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Differential Progress of Women Faculty: Status 1980–1990

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"Now here, you see, it takes all the running you can do to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!"

Lewis Carroll, *Through the Looking Glass*

Regard for female participation in higher education spiraled in the 1970s and '80s. Numerous trend analyses in the higher education literature have predicted an employment crisis in academe for the 1990s and particularly through the first two decades of the next century. Academic salaries have not kept pace with the major economic indicators; the birthrate has declined; and proportionately fewer males are pursuing doctoral degrees and academic careers than in the 1950s and '60s. These factors have contributed to the anticipated shortage of qualified candidates for the professoriate. Compared with past decades, the candidate pool has diminished in most fields, even the once glutted humanities and social sciences. Moreover, the changing composition of the student body has focused attention on promoting a culturally diverse environment in higher education that will impact on curriculum design, teaching and research. Scholars have recognized the need to approach academic efforts from multicultural perspectives to improve quality and sensitize students to previously hidden voices. Females represent a relatively untapped labor pool for academe. Given the shifting demographics and the receptive climate for cultural diversity, it is anticipated that women and minorities will meet this employment void.

The purpose of this chapter is to review the relevant literature concerning female participation in the professoriate in the past decade. Broad-based, empirical studies are examined for the period 1980–1990. These studies present findings on the status of women based on analyses of national data bases; cross-sectional and/or longitudinal data drawn from a particular discipline across institutions; or across disciplines at a single institution of higher education.

Following the combined influence of two decades of affirmative action, the Women's Movement of the '70s and the conservative sociopolitical era of the '80s, questions of particular interest include: Has the status of female faculty changed? Has progress been made toward tenure and in representation and distribution of females across institutional types and academic ranks? What theoretical explanations appear to account for the current status of female faculty? In short, have female faculty achieved equity and broken the code of the social system of academe?

HISTORICAL PERSPECTIVE

During the first half of this century, major sociopolitical changes contributed to uneven progress for female faculty. The impact of women's suffrage had begun to fade and the Great Depression placed emphasis upon employment of men. The most rapidly expanding fields of the 1940s and '50s were the male-dominated fields of science, engineering and business administration. The years following World War II were characterized by a surplus of men seeking employment, a rising birthrate and social norms which did not encourage higher education and career development for women. Additionally, academic salaries became more lucrative and therefore more attractive to male participation from 1940 through 1970. These combined influences constrained female participation in higher education through the 1950s.

The 1960s and '70s marked a period of increased liberalism concerning attitudes about sexual roles and the Women's Movement flourished. The National Defense Education Act of 1958 opened the doors to increased educational opportunity in mathematics and the sciences at the undergraduate level and provided financial incentives to those who entered teaching. The Civil Rights Act of 1964 led to increased employment opportunities for women and minorities through subsequent affirmative action programs, legislation and resulting adjudication. From 1959 to 1969 the number of women pursuing graduate education increased fourfold. This trend continued through the 1970s and '80s. The National Center for Education Statistics (1989) reported that the number of doctoral degrees conferred on women more than doubled from 1969 to 1979 and increased again by over 125 percent from 1979 to 1987. These increases translate to a total gain of 8,000 doctoral degrees conferred on women in the period from 1969 to 1987. Presumably, these women were increasingly qualified for and interested in academic positions. Indeed, Finkelstein (1984) reported a 7 percent increase in female new hires in the early and mid 1970s.

WOMEN FACULTY STATUS: PRIOR TO 1980

Based on a comprehensive survey of post-World War II social scientific inquiry, Finkelstein (1984) summarized the status differences of women in the academic

profession through the 1970s. He reviewed a body of empirical studies focused on a variety of career-related dependent variables, with sex as the control or independent variable, to characterize female faculty status within and across disciplines and institutions. Data were drawn from institutional studies, professional status reports, and national surveys in higher education. Particularly, he sought to determine whether existing patterns of differences between male and female faculty reflected a matter of choice, discrimination, or differences in level of productivity.

Finkelstein's review revealed a net decline of 1.7 percent in proportionate representation of women in the professoriate since 1930. In 1929–30 women constituted 28 percent of full-time faculty contrasted with 26.3 percent in 1980–81, despite a 7 percent increase in the '70s. Moreover, he found female faculty disproportionately located at community colleges (35.5%) and at less prestigious four-year colleges (26%). They were generally underrepresented at universities (18.2%) and specifically at research universities (17.6%).

Bach and Perrucci (1984) found that institutional size and the percentage of female deans positively correlated with female representation on the faculty of a university in 1979–80. Likewise, liberal nepotism policies increased the likelihood that the faculty members would be women. Hyer's (1985c) findings suggest that representation of women faculty at doctoral-granting institutions was significantly related to proportion of female students, curriculum emphasis and institutional prestige. At small universities and four-year colleges, Bach and Perrucci (1984) found that the larger and more selective institutions were less likely to have female representation within faculty ranks. However, proximity to larger populations and the percentage of female deans were positively correlated with female representation in 1979–80.

Concerning female representation by discipline, Finkelstein (1984) reported that in 1970 female faculty were concentrated in the traditionally female dominated fields—namely the soft, applied fields such as the performing arts, foreign languages, health-related professions, and English. However, evidence of change in the disciplinary patterns reflected by sex among new doctorate recipients and current graduate students emerged over the decade. For example, women were pursuing studies in law, economics, engineering, the physical sciences, agriculture and natural resources in increasing numbers.

Rank and Tenure

The scholarly status and progress of women within their institutions in 1980–81 was disheartening. Finkelstein (1984) reported approximately 71 percent were at or below the assistant professor level or were unranked. Even though more women had pursued graduate education in the 1970s, there was insignificant change in the proportion of full professors by 1980 since the new hires of the '70s had been absorbed at the lowest academic ranks. Only 11.1 percent of faculty

tenured at universities were females, 19.4 percent at four-year colleges and 30.8 percent at community colleges (National Center for Education Statistics, 1980). Hyer (1985c) reported a 4 percent gain in the proportion of women faculty at traditionally male-dominated doctoral-granting institutions during the '70s. This increase was unevenly distributed across ranks: a 13 percent increase in percentage of women at the assistant professor rank; a 5.2 percent increase at the associate level and a 6 percent increase in the percentage of women at the rank of full professor.

In the same study, Hyer (1985c) also found that the 1970s marked a period of gender shift in faculties of these institutions. Men moved into the upper academic ranks and as predicted, women moved in to populate the lower ranks and untenured positions. She found that the 30 percent representation of women at the assistant professor level paralleled the percentage of females earning doctorates. However, her investigation revealed little evidence of female progress at the senior faculty levels. By 1980–81, 70 percent of male faculty at doctoral-granting institutions were tenured as compared with only 41 percent of the females. The National Center for Education Statistics (1980) also reported a slower rate of promotion for women compared with their male counterparts. While the few women in the natural sciences appeared to be promoted at the same rate as male peers, the larger group of females employed in the humanities and social sciences were promoted less rapidly than males.

Robertson (1979) looked at the status of female business school faculty in the late '70s. Similarly, she found that the sample of 1492 female faculty were concentrated in the lower ranks with the majority (63%) employed in the non-tenured ranks of visiting professor, lecturer, instructor or assistant professor. Only 5.1 percent of the chairpersons were females and the highest percentage were teaching in business education (34.9%). Robertson concluded that geographical mobility, attractiveness of part-time status due to family responsibilities, and the lack of a doctoral degree (44.6 percent held doctorates) were contributing factors to low status.

As a consequence of lower representation at the senior levels, Finkelstein (1984) and Hyer (1985c) also found that women were less likely to hold positions of administrative influence. Senior faculty constitute the pool of candidates for administrative positions, and for membership on policy-making, promotion and tenure, and search committees. Lower representation at the senior ranks limits female influence in the decision-making processes and opportunity for appointment to administrative capacities which also offer higher rewards.

Research Productivity

Finkelstein's (1984) summary suggested that academic women spent about half as much time as male colleagues in research and were twice as likely as males to spend no time. Using research productivity as an example of measurable

performance, women were found to be less productive researchers than their male counterparts by as much as a threefold difference when accounting for both cumulative production and publication rate. Those who did publish did so at a moderate rate compared with males. Some variation by discipline and academic career stage was noted, however. Women at the higher ranks and those in the natural and social sciences were found to be more prolific publishers.

Women were reported to spend more time on undergraduate teaching in preference to research, to be constrained by roles associated with the family life-cycle and to be concentrated in institutions where research is less of a priority. Role conflict with attendant time constraints, preference for teaching, and limited institutional access to resources critical for enhanced research productivity are offered as explanations for gender disparity in research productivity.

However, in academic psychology, Over (1982) observed a change in the productivity differential which he hypothesized might be the beginning of a new trend. In fact, he found that the gender ratio of authors publishing in psychology journals shifted during the 1970s. Women had increased their visibility across 14 psychology journals from 1972 (12.9% senior authorship) to 1977 (21.2% senior authorship). He suggested that social change in attitudes and increased female participation in higher education during the '60s and '70s might impact on gender differences in research productivity.

Rewards

Finkelstein's (1984) summary indicated that differential treatment of women academics was notable in the area of salary. Numerous studies conducted in the '70s all concluded women were paid less than men even after controlling for rank, institutional type and discipline. Finkelstein found that this compensation disparity grew with increased academic rank across the length of female faculty careers. The differentials were higher at doctoral-granting universities and lower at the liberal arts and community colleges. According to the National Center for Education Statistics (1989), an 18 percent disparity between full-time female and male faculty compensation existed in 1972 which grew to a 19 percent differential in 1982. Female faculty fared worse in the traditional arts and sciences than in the professions although an increased proportion of women in a discipline was not necessarily proven to be related to the pay disparity.

Finkelstein (1984) suggested that either the criteria for salary determination were in the process of change or that these criteria were not being uniformly applied to men and women. He observed considerable male-female differences in salary determinants in contrast to the late '60s when there had been a high degree of similarity in the predictors for male and female faculty. He concluded that academic compensation practices were being defined in terms of male strengths. The analysis of salary determinants for male and female faculty he presented suggests that females were most highly rewarded in the areas of their

relative aggregate weakness. Women were reported to receive a higher return than men for publication, for possession of a doctorate, and for career choice in the natural sciences. Men were rewarded most for prestige of institutional affiliation, publication, experience, and administrative and public service responsibilities.

DIFFERENTIAL PROGRESS: THEORETICAL MODELS—1980

Finkelstein's (1984) analysis pointed to a multiplicity of forces affecting the status of women faculty. Although overt discrimination has been demonstrated in training opportunities, hiring practices, compensation, and progress toward tenure, there seem to be mediating influences on the differential progress of women. Finkelstein offered competing theoretical explanations which attempt to account for the differences in the patterns of female and male faculty careers during this historical period. The theories cluster around the issue of differential performance influenced by personal choice, differentials in educational background and training, and/or the social context within which women pursue an academic career.

One theoretical perspective maintains that women bring different values and orientations to the workplace which result in different task selection and institutional preference. Unfortunately, the aspects of academic work and the employing institutions preferred by women carry lower rewards.

The second perspective is that women are treated differently in subtle ways throughout their entire socialization which results in differences in educational background, attainment of the doctorate, mentoring opportunities, financial support, choice of institutional type for employment, etc. Sociological theories concerning cumulative disadvantages are relevant in this area and may provide an alternate explanation for differential performance and lower status.

