

This study focuses upon the effect of intra-university location as it influences the salaries of academics, as it differs for men and women, and as it relates to sex-typing of university locations. The findings indicate the greater importance of intra-university location in determining the salaries of academic men compared to women. However, certain patterns do emerge for both sexes. Namely, for some types of locations, the salary returns are dependent primarily upon attainment levels; for others, they are not; and in almost all cases these effects are more marked for men. Moreover, we discern a particular pattern of salary returns to sex-typed location. That is, for both sexes, certain same sex-typed locations are advantageous, and opposite sex-typed locations are generally disadvantageous, although again the effects are stronger for men than women. In conclusion, the article discusses implications that these observed patterns have for the operation of sex-disparity in salaries within the academic institution.

Location, Sex-Typing, and Salary Among Academics

MARY FRANK FOX

University of Michigan

The work profiles of men and women in academia reflect their gender standings in the society and in the world at large. Tasks are divided by sex: men and women work at different academic jobs, as in research versus teaching (Blackburn, Behymer, and Hall, 1978; Dornbush, 1979; Ekstrom, 1979). Further, work places are segregated by sex: men and women are concentrated in different institutions, fields, and areas (Astin and Bayer, 1973; Ladd and Lipset, 1975; National Center for Education Statistics, 1981). Finally, activities are stratified by sex: men occupy the more superordinate and women the

Author's Note: *For their careful reading of an earlier draft of this article, I am grateful to Catherine A. Faver, Robert E. Klein, and Peter D. Ward.*

WORK AND OCCUPATIONS, Vol. 12 No. 2, May 1985 186-205

© 1985 Sage Publications, Inc.

subordinate academic ranks and positions (Centra, 1974; Hornig, 1979; National Center for Education Statistics, 1981). And across all dimensions (task, place, and position), academic women receive fewer rewards (National Center for Education Statistics, 1980).

Because salary is highly quantifiable and calculable, inequality between the sexes in this particular reward (rather than prestige or power) has been well documented, among academics as among other employees. In explaining variation in the salaries of academic men and women, the microeconomic or single-institution study is very useful, because it provides an analysis of wage structure as it is determined at the institutional level (Ferber, 1974; Ferber, Loeb, and Lowry, 1978; Gordon, Morton, and Braden, 1974; Katz, 1973). But in these previous studies, analyses have concentrated primarily upon the effect of individual-level, employee characteristics—rank, education, experience, and ability. Correspondingly, the studies have failed to specify the particular salary effects of the academics' employment-context or location within the university. And, likewise, they have failed to analyze sex differences in the relationship between academic salary and location.

In contrast to previous work, this article focuses specifically upon intra-university unit location as it influences the salaries of academics, and as it varies in its effect for men and women. More specifically, we analyze the extent to which academics' salaries are determined by their unit's type and size—characteristics which are indicators of the academics' work function and work structure. In turn, we shall see that within the university the location features are sex-typed and segregated characteristics which parallel the labor divisions of men and women in the society at large.

In this way, our study analyzes for academics the relationship between location, sex-typing, and salary, and specifies how these relationships vary for men compared to women. This places our study of academics in the company and tradition of those investigations of other types of employees, which have recognized that men's and women's salary levels may be explained, in part, by the structure and function of their work contexts, generally (Fuchs, 1971; Rees and Schultz, 1970), and by the sex composition and sex typing of their work groups, more specifically (Synder and Hudis, 1976; Stevenson, 1975; Weiskoff, 1972).

We accomplish our aims through multi-step regressions which allow us to separate the salary effects of employment-context, or location, from the effects of individual-level, attainment and personal, characteristics. We conclude the study by discussing the implications that the sex, location, and salary relationships have for the operation of the academic institution and the behavior of its members.

METHOD

DATA

The data come from the personnel tape of a major, midwestern university,² and represent the population of academic employees for one point in time, June 1971. While more recent multivariate data would be desirable for comparison and replication, such data are currently unavailable. However, recently available data on gross wage differences between men and women indicate that while academic salaries have risen at this university, the pattern and level of sex disparity in salary has been remarkably stable over the past decade.³

This persistence of sex disparity in faculty salary is consistent with other studies' reports that academic women have been faring only slightly better in economic status over the past decade (National Center for Education Statistics, 1980; Ferber and Kordick, 1978). Furthermore, studies indicate that men and women continue to be segregated in different academic disciplines. In fact, recent data indicate that even among newest doctorates, males and females are concentrated in different fields and areas (National Center for Education Statistics, 1981). Thus, patterns of salary disparity and patterns of locational differences seem to have persisted among academic men and women.

