department i , the probability of being admitted given that application is to department i , and the probability of being a male given that application is to department i , then a reasonable measure of the association of the numbers p_i , p'_i is the correlation (weighted according to the share of each major in the applicant pool)

$$\rho = \frac{\sum \pi_i (p_i - p_i)(p'_i - p'_i)}{[\sum \pi_i (p_i - p_i)^2 \sum \pi_i (p'_i - p'_i)^2]^{1/2}}$$

where p_i , p'_i are defined by $\sum \pi_i p_i$, $\sum \pi_i p'_i$, respectively. As usual, $|\rho| = 1$ indicates linear dependence between the p_i , p'_i while $\rho = 0$ suggests "no relation." Positive values indicate "positive association" and so on.

This correlation can be estimated by substituting the observed proportions of applicants to department i , admitted applicants to department i among applicants to department i , and male applicants to department i among applicants to department i for π_i , p_i and p'_i , respectively. This is the statistic we call $\hat{\rho}$.

We can use $\hat{\rho}$ as a test statistic for the hypothesis that $\rho = 0$. To do so we need the distribution of $\hat{\rho}$ under that hypothesis. It turns out that $\hat{\rho}/\text{Var } \hat{\rho}^{1/2}$ has approximately a standard normal distribution. The expression $\text{Var } \hat{\rho}$ is complicated because of the statistical dependence between p_i and p'_i . Editorial considerations have prompted its deletion. It is obtainable from the authors.

9. The probability that an observation as extreme as (or more extreme than) the most extreme one would occur by chance alone, where n = number of simultaneous independent experiments or observations, and p = probability of occurrence by chance of the most extreme observation if it had been selected at random for a single observation, is $1 - (1 - p)^n$, and thus for p close to zero is approximately np .
10. Smallness of numbers of women applicants also invalidates the normal approximation used in the significance probabilities of approach B, but this can be remedied.
11. This may be expressed as

$$\sum_{i=1}^{85} (w_i)(p_i)$$

where w_i is the number of women applying to the i^{th} major and p_i is the probability of entry of any applicant into the i^{th} major, the latter being estimated from the number of admittees divided by the number of applicants.

12. W. G. Cochran, *Biometrics* **10**, 417 (1954).
13. N. Mantel, *J. Am. Stat. Assoc.* **58**, 690 (1963).
14. Further analysis of these data, in particular examination of individual units through time, is in progress.
15. Research currently being conducted by L. Sells at Berkeley shows how drastic this screening process is, particularly with respect to mathematics.
16. There is a real danger in naive determination of bias when the action following positive determination is punitive. On the basis of Table 1, which we have now shown to be

misleading, regulatory agencies of the federal government would have felt themselves justified in withholding substantial amounts of research funding from the university. A further danger in punitive action of this kind is that, being concentrated in the research area, which provides an important source of support for graduate students, it punishes not only male but also female students—women in areas in which women have traditionally been enrolled, such as the social

sciences, and also pioneering women in the physical and biological sciences, where federal support has been more concentrated.

17. In fact, data in hand at Berkeley suggest a dramatic decrease in the early dropout rates of women and the disappearance of the differential in dropout rates of men and women. It will be several years before we will be able to judge whether this phenomenon is one of decreased or simply of delayed attrition.

18. If the same naive aggregation is carried out for the 85 departments used in most of the analysis, $N = 12,654$, $\chi^2 = 105.6$, $d.f. = 1$, $P = 0$.

19. The investigation was initiated by E.A.H., using data retrievable from a computerized system developed by V. Aldrich. Advice on statistical procedures in the later stages of the investigation was provided by P.J.B., and programming and other computation was done by J.W.O'C.

Crisis Management: Some Opportunities

International emergency cooperation involving governments, technology, and science is now foreseeable.

Robert H. Kupperman, Richard H. Wilcox, Harvey A. Smith

Many alarming trends of our present culture share common roots. Worldwide inflation, worldwide resource shortages, extensive famine, and the inexorable quest for more deadly weapons may very well reach crisis proportions if these trends continue. They serve already as examples of national and international failures of efficient resource allocation and communications. It is important that we understand the possible future implications that these failures hold and, more important, that we develop means for dealing with them.

In discussing the crisis management demanded by such situations it is tempting to start by defining what is meant by a crisis, but this is a difficult matter. Crises are matters of degree, being emotionally linked to such subjective terms as calamity and emergency. In fact it is not necessary to define crises in order to discuss problems generally common to their management, including the paucity of accurate information, the communications difficulties that persist, and the

changing character of the players as the negotiations for relief leave one or more parties dissatisfied.