And, finally, Finkelstein (1984) summarized a group of theorists who maintain that women are treated differentially in academe because of the broader social context in which women operate. Marital responsibilities, childbearing and rearing roles, and the proportion of responsibility for domestic chores all compete for female faculty members' time and limit their productivity and career progress. In short, women are fulfilling a broader range of roles than their male counterparts. Part-time status may be more attractive to females for this reason. The disproportionate demands on their time and their constrained mobility negatively affect their academic careers at critical junctures beginning with decisions about undergraduate and graduate education and continuing through academic employment and direction of effort.

WOMEN FACULTY STATUS: 1980–1990

How have female faculty fared in the 1980s? The U.S. Department of Education (*Chronicle of Higher Education*, September 5, 1990, p. 22) reports females

TABLE 1. Doctoral Recipients by Major Field of Study

Field	Percent Female 1979–80	Percent Female 1986–80
Business	14	23.5
Computer/Information *Sciences*	11	13.9
Engineering	3.7	6.9
Health professions	45	53.5
Mathematics	13.8	17.4
Physical sciences	12.4	17.3

Source: Based on NCES data (National Center for Education Statistics, 1989).

constituted 28.6 percent of full-time faculty in colleges and universities in 1987. This represents a gain of 2.3 percent over 1980–81 and a slight increase (0.6%) over the 1929–30 employment statistics. An analysis of gender trends among campus administrators indicates a one percent increase of women in 1978–87 at state and land-grant universities (NASULGC, 1990). Of the total 34,120 doctoral degrees conferred in 1986–87, 35 percent were earned by women, a 5.5 percent increase over 1979-80. This was accompanied by an equivalent decrease (5.6%) in number of doctoral degrees conferred on men. Significant increases across selected male-dominated fields have been achieved in the past decade in doctorates conferred on women. Table 1 shows the distribution of doctoral recipients by selected fields in 1979–80 and 1986–87.

In terms of institutional prestige, female representation on faculties remains clustered at the lower ranks and in community and four-year liberal arts institutions. The Carnegie Foundation for the Advancement of Teaching (1989a) reported continued maldistribution of females across academic rank and institutional type. From their national survey of 5,414 faculty, they found women are still concentrated in the nontenured ranks of assistant professor, instructor and lecturer (48.3%). Only 19.4 percent of full professors and 33.3 percent of associate professors are females. Concerning distribution across institutional types, the Carnegie survey revealed that women continue to be disproportionately employed at two-year (40.9%) and liberal arts institutions (39.4%). Females are still lacking in their representation at comprehensive (31.4%), doctorate-granting (22.3%) and research institutions (21.7%). This situation persists despite significant increases in female doctoral recipients and distribution of females across disciplines.

The same three predictor variables identified by Hyer (1985b) associated with low female faculty representation in the 1970s have been supported by several studies conducted in the 1980s. Namely, Cadet (1989) found low representation

TABLE 2. Percent of Full-Time Faculty Tenured by Institutional Type

	1980–81		1987–88	
	Women	Men	Women	Men
All institutions	49.7	70.0	50.2	70.5
4-year	44.0	68.3	46.1	69.6
University	41.0	70.0	45.1	71.9
Other 4-year	45.5	67.0	46.6	67.8
2-year	66.6	78.8	67.5	78.1

Source: Based on NCES data (National Center for Education Statistics, 1989).

of female faculty correlated with low female student enrollment, a scientific and technical curricular emphasis, and high prestige, research-oriented institutional status. Lamanna, Miller, and Moore (1987) also found parity in the proportion of women chairs to female faculty in sociology departments across institutional types in the midwest. In 1984, 25 percent of women sociology chairs were at junior and community colleges, 61 percent were at four-year colleges, and 10 percent were at universities consistent with the percentage of female faculty at these institutions. Lamanna et al. relate gains in female administrative and faculty representation to the marked increase of female participation in leadership roles of the Midwest Sociological Society in the past 20 years. They suggest that networking may impact positively upon hiring practices.

Rank and Tenure

Women compose half of U.S. undergraduates and are earning one-third of all doctorates. Data available for 1985 indicated that although female faculty are approaching a proportionate share (28%) of the total 464,000 full-time instructional positions across all institutions of higher education, females represent only 17 percent of full-time faculty positions at the rank of associate and full professor (National Center for Education Statistics, 1989). Approximately half of female full-time faculty are tenured compared with 70 percent of males. In the period from 1980 to 1987 only a 0.5 percent gain was realized in tenured positions for female faculty. The most current data (see Table 2) indicates a 23.5 percent gap between male and female tenured positions in four-year institutions, while the gap has narrowed to 10.6 percent at two-year institutions.

More than two times as many females hold positions at the untenured ranks (assistant, lecturer, instructor, and other) than at the rank of associate or full professor, while the statistics for male faculty show a very different picture. One and one-third more males hold positions at the rank of associate and full professor compared with the untenured ranks (National Center for Education Statistics, 1989). Cadet's (1989) summary of a 1978 American Association of University Professors (AAUP) survey of 2,500 colleges and universities concluded women do not move up at the rate of their male counterparts but remain in the lower ranked, lower paid, and less secure positions for longer periods of time.

Armour, Fuhrmann, and Wergin (1990) surveyed a sample of 1,135 tenured faculty at six institutions in central Virginia representative of the full range of Carnegie institutional classification levels. As in numerous other studies, they found women had spent less time at their institution, less time in rank and less time tenured. The female faculty were concentrated at the lower ranks and in the professional disciplines versus the natural sciences.

Lamanna et al. (1987) found that female sociologists located in the Midwest also are concentrated in the lower ranks. While women have made gains overall on sociology faculties, 22 percent in 1985 versus 12 percent in 1969, the largest proportion (63%) are found in the instructor/lecturer and assistant professor ranks. In fact, their figures show that female representation in the untenured ranks has almost doubled since 1969. These data pose questions about the comparative rate of promotion of men and women graduate sociology faculty.

Employment Patterns

Using the National Research Council's Survey of Doctorate Recipients, which includes a biennial sample survey of doctorates in over 200 science, engineering and humanities fields, Tuckman and Belisle (1987) found that overall production of new doctorates between 1977 and 1983 had declined only slightly. The proportion of Ph.D. graduates employed full-time has consistently decreased from 76 percent in 1977 to 73.9 percent in 1983 while in the part-time employment category, the proportion of new doctorates has increased from 4.9 percent in 1977 to 6.1 percent in 1983. However, the patterns of employment are very different between male and female graduates. During this period, 67 percent of women Ph.D. recipients were likely to secure a full-time position in 1979 while in 1983 the percent declined to 62%. Eighty percent of males obtained full-time employment in 1979 versus 78 percent in 1983. Once females graduate from doctoral programs, Tuckman and Belisle show that they are just as likely as men to pursue postdoctoral training (15% on average). However, they are much more likely than men to end up unemployed (3–6% vs. 1–2% for males), not participating in the labor force (4% vs. 1% for males), or in a part-time faculty position (10–14% of females compared with 2–3% of males).

Lamanna et al. (1987) studied the status of female sociologists in the midwest by appointment type, rank, chairperson status, and faculty position in a Ph.D. rather than M.A. instructional program. They found gains in female faculty representation in Ph.D. programs and in full-time employment status. Based upon 1984–85 data, they discovered that from 1969 to 1985, women made significant overall gains in representation on sociology faculty from 12 percent

in 1969 to 22 percent in 1985. However, the absolute number of positions held by females after doubling in the 1970s had remained static since 1977. Considering the 27 percent share of sociology Ph.D.s in 1981, women continued to hold a smaller share of academic positions than would be predicted.

Although Tuckman and Belisle (1987) documented an increase in female Ph.D.s (+2464 in 1977–83), accompanied by a decrease in male Ph.D.s (−4246 in 1977–83), there is no corresponding evidence of a shift in labor participation. In 1977 women earned 20 percent of all doctorates awarded, and increased their proportionate share of new doctorates to 28.5 percent in 1983. In terms of employment status of new doctorates, they accounted for a 52 percent share of part-time positions and an 18 percent share of full-time positions in 1977. However in 1983, they accounted for 67 percent of the part-time positions and 24 percent of those employed full-time. The data demonstrate that women were increasing their dominant role in the part-time category.

Likewise in sociology, Lamanna et al. (1987) found that during 1981–85 women were almost two times as likely as their male colleagues to be employed part-time which points to marginal status in that discipline. Cadet (1989) also supports this observation. She cited a 1980 survey conducted by Abel (1984) illustrating that women are not only more likely to be offered part-time positions, but they are more likely to be passed over for better positions when openings occur. Tuckman and Belisle (1987) concluded that part-time faculty positions had become feminized with women composing about 50 percent of part-timers in 1977 and two-thirds in 1983. However, despite the higher incidence of women in part-time status, Tuckman and Belisle concluded involuntary part-time status appeared no more prevalent.

Given that part-time positions are marginal, women could be disproportionately affected by any changes in employment conditions for part-timers in the academic labor market. Moreover, ". . . as women have started entering the field of college teaching in larger numbers, particularly in the humanities and remedial education, such teaching is becoming stigmatized as women's work" (Cadet, 1989; p. 17). The fear is that pre-requisites of hiring will be reduced, the number of entry level positions will expand, and career ladders will disappear for females. The data on female proportion of part-time positions seem to support this observation. Lamanna et al. (1987) suggested that academia is approaching a dual labor market characterized by a male-dominated class of tenured and tenure-track professors and a growing female-dominated class of part-time and temporary positions.

Rewards

What is the status of academic rewards for females today? Have female academics made any significant progress in compensation in the last decade? Does salary disparity persist; and if it does, what explanations are offered for the differences? Differences in salaries attributable to ascribed characteristics that are unexplained by differences in legitimate salary determinants are generally attributed to discrimination. The existence of gender discrimination in the reward structure of academe has serious institutional policy implications.

A review of the literature revealed numerous studies that attempt to estimate earnings functions and salary discrimination for faculty members in various settings. While controlling for salary determinants other than sex, a consistent pattern of lower pay for females is reported with varying explanations for the differences in rewards (Barbezat, 1988; DiNitto, Martin, and Harrison, 1982; Ferber, Loeb, and Lowry, 1978; Fox, 1981a; 1981b; Kelly, 1989; Megdal and Ransom, 1984; Persell, 1983; Smart, 1990; Tuckman and Chang, 1984; Weiler, 1984). The merit ideology asserts that rewards are a function of performance and attainments. Research guided by the human capital theory finds women lacking in experience and credentials (sufficient accumulated human capital) necessary in academia to qualify for rewards. Therefore, unequal performance is offered as the explanation for unequal rewards. Several studies (Persell, 1983; Fox, 1981a; 1981b; Ferber et al., 1978) suggest that although performance is found to be a determinant of rewards, performance criteria are selectively applied by gender. The structuralist perspective relies on institutional mechanisms to account for status inequity and differential rewards. Fox (1981a) suggests that "Institutional barriers and cultural obstacles place women in structural positions which make it more difficult for them to accumulate the necessary credentials and produce evidence of performance" (p. 82). Moore and Johnson (1989) report that salary differentials reflect structural features nationally. Women are clustered in the lower ranks, the lower-paid academic disciplines and in the lesser status institutions. Salary differentials in academe also have been attributed in part to a reflection of discrimination in the market-at-large (Barbezat, 1988; Fox 1981b; Megdal and Ransom, 1984; Tuckman and Chang, 1984). Commonly, salary studies are drawn from cross-sectional data at a point in time to examine the wage gap between comparable male and female faculty members. Kelly (1989) studied gender influences on salary and job satisfaction in a data analysis based on interviews with a national sample of faculty members in journalism and mass communication departments at schools offering at least the baccalaureate degree. Using salary as the dependent variable, and controlling for legitimate predictors such as experience level and academic rank, the results of regression analysis led him to conclude that ". . . (were it possible) a change from female to male status would increase one's base salary by approximately $3,600, all other variables in the equation being equal" (p. 449).