On the other hand, data at several points in time might indicate certain changes in effects of sex and salary in particular nonteaching units. Specifically, these locations may have reduced salary disparity between the sexes to a greater extent than have the teaching units, because, in many universities, the nonteaching—administrative, ser-

vice, and research—units have tended toward stronger and broader programs of salary evaluation for their own employees.

In our population, the academic employees contain faculty, as well as researchers and administrators not directly connected to the business affairs of the university. This includes research assistants and associates, deans and vice presidents, as well as certain editors, project directors, consultants, and curators. It excludes all clerical, trade, operative, and service workers, as well as student employees. Together, the academic employees constitute a group of 5450 individuals: 83.3% male and 16.7% female.

Dependent Variable: Salary

Academic salary is the monthly amount⁴ an employee earned for full-time employment, whether or not she or he actually worked full-time.⁵ This salary rate then implicitly standardizes and controls for differences in the proportion time worked. Moreover, we analyzed the effect of percentage time working on (full-time) equivalent salary rate, and found that, other characteristics being equal, the time variable was of low significance for men and no significance for women. Thus, in this university, remuneration for part-time work is roughly proportional to reward for full-time employment.

Independent Variables

Characteristics of Employment-Context: The Location Variables. The location characteristics represent properties of the academics' context of employment. These variables include *unit type* as a measure of the nature of the work and *unit size* as a structural feature of the work unit.

Unit refers to the departments of the arts and sciences college, the other (17) colleges and schools, and the remaining (7) noncollege (i.e., nonteaching) units with academic employees. The units are coded as categories that reflect functional classification within the university: different tasks, functions, and roles. This functional labor division is, in turn, sex-typed and segregated in the university as in the society at large.

Hence, among our nonteaching locations, the administrative units which manage, tend, and direct general university operations are

male-typed places; and the service units, which engage in areas of student services, state and public relations, and community services, are more female-typed places with much higher proportions of women than in the university at large (see Appendix A). Similarly, among teaching locations, the traditional, high-status professional schools, linked to powerful functional areas, such as law, business, and technology, represent male domains; and the less established, lower-status professional schools, linked to more marginal institutions, such as education, and public health and welfare, represent female areas with much higher concentrations of women than in the university at large (see Appendix A). In this way, unit location is related to gender and hence to our focus upon the relationship between location, sex-typing, and salary in academia.

Control Variables

Characteristics of Employees: Achieved and Ascribed Variables.

The control variables represent the individual-level characteristics of the employees—their attainments and qualifications as well as their personal backgrounds.

The attainment or achieved characteristics include age as a measure of experience, educational attainment, academic title,⁶ and seniority or years at the university.

The two measures of experience require further explanation. Age is included in the quadratic form in order to approximate professional experience, including experience that may predate employment at the present university. Among highly educated professional groups, such as academics, age seems as legitimate a measure of professional experience for women as for men, since, among these groups, sex differences in career continuity are very small (see Astin, 1969; Ferber and Kordick, 1978; Zuckerman, 1971).

Years at the university is a measure of experience which is different from age. Specifically, age measures professional experience over the life cycle while years at the university measures experience at the current institution. Although age and years at the university are correlated, they are not perfectly linear ($r = .73$ for men and $.63$ for women).

Other measures, such as a productivity variable, are unavailable. A productivity measure would certainly strengthen our analyses. But

the absence is not as restrictive in the single, as in the multiple, institution study of *salary variation by sex*. This is because holding institution constant (and controlling for rank and field) eliminates certain compositional differences in men's and women's academic environment and circumstances—rank, field, institutional funding, facilities, and graduate student compositions; and these environmental and compositional factors are, in turn, the variables which have been found to explain the higher publication rate of men compared to women (Astin, 1978; Bernard, 1964; Hornig, 1979). Hence, in analysis of salary variation by sex, the single institution data (and controls for rank and field) help ameliorate the absence of a productivity measure, by eliminating, in part, certain sex differences in the academic environment and circumstances of men and women.

Finally, among the control variables, the personal background or ascribed characteristics include race (majority vs. minority) and citizenship (American vs. other).