In a sense, crises are unto the beholder. What is a crisis to one individual or group may not be to another. However, crises are generally distinguished from routine situations by a sense of urgency and a concern that problems will become worse in the absence of action. Vulnerability to the effects of crises lies in an inability to manage available resources in a way that will alleviate the perceived problems tolerably. Crisis management, then, requires that timely action be taken both to avoid or mitigate undesirable developments and to bring about a desirable resolution of the problems.

Crises may arise from natural causes or may be induced by human adversaries, and the nature of the management required in response differs accordingly. Thus the actions required to limit physical damage from a severe hurricane and to expedite recovery from it differ substantially from the tactics needed to minimize the economic effects of a major transportation strike and to moderate the conditions which caused it. Yet each also exhibits some characteristics of the other. For example, recovery from the devastation

wrought by the hurricane's wind and floodwaters brings competition among different managers whose conceptions of recovery differ: Is the goal to re-establish the status quo, including slums, or to seize upon the opportunity for urban renewal? Similarly, a transportation strike may cause such economic chaos that the Congress—535 crisis managers—might threaten to pass laws that are detrimental to a union leadership's prestige and control over its members.

It is useful to note the characteristics common to most crisis management. Perhaps the most frustrating is the uncertainty concerning what has happened or is likely to happen, coupled with a strong feeling of the necessity to take some action anyway "before it is too late." This leads to an emphasis on garnering information: military commanders press their intelligence staffs, and civil leaders try to get more out of their field personnel and management information systems. Unfortunately, few conventional information systems are equal to the task of covering unconventional situations, so managers in a crisis must frequently fall back upon experience, intuition, and bias to make ad hoc decisions (1).

The problems of uncertainty are exacerbated by the dynamic nature of many crises. Storms follow unpredictable courses; famine is affected by vagaries in the weather; terrorists perform apparently irrational acts; and foreign leaders, responding to different value systems or simply interpreting situations differently, select unexpected courses of action. Thus, with limited information and resources the manager may find it difficult just to keep up with rapid developments, let alone improve the overall picture of the situation.

During a crisis, not only does an involved manager suffer from poor information, but he has the problem of identifying the objectives he wishes to accomplish and ordering them by priority in accord with his limited re-

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MARY P. ROWE
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22 April 1975

Dr. Mary Rowe
Special Assistant for Women and Work
Office of the President and Chancellor
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139

Dear Dr. Rowe:

Thank you for your interest in the research that Marilyn Moon and I are conducting. I have enclosed a brief description of our project and will be glad to send you a copy of our findings when available. We are planning to have at least a draft paper completed by the fall. Let me know if I can be of further assistance.

Sincerely,

Barbara S. Zoloth

Barbara S. Zoloth, Ph.D.

BSZ:mk

Enclosure

Richard Howard

27/50/75

The Contribution of Occupational Segregation
to Female-Male Wage Differentials

by

Marilyn Moon
University of Wisconsin-Milwaukee

Barbara Zoloth
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Virtually all researchers who have investigated the issue of sex discrimination in the labor market agree that occupational segregation is a major cause of observed wage differentials between men and women. However, with a few important exceptions, most empirical studies of sex discrimination have focused on wage discrimination within occupation. Our study is an attempt to identify the degree to which occupational segregation by sex contributes to wage differentials.

The absence of a good measure of job experience for women has, until recently, been a major obstacle to investigating sex discrimination in the labor market. This has not caused problems in studying men's earnings because age (or current age minus age when finished schooling) is a good proxy for the length of their labor market experience. Since this is generally not true for women, most of the frequently used data sources are inappropriate. However, the National Longitudinal Survey (NLS) contains sufficiently detailed retrospective and panel-type information about labor market experience for our purposes.

We are investigating occupational segregation via the following procedures. Using the NLS sample of mature men, we predict current occupation from productivity characteristics, primarily using those factors commonly considered to be appropriate determinants of earnings,

such as education and experience. To accomplish this, we use a statistical technique that allows us to predict the value of a multiple category qualitative dependent variable, since occupation is neither cardinal nor ordinal. We then predict, for the NLS sample of mature women, the occupational distribution of women assuming that they are subject to the same structure of determination as men, i.e., using the parameters estimated from the male sample. Apart from general equilibrium effects, which we implicitly ignore, we thus get an estimate of what occupations women would occupy if they were "treated" the same as men with respect to occupational assignments.

Once we have simulated an occupational distribution for women, we can then assign them hypothetical wage rates. The choice of wage rates to assign depends on the question being examined. If we assign women the current median female wage in their "simulated" occupation, comparison of the resulting wage distribution with the observed distribution of women's wages indicates the potential wage effects of removing occupational barriers. On the other hand, if the current male wage is used, the same comparison reveals the effects of both removing occupational barriers and eliminating wage discrimination within occupation. Thus our results provide an estimate of the relative extent to which female-male wage differentials are attributable to occupational segregation rather than to wage discrimination.