A different approach to analysis includes longitudinal data (Megdal and Ransom, 1984; Weiler, 1984). Weiler's methodological case study examined life-cycle relative earnings by sex estimated from both cross-sectional and longitudinal data samples at a midwestern university. The sample consisted of 1,089

faculty members employed continuously for an eight-year period (1974–1982). Controlling for independent variables chosen with reference to the human capital model, he found substantial differences in estimated male-female earnings profiles over time and confirmed that all women in the sample suffered from salary discrimination. A possibly significant contribution of his work is related to the use of both cross-sectional and longitudinal data. Consideration of the cross-sectional data alone would indicate that only the youngest and oldest women in the sample were compensated differentially, while the combination data revealed all women in the sample were similarly affected. He constructed a convincing argument for including longitudinal data when estimating models of faculty salary discrimination.

Megdal and Ransom (1984) found significant, unexplained salary differentials persisted in a longitudinal study of teaching faculty at the University of Arizona over a ten-year period. They report male salaries average 22 to 28 percent more than female salaries with the ratio increasing over time. From a longitudinal perspective, the wage gap can be thought of as originating from two sources: differences in pay at the time of hire; and differences in rates of growth in salaries. They hypothesize that most of the differential in salaries is due to the treatment of females at the time of hire. This is supported by their data which showed the growth rate for female salaries was higher than for male salaries. Since the university must pay competitive market salaries to new hires, possible explanations for lower starting salaries are differences in productivity or a reflection of discrimination in the market-at-large.

Is academic performance related to rewards in the same way for men and women? Several studies question the hypothesis that women are treated unequally because they are unequal (Ferber et al., 1978; Persell, 1983; Fox, 1981a; 1981b). Looking at the question of whether differences in performance between the sexes account for differences in reward, Ferber et al. (1978) studied faculty at a large research university. They attempted to estimate the difference in human capital accumulated by men and women and the impact on salary and other rewards. They found that ". . . women with recent degrees at the assistant professor rank publish virtually as much as comparable men" (p.399). Multiple regressions with salary as the dependent variable against a number of measures of merit and experience as independent variables confirmed that women are not only paid less, but less than would be expected on the basis of their performance. Among men and women faculty of comparable qualifications, their findings suggested the yearly cost of being female faculty was 9.7 percent of the mean salary of the sample members. Consistent with earlier findings, they observed gender differences in the patterns of reward.

> The main differences between the reward structure for men and women are that men are rewarded more highly for long (13) years of experience and are more affected by earnings differentials across departments, while women are more highly rewarded for obtaining a Ph.D. and for articles, reviews, and other publications. . . . It appears that men obtain more automatic experience and department-related rewards, while women's rewards are more related to performance. (Ferber et al., 1978; pp. 390–91)

Persell (1983) considered not only salary but research resources and positional rewards in a study of a national sample of education researchers (published first authors) to determine the extent to which gender differences in research productivity and performance exist. Similarly, she found female gender to be negatively related to income even when measures of performance are held constant. Performance differences alone do not fully explain the differences in rewards. Surprisingly she found that quality of work is negatively related to rewards for women while positively related for men. "When women hold their own in the quality of their research, they derive no benefit from it, while the quantity of publication (where men outperform women) counts more heavily for women than for men. . . . Performance criteria appear to be selectively applied to men and women in ways that are detrimental to women" (p. 45).

Fox (1981a; 1981b) also anchors her investigation on the merit ideology and explores structural characteristics of the academic institution which may contribute to differential rewards. In two related studies which differ in design and approach to data analysis, Fox (1981a; 1981b) examined cross-sectional personnel data of a major midwestern university. One investigation (1981b) was based on an analysis of aggregate unit salary levels while the other (1981a) examined salary data on an individual basis for academic employees across units. An underlying assumption in both studies is that despite increased female participation in the labor force, occupations continue to be sex-segregated. In this respect through structural characteristics of the employment location, academia mirrors the society at large in labor market discrimination.

Consistent with the concept of a meritocracy, achievements are found to be the dominant determinants of academic salary for males and females. However, rewards seem to be apportioned by gender. The importance of ascribed and employing academic unit characteristics is found to lie principally in their consequence for the patterns of salary returns to achievements. Attainment levels are found to raise salaries, but not equitably for women and men. Fox (1981a) contends that the organizational structure presents sex-biased barriers to opportunities that would lead to accumulation of professional credentials. The conclusion Fox (1981a) draws is that a dual reward system is operating in academia.

Using a causal modeling approach, Smart (1990) examined the influence of gender on rewards (rank and salary) directly and indirectly through intervening variables representative of the human capital and structuralist perspectives. Data were obtained from the 1984 Carnegie Foundation for the Advancement of Teaching National Survey of Faculty. The final sample included 2,968 faculty, distributed across academic disciplines and employed full-time in a four-year

institution. Controlling for all other variables in the model, gender was found to exert a considerable direct effect on rank and income. Males attained higher academic rank and were found to have higher earnings than female colleagues. Decomposition of the total indirect effect of sex on academic rank revealed that nearly 90 percent is accounted for by intervening variables of career age and highest earned degree. Gender is also found to have a statistically significant direct, indirect, and total effect on income and indeed, the largest indirect effect of any variable in the model. Decomposition of the total indirect effect of sex on salary illustrated the central importance of career age, academic rank, and degree of male-domination of academic disciplines as the primary intervening variables.

Consistent with a human capital perspective, women demonstrated insufficient experience and credentials to qualify for higher academic rank and earnings. However, the study demonstrates the magnitude of sex inequity in academic rank and salary and the important intervening variables that convey the indirect influence of sex on these attainment measures.

> The importance of sex in understanding the academic reward structure is most evident in the finding that sex has the second largest total effect on both criterion measures. . . . This . . . suggests that the sex of a faculty member is more important to their academic rank and salary attainment than the kind of institution in which they work, the type of academic discipline with which they are affiliated, or the nature of work they perform . . . (Smart, 1990; p. 12)

These studies present evidence of continuing sex disparity in academic rewards and support for the continued use of variables based on the human capital and structuralist perspectives in future research. In terms of progress for female academics in gaining rewards, Smart (1990) suggests that the magnitude of disparity in both academic rank and salary may be greater than previously assumed. Fox (1981a) also concludes ". . . the male-female disparity in the achievement-reward structure is actually an underestimation of the effect of sex, and the reward dualism is probably an understatement of the sex-differential standards" (p. 82).

DIFFERENTIAL PROGRESS: CAREER PATTERNS

The literature has identified gender differences in academic career patterns (Cole, 1979; Finkelstein, 1984; Menges and Exum, 1983; Muller, 1990; Stark, Lowther, and Austin, 1985). As reported previously, women progress more slowly through the academic ranks and cluster in more of the marginal, nontenure track positions than men (Lomperis, 1990; Moore and Johnson, 1989; Tuckman and Tuckman, 1981; Tuckman and Belisle, 1987).

Menges and Exum (1983) found that women faculty are more likely to have heavier teaching loads; to teach at the undergraduate level; to work in special

programs such as special education and support programs for minority students; or to be offered joint appointments. Special programs are often marginal and part-time, and faculty within these programs are more susceptible to the effects of retrenchment. Joint appointments may negatively impact on career progress prior to earning tenure. Competing priorities for time and effort between two departments and budgetary considerations for funding of the positions can pose career risks for women who enter faculty ranks through joint appointments.

Muller (1990) found evidence that women employ "hidden passages" (p. 6) in their careers to accommodate competing roles of family and career. "Hidden passages" are defined as coping strategies that result in variations in the career pattern such as part-time work, leaves of absence, and voluntary delays of the tenure clock. Individuals in her sample who have used "hidden passages" have also been successful in achieving tenure or in remaining on the tenure track. She suggests these findings indicate change in academic career patterns and a tolerance for less traditional paths.

Throughout this review, the academic career pattern is characterized by tradition and values defined in terms of a male-dominated culture. Although women have made gains in access to the academic career, they continue to have difficulty gaining full membership. In the following sections on mobility, research productivity, stress and role conflict, and career satisfaction it is clear that whether by design or default, the feminine version of academic career pattern has not been associated with advancement.

Mobility

Mobility within academia has been related to career advancement and prestige of employing institution. Academics enjoy a national job market and especially at certain points in an academic career, advancement may depend on relocation. Advancement may also depend on being perceived as mobile when negotiating with present and future employing institutions. Differential patterns in the institutional mobility (Rosenfeld and Jones, 1986) and geographic mobility of men and women academics, both part-time and full-time, have been investigated in an attempt to explain differential career progress (Rosenfeld and Jones, 1987; Marwell, Rosenfeld and Spilerman, 1979; Tuckman and Tuckman, 1981).

Rosenfeld and Jones (1986) examined the institutional moves of male and female psychology academics. Because of the documented lower status of women in non-ranked positions, they hypothesized higher institutional mobility for women than men, but unrelated to career performance as it is for men. As predicted, they found that women made more shifts than men and benefited less from their mobility. They suggest that perhaps this was a reflection of involuntary moves. Although untenured status was related to an increased rate of leaving the institution, the effect was similar for both genders.

This seems to be supported in an earlier study of part-time faculty (Tuckman

and Tuckman, 1981). Their data suggest that a larger percentage of women than men employed part-time desire a full-time position but are unable to find one. Further they found that those females desiring a full-time job and those holding two part-time jobs were less mobile than the males in the respective categories. A larger percentage of both categories of part-timers are married and have a spouse in academe which they relate to reduced mobility. The female group found to have the lowest mobility is the "homeworker" category—caring for children or family as well as holding a part-time academic position. Data also showed very little movement between part-time and full-time positions.

Marwell et al. (1979) and Rosenfeld and Jones (1987) also considered gender differences in geographic mobility of academics. Both studies supported that women academics are less likely than males to leave their geographic location when changing jobs and are more likely to locate in large urban areas which provide for broader but more competitive labor markets. Their reasoning centered on the likelihood that married women academics would be part of a dual-career family and priority would be given to the husband's career. They related geographic mobility to career mobility through the nature of the academic profession in that opportunities for advancement within the discipline may present in a remote location.

Marwell et al. (1979) used data on geographic residence patterns of academics from the Carnegie Commission survey (1969) and as predicted married females were found to be twice as likely as married males to reside in urban centers with populations greater than one million. Gender differences in residence pattern between single academics were smaller and actually showed fewer single women than males residing in large urban areas. This finding seems to support their argument that marriage influences the sex disparity in location to a greater extent for women.