ANALYSIS TECHNIQUE

The salary relationships are expressed in two-step regression models, with separate equations for each sex. The first, base-line model expresses the gross relationship between salary and the location variables. The second-step model expresses the net relationship between salary and both the location (contextual-level) and the ascribed and achieved (individual-level) characteristics. In the analyses, our focal interest is in specifying and decomposing the relationship between salary and location, as it differs for men and women, and as it relates especially to sex-typing of locations.

The regression models permit the assessment of this relationship by allowing us to interpret the coefficients for location as the salary return associated with that characteristic (Duncan, 1968; Siegel, 1965; Suter and Miller, 1973). We may compare male-female differences in the location coefficients with a test⁷ of the null hypothesis that there is no difference in the level at which men and women convert each location characteristic into salary. Similarly, we may employ a difference of means test⁸ in order to compare the male-female differences in the *contrasting effects* of location in different types of university units, such as the arts versus the sciences.

Moreover, the two steps of these regression models permit us to compare location coefficients levels before and after addition of the

individual-level characteristics. These comparisons enable us to determine the covariation between salary, location, and the individual-level variables, and hence they allow for inference about the statistical independence of location in the determination of academic salary. Thus, significant changes in the coefficient values for the location variables after addition of the ascribed and achieved (individual-level) characteristics would suggest that the salary-location effects are mediated by variation in these characteristics. On the other hand, relative stability in certain coefficient values before and after addition of the individual-level variables would indicate that these location and salary relationships are independent of variation in returns to the individual-level characteristics. In addition, the separate equations for each sex permit us to analyze these salary relationships as they operate for men compared to women.

This study focuses specifically upon the relationship between location and salary; the individual-level characteristics are of interest only as control variables that may or may not modify the salary and location relationship. Hence, we do not analyze the salary returns to the individual-level characteristics themselves. Discussion of salary returns to academics' individual-level characteristics may, however, be found elsewhere (Fox, 1981); and coefficients for the individual-level variables of our net model are shown in Appendix B.

Auxiliary analyses indicated that gross to net changes in the coefficients for location are due almost entirely to the effect of the achieved, rather than the ascribed characteristics. The effect of the ascribed characteristics upon the salary and location relationship is very small for men, and nearly negligible for women. Thus, in the findings section below, we refer to changes in location coefficients only in terms of the set of variables (i.e., the achievement characteristics) which are responsible for that change.

FINDINGS

An overview of our net salary model shows (1) that men's coefficients for location are significantly larger than women's, and (2) that while every location characteristic is a significant determinant of salary for men, only about half of the location variables are significant for women. This indicates the greater net importance of

intra-university location for determining the salaries of academic men compared to women.

However, it is the gross and net salary models, together, which reveal more subtle sex differences, as well as common patterns, in the salary returns to location.⁹ Specifically, net of (i.e., after controlling for) the individual-level characteristics, we find that the salary returns of the (1) nonteaching (administrative, service, research) units *increase*; (2) the arts and science college *decrease*; and (3) the professional school units remain more *stable*. And across types, the effects are more marked for men. This indicates that payments for some unit types are a reflection of the attainment levels within them; that others are not; and that the relationships are stronger for men than women.

Moreover, the gross-to-net models demonstrate that certain same sex-typed locations are advantageous and opposite sex-typed locations are generally disadvantageous for both sexes; but the effects are more marked for men.

In the following sections, we analyze in more detail the relationship between salary and the two categories of location characteristics—unit type and unit size.

UNIT TYPE

In the gross-to-net models, the salary returns for location in the *nonteaching* (administrative, service, and research) units increase, and these units become the most advantageous locations for both men and women (see Table 1). Of these units, the administrative locations give the highest net salary returns for both sexes, but the (\$164) net payment for women is fully two-thirds less than the (\$482) return for men.

The effects of the other (service and research) nonteaching units also increase substantially, changing from a gross cost to a net payment. These payment changes for the nonteaching units indicate that the lower gross salaries of men and women in these units are due, in part, to their lower achievements. Hence, holding constant education, experience, and rank levels, increases the value of the locations, themselves, for both sexes.