Additional data were obtained on a sample of academic psychologists to investigate the rate of movement between geographic areas when changing institutions. Although Marwell et al. found the total number of job shifts to be similar for both sexes, the women were twice as likely as men to change institutions within their area of residence. Further they found support for the premise that men are more likely than women to change their status with a change of locale. Women, when they did move, stayed in the same rank or moved within the untenured class of positions. Women do not seem to choose location for maximizing career prospects in the same way that men do. Rosenfeld and Jones (1987) similarly found that women academic psychologists are less geographically mobile than men; women are more likely than men to be located in large cities; and that their careers are not as well coordinated with their mobility. Consequently, these authors relate women's lower status in academia to constrained geographic mobility.

Overall, the differences in women's mobility patterns and outcomes seem to suggest that life-cycle and life choices have significant influence on career patterns. Rosenfeld and Jones (1987) make an interesting speculation about the gender effect of life-cycle stage and career position on mobility which poses a question for future research. Do older women with recent Ph.D.s behave more like traditional age males with recent Ph.D.s in career mobility and progress? Whether geographic mobility patterns continue to contribute to differential progress for women may depend on social change.

Research Productivity

In the culture of academe, performance and professional attainment are reflected by the academic's research productivity, thereby linking publication to professional recognition and rewards (Astin, 1984a; Fox, 1985). Numerous variables have been examined in the literature and varying theoretical explanations have emerged. The variables studied cluster under four dominant categories. They are measures of quantity and quality differences in research productivity; impact of differing attitudes and values as reflected in time spent on research; impact of self-perception and personality characteristics; and influence of organizational, educational, and professional structural factors.

Quality and Quantity of Research

Attempts are made to quantify performance or professional attainment by measuring total publications, publication rate, research awards, and citations. Numerous studies document lower publication productivity for women academics although quality of published research is not at issue (Cole and H. Zuckerman, 1984; Fox and Faver, 1985; Helmreich et al., 1980; Over, 1982; Persell, 1983; Rodgers and Maranto, 1989; Simeone, 1987). Gender differences in research productivity remain significant even when controlling for appropriate career attainment variables such as career age, prestige of graduate degree, rank or employing institution. Differential productivity frames one context for gender differences in career progress, recognition and rewards. Persell (1983) attempted to measure the comparative quality and quantity of research produced by men versus women, the level of resource support and the citation rates for each sex. A panel of 39 accomplished researchers rated a total of 390 randomly selected articles drawn from 10 subfields of education. The variation in quality rating between the research articles authored by women and those authored by men was not statistically significant.

Utilizing a questionnaire and the *Science Citation Index*, Persell (1983) found that the average number of articles published differed for males and females throughout their careers. Men published an average of 12.6 articles and females published an average of 7.6 articles. However, men were also significantly more likely to receive research resources with an average cost of $27,236 for projects conducted by males and an average cost of $9,570 for female researchers'

projects. Citation rates had a moderate positive relationship to productivity. The average number of citations over a two-year period reached 5.2 for men and 2.8 for women. Persell maintains that citation rates are more likely a measure of visibility than of quality and the gender differential may be a result of low female participation in the inner circles of the discipline or of discriminatory behavior directed toward female academics.

Over (1982) found a gender differential in quantity of papers published and in citation frequency rates for the six-year period following dissertation publication for a group of psychologist authors. However, when cumulative percentage frequencies were compiled there was no difference in per paper citations between men and women. Although he discounts the notion proposed that women's structural placement in applied disciplines hinders research publication, when area of specialization within psychology was controlled, gender differences in productivity persisted.

Helmreich, Spence, Beane, Lucker and Matthews (1980) measured professional attainment by quantity of publications and citations in a sample of Ph.D. psychologists (141 males and 55 females) who were employed in academic institutions. There were gender differences in the reputation and productivity of employing institution and prior graduate department for subjects over the age of 40, but no such differences in those under 40. Overall, males were significantly more productive in terms of quantity of publications and citations. Even in the under 40 age group, who shared comparable quality of graduate and employing institution, gender differences in citations, self-citations, and publications remained highly significant. Differences in productivity were not significant in a subsample of academics employed at research-oriented institutions. However, the gender differences in citation rates remained highly significant in this group even when experience and age at Ph.D. were added as covariates.

Upon examination of 3,686 articles published in 10 sociology journals, Rong, Grant and Ward (1989) established that by 1983 female sociologists were contributing 25 percent of the total articles. This proportion was consistent with female representation on graduate sociology faculties. These findings would suggest that low female research productivity may not be generalizable across disciplines.

Impact of Attitudes and Values

Several studies have examined the attitudes and values females bring to their academic careers which affect research productivity. These studies suggest that women are more service-oriented and, therefore, are less interested in, spend less time on, and value research less than men do. *The Chronicle of Higher Education* (September 5, 1990; p. 24) reported on faculty attitudes and activities for 1988–89. Findings were based on a national survey of 9,996 faculty members at 306 colleges and universities. Across all institutions, 73 percent of women

compared with 58 percent of men thought that teaching effectiveness should be the primary criterion for promotion. Sixty-eight percent of both male and female faculty felt that methods other than publications were needed to evaluate faculty performance.

Considering interests in scholarly activities, respondents were asked to indicate their level of interest in research and teaching. Of the males, 33 percent cited research as either their primary interest or having a higher priority than teaching if they expressed interest in both. Of the females, 22 percent assigned research a higher priority. Responses were also categorized by institutional type, although data was not available by gender in these categories. However, only 7 percent and 16 percent of all faculty at two-year and four-year liberal arts institutions indicated a priority interest in research. The female response may be reflective of their location in the academic institutional strata since faculties at two-year and liberal arts institutions are largely female.

In their investigation of tenured faculty across institutional types in central Virginia, Armour et al. (1990) found women in their sample reported a higher percentage of time spent teaching (53% vs. 43%) than male faculty and less time doing research (13% vs. 22%). Similarly, a U.S. Department of Education study (*Chronicle of Higher Education*, February 7, 1990) found that women showed a clear preference for teaching by spending 61 percent of their time teaching in comparison with men spending 54 percent. Consistent with previous studies, women reported spending 12 percent of their time on research as opposed to 18 percent reported by men. Witt and Lovrich (1988) also showed women spend significantly more time than men on teaching and less time on research. Overall, faculty effort devoted to research is estimated by Bowen and Schuster (1986) to absorb no more than one-fifth of all faculty time.

Aisenberg and Harrington (1988) conducted a qualitative study based on the assumption that women have a different view of life in the academy from their male colleagues. They found that female academics are motivated by different interests. "What women do find meaningful . . . are subjects through which interior change is possible—enlargement of individual scope, shaping of individual identity, interior liberation—for themselves and for their students" (p. 89). Based upon a series of interviews with female academics, their study clearly illustrates the strong draw of the teaching and service mission for women. This can partially explain low interest and productivity in research.

Impact of Self-Perception and Personality

Several researchers have explored female ability, self-perception of research competency, and the influence of personality traits on quantity of publications. In a study of natural sciences faculty, Trautvetter and Blackburn (1990) attempted to elucidate gender differences in predictors of publication rate. Their work was guided by a theoretical framework that incorporated sociological,

psychological and environmental factors. They found "no gender differences in personal preference for effort allocated to research or actual effort allocated to research" (p. 9). They determined the major predictor of female publication rate to be perception of self-competence.

Bandura's (1977) theory of self-efficacy suggests that individuals develop confidence levels about their ability to use their skills in specific situations. This confidence results in levels of expectation which in turn influence the amount of effort expended and the extent of perseverance in the face of adversity. Landino and Owen (1988) examined the theory in terms of faculty effort in areas of teaching, research and service at a state university. Analysis of research self-efficacy revealed a negative direct effect of percentage of women in a department. Being female contributed to feeling less capable about conducting research because of ". . . mediating effects of not holding a Ph.D., producing fewer articles, being in a department with a high percentage of women, participating in fewer networks, feeling less mentored, and feeling undernourished and unrewarded by a department . . ." (p. 10).

Rodgers and Maranto (1989) developed a causal model to test predictors affecting research productivity: ". . . ability, quality of the graduate program, pre-Ph.D. publications, quality of the first job, and sex of the researcher . . ." (pp. 644–645). They found ability has both a direct and indirect relationship to increased productivity and that gender has a large direct effect on publication quantity but not on quality.

Boice and Jones (1984) suggested that differences in personality traits between men and women contribute to publication productivity differentials. They propose that writers can be distinguished in terms of four styles—"prolific, perfectionist, silent, and mass-producers" (p. 571). Women tend to be silent or perfectionistic writers, prolonging the pre-publication stage, while men are more likely to be prolific or mass-producers. However, Helmreich et al. (1980) included motivational attributes as elements of their path model and found no significant differences in gender-linked personality traits in a sample of academic psychologists.

Fox and Faver (1985) also suggest that women hold different attitudes toward research than men and this difference may account for productivity differentials. Using data from a national sample of social work academics, the authors attempted to assess determinants of productivity levels for men compared with women. Three sets of characteristics were identified as variables and broadly labeled as attitudes and practices; structural factors; and family characteristics. Attitudes and practices refer to self-image as a researcher and priority of career as measured by time spent, dedication to research, and the degree of separation between work and leisure. Attitudes and practices were particularly significant predictors for women but not for men even after controlling for all other variables.

Impact of Organizational and Structural Factors

Numerous authors have identified organizational, educational background, and professional structural factors that influence research productivity. Representing an emerging area of interest, these researchers suggest that factors contributing to high levels of research productivity include: possessing a Ph.D. from a prestigious graduate program in which research is emphasized; employment at an elite research institution; membership in the predominantly male professional networks that determine what gets published; access to institutional research support; and expert management of professional and family responsibilities.

Fox (1985) cites prior research indicating that women publish approximately half as much as men. Most of this body of research has been based on publication and citation counts as dependent variables. However, she attributes the cause for this discrepancy in performance to a series of contributing complex organizational and structural elements. Examples are teaching load, involvement in professional networks, research support, and institutional type and climate.

Helmreich et al. (1980) pose a causal model of attainment in psychology by identifying motivational and situational factors leading to attainment as reflected in recognition of one's work through citations. Sex, quality of graduate school, quality of employing institution, publication rate, citation rate, and motivational attributes are elements of the path model. Although the women received their Ph.D.s significantly later than their male counterparts, the men and women in the sample were highly comparable in age and did not differ significantly in years of experience. The males were more likely to hold Ph.D.s from more prestigious graduate programs and were currently employed at higher rated and more research-productive institutions. These findings are consistent with the overall low representation of female academics in research institutions.

Both Persell (1983) and Cole and Zuckerman (1984) hypothesized that women receive less reinforcement for publication as evidenced by a lower rate of citations. If female researchers are not able to garner recognition for their contributions, these authors maintain they may become discouraged from making future contributions and their publishing rates will decline. Cole and Zuckerman found declining rates in publication more common among women than men.

Boice and Jones (1984) assert that academicians overall have a low rate of publication. They reviewed the literature for explanations for this phenomenon of generally low research productivity among academics of both sexes. They note that membership in an "invisible college" is a prerequisite to publication. (p. 571) This "invisible college" consists of relatively small groups of established, primarily male, scholars who wield considerable influence over what is published. Astin (1984a) likewise points to the exclusion of female academics from the collegial atmosphere. Participation in this inner circle is essential to achievement and access to rewards. She maintains learned sex roles result in perceptions of inequality which lead to exclusion of females.