The payments for the teaching departments of the *arts and science college* also change considerably. However, in contrast to the non-

TABLE 1
Comparison of Coefficients of Location Characteristics: Gross and Net Effects (by sex)

Variable	Gross Coefficients			Coefficients Net of Achieved and Ascribed		
	Males	Females	Differ.	Males	Females	Differ.
Location Types ^a						
Nonteaching:						
Administration	130.14*	5.94	124.20	482.86*	164.90	317.96
Service	-492.32*	-107.27*	-385.05	166.95*	111.41*	55.54
Research	-182.03*	-76.58	-105.45	373.21*	139.50*	233.71
Professional Schools:						
Traditional ^b	167.43*	-24.22*	191.65	82.24*	10.72	71.53
Other ^c	-139.73*	183.39*	-323.12	-113.22*	57.59*	-170.81
Other Campuses ^d	-368.34*	179.16*	-547.50	-210.27*	30.69	-240.96
Arts and Science College:						
Arts/Humanities	178.17*	-122.25*	300.42	-292.16*	-192.49*	-99.67
Nat/Bio/Phys. Sciences	182.51*	-185.31*	367.82	-197.35*	-205.29*	7.94
Social Sciences	418.79*	87.52	331.27	-132.75*	-70.05*	-62.70
Unit Size	-.34	.14*	-.483	.12*	.12*	.00
Constant	1832.	1005.		-1248.8	-125.43	
Standard Error	691.77	402.34		396.08	256.02	
R ²	.066	.084		.695	.637	
N	4031	830		3921	807	

NOTE: Underline indicates significant difference between M-F coefficient at $\leq .05$.

a. As compared to average location salary (for each sex).

b. Law, medicine, dentistry, engineering, architecture and design, and business administration.

c. Education, library science, music, natural resources, nursing, pharmacy, public health, and social work.

d. Secondary campuses of the university.

* Significant $\leq .01$.

teaching locations, payments for these units decrease, rather than increase, in the net model (see Table 1).

In men's gross salary model, the social sciences, the natural sciences, and the arts are, in that order, the most advantageous of all unit locations. In men's net model, however, the departments not only lose their rank-order; they lose their advantage altogether and become disadvantageous locations (see Table 2). This indicates that it is the achievement levels of the men in these departments, rather than the locations per se, which account for the gross payments to these units.

For women, also, salary effects of the arts and science departments decrease between the models. However, the decrease is smaller, and the gross-to-net reduction is not a clear payment-to-cost as it is for men. For women, not all of these teaching locations provide (gross) advantages; social sciences do, but the arts and natural sciences do not. In the net model, the arts then become a greater disadvantage, the natural sciences a somewhat larger disadvantage, and the social sciences a first-time disadvantage (see Table 2).

The sizable increase in the disadvantaged of the arts probably reflects the effect of lower attainments of women in the arts and humanities, compared to the other locations. Hence, with achievements held constant in the net female model, the cost of the arts location becomes even greater.

Location in the natural sciences, however, becomes only a little more disadvantageous: \$205 net compared to a \$185 gross cost. The stability of this effect suggests that the disadvantage of location in natural science departments is not a function of low attainments of women in the sciences compared to elsewhere. Rather, the disadvantage of location in natural science is a relatively "pure" cost for women, which is comparatively unaltered after we control for their attainments.

Social sciences, on the other hand, are a gross (\$87) advantage which become a net disadvantage of a similar amount (\$70). The change in this effect of social sciences indicates relatively high attainments of women in these locations, and suggests, moreover, that the achievement levels, rather than the locations, account for the gross female payment in these units.

The effects of the *professional schools* contrast with those of the other locations in two important ways. First, while the coefficients

TABLE 2
Rank Ordering of Coefficients of Location Type, Net and Gross
of Achieved and Ascribed Characteristics (by sex)

Males			Females				
Location	Net Coeff.	Gross Coeff.	Location	Net Coeff.	Gross Coeff.		
Administration	482.86	130.14	5	Administration	164.90	5.94	4
Research	373.21	-182.03	7	Research	139.50	-76.58	6
Services	166.95	-492.32	9	Services	111.41	-107.27	7
Trad. Professional	82.24	167.43	4	Other Professional	57.59	183.39	1
Other Professional	-113.22	-139.73	6	Other Campuses	30.69	179.16	2
Social Sciences	-132.75	418.79	1	Trad. Professional	10.72	-24.22	5
Natural Sciences	-197.35	182.51	2	Social Sciences	-70.05	87.52	3
Other Campuses	-210.27	-368.34	8	Arts/Humanities	-192.49	-122.25	8
Arts/Humanities	-292.16	178.17	3	Natural Science	-205.29	-185.51	9

for the other location types change in the gross-to-net models, those for the professional schools remain more stable. Second, compared with the other unit types, the professional schools show certain sex differences not just in the strength but also in the direction of their coefficients (see Table 1).