Fox and Faver (1985) found explanatory significance in the structural factors considered to be stronger for men and to be associated with significance of professional connections rather than location variables (e.g., doctoral program, size of program, importance of research activity). Membership on an editorial board was a significant predictor of productivity for both sexes, while holding a national office had a significant negative effect on female publication productivity. Location variables were positively but weakly associated with higher publication for both sexes with weaker associations for females. For women it is important to note that after controlling for structural factors, dedication and time spent in research remain significant predictors of productivity.

Chamberlain (1988) surveyed a subsample of highly productive academic men and women to determine factors facilitating productivity. The study found women were less likely than men to appreciate the importance of organizational factors and institutional resources in enhancing their scholarly productivity. Chamberlain suggests that institutional barriers may exist which contribute to women's underutilization of institutional resources and resulting lower research productivity. Support for this notion is found in Witt and Lovrich (1988) who report males experience more stress connected with obtaining institutional support for research than females. Significant findings support the hypothesis that female faculty experience more stress in areas related to managing time constraints. Chamberlain (1988) also found that women identify limited availability of time due to participation in competing, time-consuming activities (committee work, administrative duties, teaching, family) as the major inhibitor to research productivity.

Newell and Kuh (1989) created a composite dependent variable labeled "research orientation" to assess factors affecting female higher education faculty member's orientation toward research. (p. 80) They found that four variables explained 56 percent of the variance in research orientation. These factors negatively affected research orientation: less capable students, a quarter academic calendar (presumably associated with more courses and more preparation time), days of each month spent consulting, and number of hours spent teaching.

Further support for female work overload is offered by Theodore (1986). Based upon responses to 365 questionnaires and 40 interviews with female academics, she found that women faculty reported responsibility for teaching eight different courses a year, many of which were rejected by their male cohorts. They were responsible for teaching courses outside their area of interest to large numbers of students. As a result, the female academics suffered from work overload in course preparation and teaching time. Limited research resources combined with teaching load and committee responsibilities left little time to conduct research.

Impact of Marriage and Childbearing

Some researchers have studied the impact of marital status and child rearing responsibilities on the research productivity of women academics. Most studies investigate the effect of presence or absence of children. However, Fox and Faver (1985) suggest that the relationship between children and productivity may be due to the presence or absence of children of various ages. "Marriage, by itself, is a nonsignificant predictor of productivity for women—as it is for men. But the presence of children—particularly children at younger ages . . . is positively related to women's productivity" (p. 545).

Helmreich et al. (1980) found a higher proportion of women were never married or were separated, divorced or widowed. Likewise, more women than men were childless among those who had been married at some time. Childless women, married or not, were only slightly more productive than female colleagues with children but still below men in both publication productivity and recognition. Despite these characteristics, there was no significant relationship between research productivity and citation rates and marital status or number of children in either sex. Males were significantly more productive in terms of publications and citation rates. Helmreich et al. found no indication that women's lower productivity and scholarly influence could be attributed to marital or family responsibilities.

Theoretical Explanations for Research Productivity

What accounts for the productivity differential? Hypotheses for the gender disparity in productivity have been based on personality and situational correlates (Aisenberg and Harrington, 1988; Boice and Jones, 1984; Helmreich et al., 1980; Landino and Owen, 1988); models of accumulative disadvantage (Clark and Corcoran, 1986) and human capital (Youn, 1988); and structural perspectives (Armour et al., 1990; Chamberlain, 1988; Fox, 1985). Other researchers have investigated a combination of social, environmental and psychological contributing factors (Fox and Faver, 1985; Rodgers and Maranto, 1989; Trautvetter and Blackburn, 1990).

Several theoretical explanations which fall into the categories of socialization and labor market theories have been tested across these and other studies. Rodgers and Maranto (1989) provide a thorough overview of the theoretical foundations referenced in much of the publication productivity research. They drew upon the accumulative advantage theory from sociology, the human capital theory from economics, and the accumulative disadvantage theory from the psychology literature to build six causal models. These models were evaluated for how well they fit data on a sample of 162 academic psychologists. Each theory contributed to development of an empirical model in which sex of researcher is considered as a lone variable separate from general background

characteristics. The resulting model allows testing of direct and indirect effects of predictor variables. They found sex directly predicted quantity of productivity but not quality or citation rate.

Boice and Jones (1984) offered the "Matthew Effect" as one explanation for lower research productivity among females. This theory originates in the Biblical passage Matthew 25:29: ". . . For unto everyone that hath, more shall be given . . ." It suggests that advantages accrue based on structurally advantageous positions or conversely, that initial structural disadvantages in effect prevent further success. Those whose work is published, continue to benefit from recognition and higher citation rates. Research productivity differentials are established early in one's career and the established scholar continues to benefit from peer recognition.

Menges and Exum (1983) assert that the scholarly work of women and minorities is "provocative" (p. 135). They suggest that women (and minorities) have redefined scholarship to reflect their values and experience that differ from those of the dominant culture. By so doing, they have challenged the content of disciplines, the philosophy of teaching and learning, and prevailing research paradigms. While the dominant research paradigm is based on elucidating universal truths, the alternative seeks patterns informed by experience and historical context. When expressing the feminist perspective in their research, women scholars are drawn to the alternative research paradigm. For example, Grant, Ward and Rong (1987) discovered that across 10 sociology journals in 1974–83, female authors were more likely to use qualitative methods than males. Promotion and tenure committees composed of traditional male researchers may not value this approach to scholarship and thus, the difference in research orientation may contribute to differential progress.

Caution should be exercised when making generalizations regarding female faculty research productivity. Although all studies reviewed were published in the 1980s, the data for many was drawn from the 1970s and even 1960s in some cases, and may be a reflection of what was and not what is to be. Increased numbers of female faculty and wider distribution of females across disciplines may contribute to increased female research productivity in the future. In assessing the likelihood of change in research productivity and career progress, consideration must be given to the complexity of contributing intrinsic and extrinsic factors.

Stress and Role Conflict

The minority status of female faculty members provoked a research emphasis in the 1980s on the impact of stress and behavioral mechanisms utilized to cope with role conflict. Dominant career development theories of the 1980s form the context of interpretation for these studies, which emphasize the role overload

experienced by women (professional, wife and mother) and the unique social context in which women work due to prior socialization.

One focus of this literature is the unique context of female response to stress based upon socialization. These studies find expansion of role definition to accommodate a traditional distribution of labor across housework and childcare to be a typical response (Hochschild and Maclung, 1989; Smart and Smart, 1990; Yogev, 1981). Yogev (1981) found that the female faculty member simply merged existing family responsibilities with new employment responsibilities, thereby avoiding additional stress related to redefining identity. In the general population women spend more time in the physical care of children than men (Smart and Smart, 1990) and regardless of occupational status, wives in dual-career families cover 75 percent of housework and 80 percent of domestic management (Hochschild and Maclung, 1989). Prior studies of female academics pointed to this same tension of expanding roles versus prioritizing as a means of meeting the high expectations of the faculty role and abating the guilt and anxiety frequently associated with the commitment to motherhood (Liss, 1975; Neuman, 1978).

Other studies consider aspects of the work environment which may result in greater stress levels for female than male faculty (Richard and Krieshok, 1989; Witt and Lovrich, 1988). The repeated testing of Kanter's (1977) theory on tokenism across several studies is an example of an organizational factor (low representation of women in professional roles) which is thought to cause undue stress as it relates to higher expectations for the minority individual.

Witt and Lovrich (1988) reported gender differences in levels of stress which lend credence to prior studies (Lovano-Kerr and Fuchs, 1982; Neuman, 1978; Yogev, 1981). Drawn from a national data base of professors at doctoral-granting institutions in 1982, faculty subjects were equally proportioned across the Biglan (1973) categories of disciplines and across the academic ranks. Witt and Lovrich found women reported experiencing higher levels of stress overall than reported by the male subjects. On individual measures, statistically significant findings support the hypotheses that female faculty experience more stress associated with higher self-expectations and managing time constraints. However, there was no evidence that female faculty experience more stress related to collegial competition; nor that females experience more stress related to acquiring institutional support for research. In fact, the male faculty reported more stress in this area. Male faculty also reported slightly higher (not statistically significant) levels of stress related to career progress. Despite the significant salary differential between female and male faculty, compensation was not reported by women as a source of stress.

Richard and Krieshok (1989) found academic rank is an important explanatory variable when discussing the level of stress and strain on both male and female faculty. Support for this finding can be found in previous studies (Fulton and

Trow, 1974; Gmelch, Lovrich and Wilke, 1984). However, Richard and Krieshok found women experienced increased strain with higher academic rank and men experienced less strain as they progressed through the academic ranks. Further, they found no gender differences on measures of coping and role stressors in a sample of male and female faculty equally distributed across ranks.

Amatea and Fong-Beyette (1987) analyzed role conflict and coping strategies. Of 192 females in the sample, 70 percent reported specific role conflict. These female academics were found most likely to employ active, problem-focused versus passive, emotion-focused strategies for coping. The authors concluded that use of active, problem-focused strategies to deal with inter-role conflicts "seem associated with perceptions of effectiveness" (p. 251).

In summary, the literature of the 1980s suggests female faculty experience more stress related to specific areas than do male faculty but do not appear to differ in their means of stress management. The gender differences appear to be most evident for females concerning the stresses of managing multiple priorities created by competing family and employment responsibilities without altering self-expectations in any area of responsibility. Further research in this area may be relevant to low retention rates of female junior faculty as predicted by Lovano-Kerr and Fuchs (1982).

Career Satisfaction

Although research indicates men and women academics are generally satisfied with their careers, sources of satisfaction are found to differ by gender (Armour et al., 1990; Newell and Kuh, 1989). Armour et al. (1990) found that men tend to derive satisfaction from research and impersonal activities while women emphasize teaching and service activities. Although the female subjects reported higher levels of career satisfaction than their male counterparts, this increased satisfaction was in the area of recognition from students. They reported less satisfaction in measures such as teaching load, opportunities for advancement, and job security. Several measures indicated female academics feel disenfranchised with less influence and less of a niche in their institutions. The concentration of females in the lower academic ranks could account for these differences.

Newell and Kuh (1989) surveyed a national sample of professors of higher education affiliated with research, doctorate-granting or comprehensive universities. Their respondents (14 percent female, proportionate to representation in the field) agreed on only one variable in the satisfaction regression analysis. Both men and women expressed satisfaction if they were pleased with their departmental colleagues, a reflection of the departmental intellectual climate. The authors found this item to be a more powerful predictor of job satisfaction for women. Other contributing variables for women's satisfaction centered on the teaching load. Women at institutions operating on a quarter system and those

who spent more time teaching undergraduates were less satisfied. The best predictor of satisfaction for men was salary, while other contributing variables included invited presentations and absence of pressure to obtain external funds. Overall, they found the women in their sample were less satisfied with their present position than the men.

Based upon a longitudinal study (1967–1981) of 111 academic and non-academic women, Jenkins (1989) found that the faculty members in her sample (n = 21) valued and reported advancement and achievement satisfaction. Reported sources of job satisfaction were challenge, "exercise of interpersonal power," and autonomy and competition. (p. 217) Other areas of importance cited were working with people, improving society, and having a match between their abilities and the demands of their occupation.