Observe that, both in the gross and net models, the traditional professional schools, linked to the powerful and male-dominated institutions such as law, medicine, business, and technology, are strongly advantageous locations for men, but not for women. The other, lower status professional schools, linked to the more marginal and female-dominated institutions, such as education, public health, and welfare, are advantageous locations for women, but not for men. The persistence of sex-differential effects in the gross-to-net models indicates that the payments for same sex-typed location cannot be attributed simply to the differential achievement levels of

men versus women in the higher status, contrasted to the lower status, professional school units.

Given the particular achievement profiles of academics in the professional school units (and the "partialling out" of these salary effects in the net model), the relative stability of certain professional school coefficients is especially notable. Observe, for example, that, between the models, men's payments for location in the traditional, professional schools decrease from \$167 to \$82. This reduction is not large, given that auxiliary analyses show the vast (84%) majority of men in these units have doctorates or advanced professional degrees. Only men in the arts and science college units have higher educational attainments. Yet, unlike the arts and science departments, the traditional professional schools remain a significant location advantage, net of achievement. Similarly, the female payment for the other (nontraditional) professional schools decreases from the highly advantageous gross (\$183) amount, but remains a significantly rewarding amount (\$57) in the second model. This reduction is not large either, given the unusually high ranking titles of women in these professional schools: 43.2% hold a tenured faculty, or a nonteaching but faculty senate affiliated, position. In other words, although employees in these units have particularly high attainments, the locations, themselves, remain rewarding even after controlling for the returns to their high achievement levels.

Moreover, note that these salary effects of professional school location, the costs as well as the benefits, are more marked for men than for women. For men, location in same-sex typed (traditional) professional schools is a significant (\$82) advantage and location in their opposite-sex typed (other) professional schools is a significant cost (\$113). For women, however, location in their same-sex (other) professional schools is a smaller advantage (\$57), and location in the opposite sex-typed (traditional) schools is a small cost (\$24) in the gross model, which changes to an insignificant payment (\$10) in the net model.

This sex-differential pattern is bolstered further by the observed sex contrast in the effects of the natural sciences versus the arts: As discussed earlier, neither the natural sciences nor the arts are advantageous net locations for men or for women. But note that the contrast between the effects of the two locations shows a *relative* \$94 science advantage for men, and a \$12 arts advantage for women (Table 3). This indicates again a large male benefit, but a more paltry female benefit, for location in same-sex typed departments.

TABLE 3
Contrasts Between Coefficients of Location Types, Gross and Net
of Achieved and Ascribed Characteristics (by sex)

Location Contrasts	Gross		Net	
	Males	Females	Males	Females
Trad. Professional vs. Other Prof.	<u>307.17*</u>	<u>-207.61*</u>	<u>195.46*</u>	<u>-46.88</u>
Arts/Humanities vs. Natural Sciences	-4.33	63.06	-94.81*	12.80
Natural Sciences vs. Social Sciences	-236.29*	-272.83*	-64.61	-135.24*

NOTE: Underline indicates significant differences between M-F contrasts at $\leq .05$.

*Contrasts significant at $\leq .05$.

The coefficients for the "other campuses"—which show that the salary effects of location on the auxiliary campuses (off the main campus) of the university—also suggest sex-differential patterns. We see that location in these lower prestige and less powerful auxiliary campuses is very costly for men both before and after controls for achievements (Table 1). For women, however, location in the lower prestige secondary campuses is an advantage rather than disadvantage (Table 1). The sex differences in salary effects of these secondary campuses suggests again that location in lower-status and less powerful units is very costly for men, but of some benefit for women.

UNIT SIZE

Unit size continues to be a significant salary determining effect for both men and women (see Table 1). But, the direction of the effect reverses for men, and remains relatively stable for women. The sex difference in the effect is then no longer significant.

In the gross male model, the salary effect of unit size is negative. In the net model, size has a positive salary effect. This suggests that

the gross payment for *smaller* units reflects the relatively high achievements of men in these locations. Hence, holding achievements constant, larger unit size does pay for men.

For women, the payment for unit size remains virtually the same in the gross and net models (see Table 1). Larger units are then a female, as well as a male, advantage, but the net models indicate that for women, unlike men, the return on unit size is relatively independent of payment for achievements.

SUMMARY AND CONCLUSIONS

In general, men's net location coefficients are significantly larger than women's, and indicate the greater net salary determining importance, and salary returns, of university unit location for men compared to women.

Yet, although the location effects are much stronger for men, certain patterns emerge for both sexes. First, we find that for some locations, salary returns are dependent upon achievement levels; for others, they are not; and that in almost all cases the effects are more marked for men. Hence, the gross-to-net models indicate that the gross disadvantage of nonteaching units and advantage of the arts and science teaching units reflect the salary effects of lower, compared to higher, achievements among academics in these units, rather than the effects of their locations, *per se*. Thus, with achievements held constant, the nonteaching units emerge as advantageous, and the arts and science units as disadvantageous, locations. In contrast, the salary returns to professional school units are more stable across the gross and net models, and indicate the more independent effect of these locations, themselves.

Moreover, these professional school effects show a particular pattern of salary returns to sex-typed locations: Namely, the lower-status female-typed professional schools are advantageous for women, but not for men. The higher-status, male-typed schools are strongly advantageous for men, but not for women. These effects, both costs and benefits, are more marked for men.

In conclusion, our findings offer implications for the operation of sex-inequality in salaries within academia. Prior studies, discussed earlier, revealed a gap between the sexes in salary returns to individual-level characteristics—rank, experience, and education.

Our study now shows a particular pattern of sex-disparity in salary returns to academic location. Yet, in spite of (1) a documented gap in men's and women's salaries, and (2) the existence of a strong ideology of equity and universalism in academia (Cole and Cole, 1973), this salary disparity prevails with relatively little discord or strain within the academic institution. The particular patterns of location, sex-typing, and salary, reported here, may be among the very factors which operate to permit and promote this inequality between the sexes.

To begin with, in academia as in other work settings, male and female employees are segregated from each other. Academic men tend to hold the higher-level administrative, research and faculty positions, and to be located in the natural sciences and social sciences, and in the business, technical, and medical professional schools. Women, on the other hand, tend to hold the lower-level academic ranks and positions, and to be located in the arts and humanities, and in the professional schools, in the areas of health, education, and welfare (Fox, 1981).

Salary inequality is more tenable when it is less evident. And this segregation of the sexes makes men and women, and their discrepant rewards, less visible and apparent to each other. Moreover, our study suggests that within each gender group, the separation is rewarding, and hence reinforcing; we find that both men and women's salaries are enhanced by certain same-sex locations and depressed by other opposite-sex locations. Thus, if segregation of the sexes is a factor which reduces the recognition and the strain of disparity between men's and women's salaries, the reinforcing payments for separation, which we document, may be a mechanism which supports this segregation and, in turn, promotes salary inequality among academic men and women.

Of course, one must consider whether these relationships of sex, location, and salary have persisted more recently. Certain data suggest that, in general, they have. Although affirmative action programs have existed and salary reviews have been conducted (especially in nonteaching units), these programs have had little effect upon the disparate work profiles of academic men and women in our universities. Recent national data indicate the persistence of salary inequality (National Center for Education Statistics, 1980) and the persistence of men's and women's location in different academic fields and disciplines (National Center for Education Statistics,

APPENDIX A
Sex (proportions) by Location Type

Location Type	Male	Female	
TOTAL	83.3	16.7	100.0%
Nonteaching:			
Administration	89.7	10.3	100.0%
Services	67.7	32.4	100.0%
Research	83.5	16.5	100.0%
Professional:			
Traditional	90.0	10.0	100.0%
Other	70.2	29.8	100.0%
Other Campuses	83.3	16.7	100.0%
Arts and Science College:			
Arts/Humanities	85.2	14.8	100.0%
Nat/Bio/Phys. Sciences	90.8	9.2	100.0%
Social Sciences	88.9	11.1	100.0%

1981). Given the continuance of both of these phenomena, the *relationships* of sex, salary, and location which we have found here are also likely to have persisted; thus, as we have discussed, the sex segregation of academic work may be among the factors which promote the inequality among academic men and women.