Ethington, Smart and Zeltmann (1989) investigated female faculty satisfaction with institutional type and department. The sample was drawn from the 1984 Carnegie Foundation for the Advancement of Teaching national survey and was composed of individuals who had received their highest degree within the ten years preceding the survey. Although not indicative of significant differences, the results revealed patterns of satisfaction levels associated with discipline and institutional type which suggest further research. Women in the applied fields (nursing, education, social work) were likely to be more satisfied with their departments and institutions and women in pure fields slightly less satisfied with their departments. Institutional environments affected faculty satisfaction relative to both institution and department. Women at lesser research institutions, especially those in applied fields, were much less satisfied with both department and institution than women at Carnegie-classified liberal arts colleges or research I institutions. Although affiliation with a liberal arts college was found to be positively associated with both institutional and departmental satisfaction, women in pure fields at these institutions had a particularly high level of departmental satisfaction relative to women in applied fields.

Consistent with previously cited research, the Carnegie Foundation for the Advancement of Teaching (1989b) in their National Survey of Faculty (n = 5,450 academics) showed both male and female academics to be generally satisfied with their choice of profession. Four out of five reported they would choose the academic profession again and that they did not wish they had chosen another profession. Women, however, were more likely (51%) to report their jobs as the source of considerable personal strain versus males (40%).

A U.S. Department of Education study (*Chronicle of Higher Education*, February 7, 1990) with a sample size of 8,383 offers similar results. Eighty-six percent of men and 84 percent of women reported they are at least somewhat satisfied with their jobs in academe. However, women desired more human contact-related activities such as student advising and mentoring and they were more likely to see themselves as overworked. Female subjects in the Armour et

al. (1990) study also reported very rewarding but overworked and pressured lives.

It is clear across all of these studies that men and women academics report satisfaction with their careers. However, men and women derive satisfaction from different career variables. Those aspects of the academic career reported by men to contribute to satisfaction are more consistent with the reward structure of academe. For administrators concerned with the status of women faculty, Ethington et al. (1989) suggest that further research focus on identifying factors which would enhance the satisfaction level and adjustment of women faculty, especially at those institutional types found to be negatively associated with satisfaction.

DIFFERENTIAL PROGRESS: GENDER RELATED INFLUENCES

Gender differences in professional development have been identified in the literature and related to the personality and background traits and socialization/acculturation of the female academic. The emphasis on background traits has highlighted gender related influences between male and female academics and between females in male-dominated disciplines and those in female-dominated disciplines. The scope of the socialization literature has spanned early childhood socialization through the socialization and/or acculturation of the academic within the departmental culture.

Background and Personality Traits

Family background and personality traits of females in male-dominated fields has captured research interest particularly in the past 20 years (Betz and Fitzgerald 1987; Helmreich et al., 1980; Lemkau, 1979; Lunneborg, 1982). In the last decade attention has focused on these attributes in the context of theories which consider the life-cycle of women as an explanation for career development (Armour et al., 1990; Cole, 1979; Stevens and Gardner, 1985; Yogev and Vierra, 1983). Throughout this literature there is an expressed concern as to whether women in these fields feel they must elect not to have children in order to succeed professionally.

Lemkau (1979) reviewed studies from primarily sociological and psychological literature for 1930–76 and found many included female academics. However, despite peak involvement of women in academe circa 1930, little was published on the topic until the 1960s. She found women in male-dominated fields were high on competency traits as defined by the male stereotype i.e., self-reliant, dominant, resourceful, independent, autonomous and adventurous. In the vast majority of studies reviewed by Lemkau (1979), the women shared family backgrounds that fostered high achievement. Shared characteristics included foreign ancestry, first-born status, family stability, high levels of parental education, and androgynous upbringing.

Betz and Fitzgerald (1987) found support for many of the same personality traits in a study of high achieving females across types of employment. "High ability, liberated sex role values, instrumentality, androgynous personality, high self-esteem, and a strong academic self-concept" (p. 143) were most commonly held traits in their sample.

Two more recent studies also found subjects were likely to have highly educated parents who fostered an androgynous or non-traditional orientation for their daughters (Betz and Fitzgerald, 1987; Lunneborg, 1982). Helmreich et al. (1980) studied demographic and personality correlates of attainment in academic psychology. Sixty-two percent of the females in the sample were first-born or only children. Citation rates of first-borns were found to be significantly higher. This finding concerning higher achievement levels of first-borns corroborates other studies of women in male-dominated fields (Astin, 1969; Hennig and Jardim, 1976; Standley and Soule, 1974).

Stevens and Gardner (1985) explored the most important influences on career development of eminent female psychologists. Gender differences in professional development were evident when responses were compared with those of male counterparts in previous studies. Women were often re-entry students in college, more often responsible for home and children, and more likely to be the only individual of their sex in the department. The females cited family members or a personal relationship (20%) as important sources of encouragement, while none of the males in previous studies had indicated family members as a major influence on professional development. The authors concluded that due to the social climate, women may need permission from significant others to be successful.

In general, studies of females in male-dominated fields have found a higher incidence of females choosing childlessness than is found in the general population (Cole, 1979; Yogev and Vierra, 1983). Cole (1979) maintains in his study of female scientists that those who have persevered in biology, psychology, chemistry and sociology have defied the odds through placing primary importance on their careers relative to marriage, family and other pursuits. Betz and Fitzgerald (1987) reported single status or late marriage with no or few children to be significant background variables in high achieving academic and non-academic females. Armour et al. (1990) similarly found in their study of tenured faculty that female faculty were more likely to have no children at home and to have no responsibility for a dependent adult.

There is difference of opinion across studies as to whether this lifestyle choice is necessarily correlated with the choice of career type or is consistent with an intention to remain childless at an earlier age. Yogev and Vierra (1983) found the rate of childlessness (55%) across their sample of 151 female faculty at North-

western University to be significantly higher than that of women ever married in the general population. They also found a trend toward permanent childlessness among younger (under age 40) professional women (67%). Additional data indicated the younger women's choices derived from a lack of confidence in being able to successfully combine motherhood and career.

Quoted remarks from two respondents seem to capture the essence of this issue for female academics. The first is from a 33-year-old, married and childless female faculty member who wrote:

> I have ambivalence about having children. I have been resenting the fact that as a professional woman it would be difficult for me to have a child, because I am not sure I could give my child adequate care and attention. I see professional men enjoying their roles as fathers because their wives are at home taking care of the children. (Yogev and Vierra, 1983; p. 395)

The second quote is from a 34-year-old married woman with children ages 5 and 7:

> Organizing the kind of schedule I have had . . . has been extraordinarily difficult. . . . The whole system only works if no one is sick. . . . Your working time is constantly encroached upon. This can lead to a great deal of resentment. The personal cost to me . . . has been high. . . . So my advice to professional women is . . . have only one child. That is much more manageable than two. Second, spend a great deal of time at the beginning. . . . Then by first grade you comparatively have it made (i.e., life is now possible—though difficult—instead of impossible). (Yogev and Vierra, 1983; p. 395)

In summary, a pattern emerges of personality traits combined with fostered and chosen behaviors related to female career achievement in male-dominated fields. A background which encourages female achievements and an open, androgynous orientation to occupation selection seems to support female participation in academia.

Socialization

The majority of studies on the early socialization and career acculturation and salience of women have suggested that early socialization combined with structural barriers encountered in the academic and social/organizational settings contribute to underutilization of their abilities and their concentration in a small number of traditionally female fields and low paying occupations (Betz and Hackett, 1983; Cole, 1979; Fagot, 1981; Feldman, 1974; Gettys and Cann, 1981; Hennig and Jardim, 1976; Komarovsky, 1982; Reis and Wright, 1982; Rosenthal and Chapman, 1982; Schwager, 1987; Umstot, 1980). These studies have given rise to theories and models of career development relating to the socialization process (Almquist and Angrist, 1970; Astin, 1984b; Betz and Fitzgerald, 1987; Clark and Corcoran, 1986; Ethington, Smart, and Pascarella,

1988; Harmon, 1989; Jensen, 1982; Reynolds, 1990; Terborg and Ilgen, 1975; Wagner, Ford and Ford, 1986; Young, MacKenzie, and Sherif, 1980).

Clark and Corcoran (1986) conducted an institutional case study of faculty career vitality during 1980–81 and 1981–82 at the University of Minnesota. Data was gathered through interviews with 147 tenured faculty from science, math, the social sciences, and the humanities. Eleven percent of the sample were women; the same percentage of representation of women in the academic ranks at the institution.

Results supported the accumulative disadvantage theory under consideration. They found women do not enroll in the best graduate programs; are not chosen as proteges of productive, established scholars; lack the resources to carry out their research and scholarly endeavors; express considerable difficulty balancing the demands of career with those of wife and mother; and experience professional marginality due to their unique status as females in predominantly male departments. These factors combined with evidence of lack of parity in financial aid and lack of involvement in the inner circles of collegial networks accumulate to a significantly lesser status for female academics. Clark and Corcoran (1986) surmise that women begin with an initial disadvantage which expands over time. As a result, when they are reviewed for promotion and tenure decisions, their publication records and history of external funding are weak by comparison with their male counterparts.

Jensen (1982) also chose a qualitative methodology which utilized an acculturation model of lifestyles to explain females' adaptation to academic life. She holds that to become an academic, a female must "mediate the boundary between behaviors expected of women and those expected by the overwhelmingly male academic profession" (p. 67). Jensen found the sample of 42 subjects from five western and midwestern universities fell into one of "three modal categories" of acculturation (p. 67). All three groups were attracted to and survived Ph.D. programs at prestigious institutions, but their level of goal orientation, research emphasis, and management of personal and professional lives differed. All three groups adapted to the male career model. All exhibited strong goal orientation, although one group less so. Two out of three groups re-oriented their research toward concrete human problems or narrow, small-scaled studies due to pressure to publish. Essentially, they adapted to the academic culture at great expense to their research interests, themselves or their personal lives.

A validation study on the impact of tokenism in academe on the female faculty member's perception of sex discrimination conducted by Young et al. (1980) is related to the Jensen (1982) study. Young et al. interviewed and administered two paper and pencil instruments to 52 full-time, tenure track, randomly selected female faculty in male-dominated departments. Two-thirds of the sample held doctorates. All were employees of a large state-related, eastern university.

Three clusters were identified by multiple criteria. Women in the three clusters

did not differ significantly by academic rank or marital status and only marginally by chronological and career age. The first cluster of respondents (n = 15) were token women who, assuming academia to be a meritocracy, minimized the existence and impact of sex discrimination in their work environment and attributed differences to the failure of women to meet the standards of the system.

The second cluster were the non-token women (n = 20) who disagreed with the assumption that academia is a meritocracy and were aware of sex discrimination. The third cluster were women (n = 17) with mixed or moderate orientations on the presence of sex discrimination. Women in all three clusters "did not differ in their accuracy in recognizing status differentials between the genders" (p. 523). They disagreed on the basis for the gender discrepancies. The authors found the contradiction between the philosophy of meritocracy and discriminatory employment practices and decisions to reinforce the marginality and isolation of these women.

Reynolds (1990) conducted a qualitative study which mapped the individual changes experienced enroute to tenure as individuals interacted with their institutions. Five case studies which were part of a larger study of 19 faculty were the basis for this analysis. Two of the cases illustrated the impact of socialization and three exemplified acculturation. All five subjects were assistant professors at a major research institution. Reynolds found that sex was not the major influence on the changes these assistant professors endured during the first few years of employment. Instead, regardless of sex, the world view (as measured by a seven-part conceptual model of world view) of the assistant professor appears to account for the changes the individuals experienced. Moreover, the interaction and compatibility of the individual world view with that held by the members of his/her department was of great importance. All of these subjects had attended prestigious institutions for their undergraduate and graduate education. The only difference between the males and females was the females' stronger desires to build and maintain relationships with families and colleagues for personal reasons. Whereas, the male incentive for collegiality was based upon pragmatic needs such as access to research funds or task completion.

While Reynold's (1990) study is not generalizable and is based upon a very small sample size, it is very useful for suggesting future research. Since world view is subject to early childhood socialization, to what extent is socialization predictive of success or failure in meeting the expectations of male-dominated academic departments? In other words, are women advantaged or disadvantaged by their prior socialization?

Mentoring

An area of increasing recent interest in the career socialization literature is the importance and impact of role models and mentoring for female faculty. The literature is mixed on these points. It is clear that mentoring is one means of developing the scholarly potential of students and also a means of transferring the norms and values of academic life. Mentoring has been shown to have pragmatic career implications in terms of sponsorship for faculty positions, acquiring post-doctoral fellowships, grant acquisitions, promotion and tenure benefits, and tangible guidance for successful research and publishing. However, there is some evidence to suggest that women are rarely mentored during graduate training and when they are, the experience has been described as negative by some researchers (Clark and Corcoran, 1986; Aisenberg and Harrington, 1988).

Four studies published in the 1980–90 period were reviewed for their applicability to academe and their representativeness of the literature. The influence of role models on non-traditional professional women (Lunneborg, 1982) and the importance of same gender student-faculty role models on professional development (Gilbert, 1985) are two areas of research represented. Others investigate the nature of the mentoring (Johnsrud, 1990) and collegial network (Rose, 1985) relationships and the contribution to career advancement.

In a study of 142 cases of non-traditional professional women, Lunneborg (1982) found no evidence that men or women are more effective role models, but did find support for the importance of a supportive role model and environment. The study demonstrated the necessity for non-traditional career seekers to not only seek supportive environments, but to avoid discouraging, negative environments and influencers.

The few studies summarized by Rose (1985) concerning female faculty's networks and their contribution to career advancement indicate that in the natural and social sciences colleagues are "less apt to fulfill the socialization, friendship, visibility and access to career functions for women" (p. 534). This is contrary to research on professional networks in other occupations. Rose surveyed a sample of 90 tenure-track, assistant professors in psychology, fairly evenly distributed by sex (47 female, 43 male) drawn from a national sample across 60 universities. Rose compared the respondents on a number of background variables and found no significant difference between the men and women.

However, Rose (1985) found women had more higher-status women as close friends than male faculty. No significant gender differences in expectations for network functioning were found. Both groups rated their networks as moderately effective; however, there were specific differences by sex. Women felt their colleagues were less effective at assisting them with establishing a professional reputation and less likely to recommend their work to other colleagues. And women rated "their colleague friends as having expended significantly less effort in helping them establish a network" (p. 542). The implications associated with potentially lower national visibility on tenure decisions are a concern.

Johnsrud (1990) offers a conceptual framework in which the tension between autonomy and connectedness between mentor and protege is "inherent in both

the individual development of the participants and in the relationship itself'' (p. 1). Several other studies of the 1980s concerning mentoring students and faculty are cited which advise women to avoid the pitfalls of the male model of mentoring (e.g., side effects of the hierarchical relationship). Instead, they recommend females turn to peer networks and multiple mentors. Johnsrud maintains it is premature to draw this conclusion and that mentoring can be a valuable, enabling relationship. Instead, she recommends adoption of the mentoring stages inherent in Kegan's (1983) formulation of a human growth framework which resolves the underlying tension between autonomy and connectedness. Johnsrud proposes this framework is consistent with the female orientation of collaboration and advantageous to academia through enhancement of all participants. Likewise, the model has potential for contributions to scholarly work through promotion of ''intellectual openness and shared rigor of collaborative, inter-independent efforts'' (p. 15).

Gilbert (1985) administered a questionnaire to 33 female and 24 male graduate students of a psychology department at a large state university to determine factors important in the establishment of same-gender, student-faculty role model relationships. Female students rated the importance of a same-sex role model relationship as more significant to their professional development than did the males. Females were looking for both personal and professional assistance in managing career and home life. Females and males did not vary in desire to associate with those of power and influence. No support was found for gender differences in ratings of perceived similarity between student and role model. Although not generalizable, this small study suggests further research on the effectiveness of same-sex role modeling.

The mentoring relationship is wrought with potential power inequities and can be elitist and exclusionary, particularly if the most probable access to proteges is through research and teaching assistance relationships. There is a clear need in the literature to define mentoring fairly broadly and to recognize the potential idiosyncratic, special nature of such relationships, which make studying their influence in an empirical way very difficult. Moreover, unless there is clear evidence that same-sex mentoring is more effective, adding graduate student mentoring responsibilities to female faculty in the lower academic ranks (given their reported difficulty with balancing multiple roles and achieving tenure) may further jeopardize the goal of increasing female faculty representation across senior ranks. Even more important, before mentoring is embraced as a panacea, alternative mechanisms for positively influencing female graduate students and junior female faculty should be recognized.

DIFFERENTIAL PROGRESS: THEORETICAL MODELS–1990

The studies reviewed for this chapter tested theories, models, or frameworks drawn largely from the sociology, psychology, or economics literature. The

dominant theories linked to status of female academics appear to cluster into five categories. Theories pertaining to labor market conditions; life cycles/socialization impact; individual choice and performance influences; organizational and structural attributes and/or barriers; and overt discrimination are offered as explanations for differential progress.

Labor Market

The first dominant category of theories pertains to labor market conditions and has been utilized primarily to provide alternative explanations for the economic and research productivity status of female academics. Theoretical models from other categories also have been applied to explain salary differential, research productivity or employment discrimination. The institutional ascription model (Youn, 1988) argues that the prestige of the department into which the new faculty entrant is hired will determine productivity. A limitation of this model and subsequent studies it has stimulated is the narrow focus on research institutions and, even more specific, selected hard science disciplines. The applicability across disciplines within research institutions is an area for further exploration and may offer possible explanations for predictors of success at such institutions.

Another model which fits the labor market category of theories is the institutional screening model (Youn, 1988). This is an economic concept that holds that in the academic job market, Ph.D.s from more prestigious institutions and departments drive out those with less prestigious backgrounds. Offering a free market explanation, this model suggests candidates may very well be of equal ability and talent but the prestige element is the deciding factor in academic hiring practices. Again, this model is most applicable to doctoral-granting and research universities and may not be as applicable to comprehensive, liberal arts and two-year institutional settings which are most likely to hire greater numbers of women and where the institutional mission is not as oriented toward research outcomes.

Tuckman and Chang (1984) and Megdal and Ransom (1984) examined the impact of ''market sorting'' on salary differentials and sex distribution in academe through the economic lenses of dual, unequal labor markets. Tuckman and Chang were interested in the extent to which salary differentials influence the proportional representation of males and females on faculties in higher education. Tuckman and Chang employed an economic aggregate model and a labor submodel to measure any link between salary differentials and increased hiring of females in the lower academic ranks. They concluded that non-salary factors have accounted for a changing sex distribution in academia.

Megdal and Ransom (1984) examined the salary gap between comparable male and female faculty at the University of Arizona during 1972, 1977, and/or 1982. They found that most of the salary differential occurs at the point of hiring

and perpetuates over time. The most damaging point appears to be at the date of hire.

A hypothesis posed by Cole and Hanson (1975) also is explanatory of many of the results and recommendations of the authors of the '80s; that is, the opportunity dominance hypothesis. This hypothesis poses that the existence of increased opportunities for women (e.g., the opening up of the labor market) will encourage women to take advantage of these opportunities.

Life-cycle/Socialization

A second category centers on life-cycle/socialization theories. These have drawn attention in the past 20 years and today represent the dominant explanations tested in the '80s literature. Life-cycle/socialization theories originated with Almquist and Angrist's (1970) enrichment hypothesis. Testing the deviance and enrichment hypotheses to explain the career salience of women and the choice of a male-dominated field, they found the enrichment hypothesis a more robust explanation. This hypothesis predicts that career salient, non-traditional women have been influenced more frequently by occupational role models, have a working mother who enjoyed her job, and have had more work experience themselves at an early age. Bachtold and Werner's (1972) study similarly identified personality and family background traits which resulted in females in non-traditional fields adapting to role expectations and professional lifestyles the same way men do, only more so.

Clark and Corcoran's (1986) accumulative disadvantage theory, adapted from a framework for socialization, epitomizes the influence of socialization interacting with the school and work environment factors female academics experience. Arguing that there are many important influential factors experienced by women prior to their first faculty position, Clark and Corcoran pose that women arrive at the entry point at a net deficit. After that the disadvantages accumulate and widen the gap between male and female academics in areas such as promotion and tenure, salaries, research productivity, and quality of working conditions. Ultimately, the chain of disadvantages leads to lower scholarly productivity, part-time or marginal positions, underrepresentation across all ranks and institutional types, and lack of access to academic leadership positions.

This and other studies were informed by the earlier work of Cole and Hanson (1975) which argued that not only did a wider array of career opportunities need to be opened to women, but fundamental changes in early childhood socialization were necessary to change the career interests of females. The 1970s and '80s literature is full of studies of elementary school through college age students looking at the impact of home and school socialization on lesser achievement in math, choice of undergraduate major and career salience and choice. (Baruch, 1972; Betz and Hackett, 1983; Bielby, 1978; Bressler and Wendell, 1980; Faver, 1982; Greenfeld, Greiner, and Wood, 1980; Komarovsky, 1985; McBroom,

1981; Rosenfeld, 1980; Sandberg et al., 1987; Steckler, 1985; Tidball, 1986; Zuckerman, 1981).

Several authors (Hackett and Betz, 1981; Hackett, Betz, and Doty, 1985; Lent, Brown and Larkin, 1984) used a self-efficacy theory to suggest women hold lower levels of self-esteem about their ability to achieve which could explain their participation rates in teaching, research, and administration and their attraction to less competitive or traditional careers. Hackett and Betz (1981) reason that this low self-efficacy results largely from socialization experiences resulting in a failure "to fully realize their capabilities and talents in career pursuits" (p. 326).

In their comprehensive treatise on the career development of women, Betz and Fitzgerald (1987) offer a theoretical model which contains four independent latent variables and five dependent variables found to be significant in the large body of research they reviewed. Their hypothesis is that the independent variables of previous work experience, academic success, role model influence, and perceived encouragement from influential others directly affect the dependent variables of attitudes toward work, self, and sex roles. These dependent variables, in turn, affect the dependent variables of lifestyle preferences and plans and realism of career choice. Additionally, they hypothesize there is a relationship between the independent variables of role model influences and perceived encouragement.

Astin (1984b) proposes a career development model which attends to the psychological variables (personal characteristics), as well as, contextual-sociological variables (social forces) and the interaction of these in shaping career choice and work behavior. She applies the model to both genders. In exploring how basic human needs (of survival, pleasure, and contribution) drive the individual, Astin (1984b) shows how early socialization in the family, choice of play activities, school, work, and perceived structure of opportunity shape the differential interests and capacities of men and women. Her model is holistic in that it also includes structural factors which impact upon female career choice and achievement such as sex typing of jobs, discrimination, and impact of the family structure and reproductive technology.