(text continues on page 202)

APPENDIX B
Coefficients of Achieved and Ascribed Characteristics
(net of location) by Sex

Variables	Coefficients	
	Males	Females
Age	<u>73.31*</u>	<u>35.13*</u>
Age ²	<u>-.63*</u>	<u>-.35*</u>
Title ^a :		
Administrator	<u>917.91*</u>	<u>485.52*</u>
Professor	<u>1180.60*</u>	<u>947.79*</u>
Associate Professor	<u>739.63*</u>	<u>627.73*</u>
Assistant Professor	<u>598.05*</u>	<u>302.81*</u>
Instructor	<u>382.53*</u>	<u>208.22*</u>
Lecturer	<u>522.49*</u>	<u>321.44*</u>
Other-Faculty Senate	<u>632.45*</u>	<u>422.33*</u>
Degree ^b :		
B.A./M.A.	174.25*	53.08
Ph.D./Prof.	298.36*	250.10*
Years at Univ.	1.65	5.15*
Race: White	24.33*	-41.01
Citizen: U.S.A.	81.63*	53.07

NOTE: Underline indicates significant difference between M-F coefficient at $\leq .05$.

a. As compared to "other—not faculty senate."

b. As compared to "no degree."

*Significant at $\leq .05$.

NOTES

1. Unit refers to the departments of the college of arts and science, the other colleges and schools of the university, and the remaining noncollege (i.e., nonteaching) units with academic employees. This classification is discussed subsequently in the methods section.

2. The large and functionally diverse character of the institution makes it an appropriate setting for assessment of the effects of intra-university location. However, findings may not generalize to smaller institutions with less diversity and fewer research-oriented units.

3. Our 1971 data show that, among teaching academics, the ratio of female to male salary ranges between a high of .89 for associate professors to a low of .78 for instructors, with lecturers (.88), assistant professors (.83), and full professors (.82) falling between that range. Calculation from the University's gross-level salary statistics for 1978 show the *same pattern and level* of sex-wage disparity, with female to male salary ratios ranging from a high of .87 for associates, to a low of .71 for instructors, with lecturers (.82), assistant professors (.80), and full professors (.83), in between.

4. The log of salary did not improve the fit with the independent variables, and was hence rejected.

5. Following university personnel rules, the full-time monthly rate is determined in this way: For a one-term appointment, the time proportion is adjusted to reflect full-time employment, and the salary is divided by 4.5; for a two-term (academic year) appointment, the adjusted proportion is divided by 9; for teaching appointments of two and half terms, the adjusted proportion is divided by 12.

6. The title classification, which appears in Appendix B, comprises both faculty and academic nonfaculty, including those with and without faculty senate affiliation (senate affiliation represents a higher rank and type of tenured status for nonteaching academics).

Hence, although the sample includes both teaching and nonteaching academics, while the inclusion of the title variable allows us to control for the effect of rank and type of position.

7. The test statistic for the null hypothesis is $(C_1 - C_2) / \sqrt{S_1^2 + S_2^2}$, where C_1 is the coefficient value of a given location for men, C_2 is the value of the same location for women, and S_1 and S_2 are the respective standard errors of the coefficients. All of the tests do not hold simultaneously, because the estimated coefficients in each equation are correlated.

8. The test statistic for the *contrast* between locations is: $(C_1 - C_2) / \sqrt{\text{var}(C_1) + \text{var}(C_2) - 2 \text{cov}(C_1, C_2)} = D / \sqrt{\text{var}(D)}$. The test statistic for the sex difference between location contrasts is $(D_1 - D_2) / \sqrt{\text{var}(D_1) + \text{var}(D_2)}$, where C_1 is the coefficient of a given location, C_2 is the coefficient for the contrasting location, D_1 is the contrast between two location coefficients for males, and D_2 is the contrast between the corresponding coefficients for females.

9. Between the gross and net models, the R^2 level increases greatly (from .066 to .695 for men and .084 to .637 for women). The increase occurs because the added achievement characteristics do, in fact, explain a large proportion of the variance in academic salary. However, we remind the reader that, here, we are interested in the achievement characteristics only as they influence the salary and location relationship.

REFERENCES

- ASTIN, H. (1969) *The Woman Doctorate in America*. New York: Russell Sage Foundation.
- (1978) "Factors affecting women's scholarly productivity," pp. 133-157 in H.

- Astin and W. S. Hirsch (eds.) *The Higher Education of Women*. New York: Praeger.
- ASTIN, H. and A. E. BAYER (1973) "Sex discrimination in academe," pp. 333-356 in A. Rossi and A. Calderwood (eds.) *Academic Women on the Move*. New York: Russell Sage.
- BAYER, A. E. and H. ASTIN (1975) "Sex differentials in the academic reward system." *Science* 188 (May): 797-802.
- BERNARD, J. (1964) *Academic Women*. University Park: The Pennsylvania State University.
- BLACKBURN, R. T., C. E. BEHYMER, and D. E. HALL (1978) "Research note: Correlates of faculty publications." *Sociology of Education* 51 (April): 132-141.
- CENTRA, J. A. (1974) *Women, Men, and the Doctorate*. Princeton, New Jersey: Educational Testing Service.
- COLE, J. and S. COLE (1973) *Social Stratification in Science*. Chicago: Univ. of Chicago Press.
- DORNBUSH, S. M. (1979) "Perspectives from sociology: organizational evaluation of faculty performance," pp. 41-60 in D. Lewis and W. Becker, Jr. (eds.) *Academic Rewards and Higher Education*. Cambridge, Mass: Ballinger Publishers.
- DUNCAN, O. D. (1968) "Inheritance of poverty or inheritance of race," pp. 85-110 in D. Moynihan (ed.) *On Understanding Poverty*. New York: Basic Books.
- EKSTROM, R. B. (1979) "Women Faculty: Development, Promotion, and Pay." *ETS Findings* 5:1-5.
- FERBER, M. A. (1974) "Professors, performance, and rewards." *Industrial Relations* 31 (February): 69-77.
- FERBER, M. A. and B. KORDICK (1978) "Sex differentials in the earnings of Ph.D.s" *Industrial and Labor Relations Review* 31 (January): 227-238.
- FERBER, M. A., J. LOEB, and H. LOWRY (1978) "The economic status of women faculty: a reappraisal." *The Journal of Human Resources* 13: 385-401.
- FOX M. F. (1981) "Sex, Salary, and Achievement: Reward-Dualism in Academia." *Sociology of Education* 54 (April): 71-84.
- FUCHS, V. (1971) "Differences in hourly earnings between men and women." *Monthly Labor Review*, 94 (May): 9-15.
- GORDON, N., T. E. MORTON, and I. C. BRADEN (1974) "Faculty salaries: Is there discrimination by sex, race, and discipline?" *American Economic Review* 64 (June): 419-427.
- HORNIG, L. S. (1979) *Climbing the Academic Ladder: Doctoral Women Scientists in Academe*. Washington, DC: National Academy of Sciences.
- KATZ, D. (1973) "Faculty salaries, promotion, and productivity at a large university." *American Economic Review* 63 (June): 469-477.
- LADD, E. and LIPSET, S. M. (1975) "Faculty women: Little Gain in Status." *The Chronicle of Higher Education* II (September): 29.
- National Center for Education Statistics (1981) *Degrees Awarded to Women*. Washington, DC: Government Printing Office.
- (1980) "Women faculty still lag in salary and tenure for 1979-80 academic year." Washington, DC: U.S. Department of Education.
- PATTERSON, M. (1973) "Sex specialization in academe and the professions," pp. 313-331 in A. Rossi and A. Calderwood (eds.) *Academic Women on the Move*. New York: Russell Sage.

- REES, A. and G. P. SCHULTZ (1970) *Workers and Wages in an Urban Labor Market*. Chicago: Univ. of Chicago Press.
- SIEGEL, P. M. (1965) "The cost of being a negro." *Soc. Inquiry* 35 (Winter): 41-47; 55: 412-457.
- STEVENSON, M. H. (1975) "Relative wages and sex discrimination by occupation," pp. 175-200 in C. Lloyd (ed.) *Sex, Discrimination, and the Division of Labor*. New York: Columbia Univ. Press.
- SUTER, L. E. and H. P. MILLER (1973) "Components of differences between the incomes of men and career women." *Amer. Journal of Sociology* 78 (January): 962-974.
- SYNDER, D. and P. M. HUDIS (1976) "Occupational income and the effects of minority competition and segregation: a reanalysis and some new evidence." *American Sociological Review* 40 (April): 209-234.
- WEISKOFF, F. B. (1972) "Woman's place in the labor market." *American Economic Review* 62 (May): 161-165.
- ZUCKERMAN, H. (1971) "Women and blacks in American science: the principle of double penalty. Paper presented at Symposium on Women in American Science and Engineering, California Institute of Technology.