Barbezat (1988) employs a life-cycle theory to examine the salary differential between male and female academics. She finds this explanation to be prominent in the literature but lacking in its explanatory effects. Even after including marital and parental variables in the regression models, Barbezat found the life-cycle theory not explanatory of salary differential. What it may be explanatory of, however, are the indirect effects on female academics' employment status vis-à-vis part-time or adjunct employment status, geographic job mobility, and distribution across ranks and types of institutions. The life-cycle theory used argues that women's choices at crucial junctures of their career concerning marital status, childbearing, pursuit of Ph.D. or administrative role, type of

graduate institution to attend, and preference for teaching all result in the benefits of the salary differential accruing to male counterparts because the academic labor market is reacting negatively to women's choices in these potential areas. While Barbezat's findings do not support the life-cycle theory, it is a common theory tested independently or in conjunction with other theories in the literature.

Two theories/models which blend the impact of life-cycle and individual choices and performance are the Holland Vocational Type Theory (1966, 1973, 1985) and the block-recursive model used to explain entry into male-dominated fields by Ethington et al. (1988). Holland's theory has been tested in the vocational literature since the middle 1970s. Most recently, Smart (1989) tested the influence of "selected life history experiences on the development of three vocational types proposed by Holland through the use of causal modeling procedures" (p. 69). He found support for Holland's theory which maintains that most individual's career choices parallel their personality type. In his 1985 work Holland expanded his theory to promote the synergistic linkage between personality and career choice types. He postulates that the choice of a vocation is dependent upon a series of events such as family background, initial personal orientation, occupational preference, and interaction with various environments such as school, college, and job settings. Many of the life-cycle and socialization theories that have evolved in the 1980s are underpinned by Holland's orientation toward the interaction between personality and family background traits and career choice.

A study specific to female choice of male-dominated careers illustrative of the explanatory models and theories in the 1980s literature is that undertaken by Ethington et al. (1988). They drew upon the status attainment and longitudinal career choices models to determine how a female college student's background characteristics, educational experiences, and achievement inform choice of a male-dominated occupation. The authors constructed a block-recursive model consisting of family and individual background measures, characteristics of the undergraduate institution, collegiate experience measures, highest academic degree attained, and characteristics of the workplace measures. Although they found different effects depending upon choice of a science or non-science field, the commonalities found were initial occupational aspirations, relatedness of the undergraduate major to current job, and the type of organization in which they were employed. Private institutions appeared to be significantly more supportive of female entrance into male-dominated fields.

Individual Choice and Performance

Individual choice and performance is another category of theories and models employed in the 1980s to explain differences in the employment status of male and female academics. Perhaps the most controversial of these works was that of Cole's (1979), previously described in greater detail. An example of a theory

which maintains individual performance predicts success in academe, Cole's theory is based upon the assumptions that academe is uniformly a meritocracy and that status attainment and human capital models are most persuasive in explaining differences in performance and achievement between male and female academics. He concludes that women fare less well than males in academic science because they produce a lower quantity and quality of work than men do as measured by honorific awards, publication counts, citation data, innate ability (IQ scores), and prestige of current employing academic departments. Using these measures, Cole devises a theoretical model of the relationship between sex of the scientists to role performance and to outcomes or rewards gained. The limiting factor here is the assumption that analysis of employment status is measurable within the self-contained environment of the workplace.

Numerous other studies utilizing this rationale for the status of female academics focus on the task selection of females as evidenced by their preference for teaching over conducting research. Still others discuss the psychological orientation of females which leads to non-competitive, collaborative styles of effort frequently at odds with the more isolated environment within which the academic functions, the high value placed upon individual achievement as reflected in the rewards structure, and the increasing expectation of competitive behavior in order to secure research funding or other accoutrements of academic power such as acquisition of teaching assistants and research assistants, institutional research support, and computer hardware and software support, to name a few. Still others return to the human capital theory as evidence that females invest less in their education, which has lasting career implications.

Those studies that offer individual choice as a theoretical explanation reflect the norms of science departments in research institutions as a standard framework generalizable to other types of disciplines and institutions. More hypothesis testing at alternative institutions such as the liberal arts and comprehensive institutions would be useful to provide a more comprehensive and valid picture.

Organizational and Structural Barriers

Organizational structures as impediments to female academics' achievement is another category of theories present in the literature. The body of studies epitomizing this category of theories essentially maintain that organizational structures, particularly those of higher education, are based upon a male psychological orientation toward the world and male norms of behavior. This results in an organizational culture and structural barriers contrary to the socialized nature of females. Fox's (1981b) study of the salary differential experienced by female academics is an example of such a study.

Overt Discrimination

Finally, discrimination describes another category of alternative explanations for the differential status of male and female academics. This has been a long-

standing explanation which Finkelstein (1984) also found present in the studies of 1930–80. One example of such a theory would be the status characteristic theory in which self-perception or others' perceptions of your worth play a role in that if you see yourself as more capable than other members of the group you will behave accordingly. As women's membership and their scholarship have been perceived as marginal in higher education, as evidenced by the lack of tenured females relative to males, this results in behaviors which are different from the standard expectations. As an example, Terborg and Ilgen (1975) tested two theories (attribution theory and equity theory) which have as their basis discriminatory perceptions of female achievement in male-dominated occupations. The implication for female faculty members is that if males in positions of power (i.e., department heads, deans) hold traditional attitudes about the capabilities of women, they will not perceive the females as achieving at as high a level as the male members of the organization. As a result, women will be rewarded less. This has potential impact on salary and promotion and tenure decisions, along with assignment of responsibilities.

Wagner et al. (1986) tested the status characteristic theory. This theory suggests that both men and women place a higher value on male characteristics. This creates a conundrum for the female in that only if she exhibits male characteristics can her status be improved.

Kanter's (1977) theory of tokenism is another example of a much tested explanation in the 1980s literature which focuses on discriminatory behavior due to proportion of representation in the group. Although originally tested in a corporate setting, Kanter's theory also has been offered as an alternative explanation for the status of female academics. Based upon the assumption that form determines process, Kanter holds that a skewed distribution of social types based upon minority status within the group generates certain damaging perceptions of the token members by the majority members. Circular causation is set in motion. The perceptions determine the nature of the interaction between the token and the majority members of the group which, in turn, results in pressures placed upon the tokens. In turn, token responses to these pressures fit the stereotypical perceptions of the majority. One can easily extrapolate this set of circumstances to the female faculty members in a male-dominated department.

There is considerable variety of specific theories across and within the five categories detailed above. In the current literature the theoretical explanations that seem to be most explanatory of female academics' differential progress are those derived from the socialization and structural perspectives. Theoretical models drawn from these perspectives are most generalizable across disciplines and institutional types. Of those reviewed, the causal models posed by Betz and Fitzgerald (1987) and Astin (1984b) are most persuasive. These models exhibit comprehensiveness and explicate the complex interaction of personal, social, and structural factors affecting female faculty progress. Future research on the

relationship between structural factors and career progress may inform socialization processes to abate the documented accumulative disadvantage associated with female career development. More recent qualitative research has proven to enrich this area of inquiry and broaden understanding of the complexity of contributing elements. Therefore, increased attention to qualitative methods may provide richer and fuller explanations of female academics' status.

CONCLUSIONS

Assessing the employment status of female academics is difficult to accomplish due to the contradictory national data bases utilized in the literature. However, it is clear that regardless of the samples used across the various studies examined for this chapter, progress in the overall employment status has changed only marginally during the past decade despite the dramatic increase in female doctorates and the increased tendency for females to work outside the home. It is clear from the literature that explanations for minimal progress are complex and span such sources of influence as parents, prior socialization, early educational experiences, marriage and family decisions, differential treatment in higher education and the profession, and structural barriers within the disciplines and at the institutional level (Moore, 1987).

Moore and Johnson (1989) suggest that if a slower labor market in the 1970s and a lack of qualified women in male fields is justification for lack of affirmative action progress in the '70s and early '80s, then increased retirements and increased numbers of Ph.D. qualified females accompanied by increased representation in male fields should make a difference in the employment status of females between 1985 and 1995. So far there is little evidence to suggest that significant change will occur during this period of time. They cite two decades of affirmative action legislation and corresponding judicial activity in comparison with the minimal amount of progress.

The vast majority of affirmative action research involves the comparison of employment statistics within and across institutions similar to that undertaken in this chapter. There are few examples of actual experiments to test what improves the employment status of females within institutions or what concrete impact affirmative action legislation has achieved. One notable exception is a qualitative study undertaken by Hyer (1985a) which "focused on affirmative action implementation at doctorate-granting universities" (p. 282). This study is based upon case studies of three highly reputed institutions which achieved positive change in the status of female faculty employment. Hyer (1985a) discovered considerable similarities across the three institutions to explain the dramatic, positive changes in the proportion and number of female faculty employed, number of female full professors, ratio of male to female faculty, and number of tenured women. Most notably, there was a high level of commitment on the part of the

top institutional leader to affirmative action principles and implementation, and affirmative action personnel had high visibility and were integral to setting goals and reporting progress and, in one case, had significant influence over the hiring process. Moreover, "hiring decisions were closely monitored and decision makers held accountable for good faith efforts" (p. 294). Hyer (1985a) found that two to three senior female faculty at each of the institutions were critical change agents through articulating women's issues and providing leadership by deliberately implementing a variety of effective strategies. Likewise, there was considerable support among women in proactively identifying candidates for faculty positions, establishing personal and professional support systems and changing "male attitudes and policies that hindered women's progress" (p. 295).

In examining the impact of affirmative action legislation from 1972 to 1982, Astin and Snyder (1982) also emphasized the importance of the top administrator in not only making the hiring and retention of female faculty a priority but in also making improvements in the academic environment and examining the effects of retrenchment on women.

What conclusions can be drawn from the research to date? The following conclusions emerge from the literature of the '80s concerning the status of female academics.

Employment Status

- The proportion of women in the professoriate has increased in the 1980s, returning to the level of representation of 1930. However, growth occurred primarily in the lower ranks.
- Women are still concentrated in community colleges and four-year liberal arts colleges and have made little progress in movement into the elite research institutions and doctoral granting institutions.
- Movement into the higher ranks of associate and full professor has not occurred with notable exceptions in particular disciplines.
- Women faculty members are still promoted at a slower rate than male faculty.
- Despite an increased proportion of females receiving doctoral degrees and pursuing postdoctoral training, they represent a disproportionate share of the unemployed, part-time status, special program, or adjunct employees.
- There is still a significant disparity between males and females in financial rewards even when controlling for career age, academic rank, prestige of institution, and discipline.
- Affirmative action has assisted females in gaining access to higher education through hiring at the lower ranks but has not had far-reaching effects on employment matters such as tenure decisions, salary compensation, and selection of academic leaders.

Career Patterns

- Differential treatment occurs in the socialization, education, recruitment, hiring, and rewarding of females, resulting in lesser access to and achievement in academe.
- Prior experience plus acquisition of a Ph.D. was found to be a significant predictor of career progress. Achieving the Ph.D. alone is not sufficient for females in the current hiring environment.
- Men and women experience stress due to different factors. Primarily, women continue to experience difficulties in balancing careers with family responsibilities due to role overload.
- Women continue to express greater interest in teaching than research.
- Research productivity of females is less than that of men for a variety of reasons. More recent research suggests that females who conduct research choose to emphasize quality over quantity, which disadvantages them in the reward structure.

Gender-Related Influences

- Female academics of the '80s continue to report an incompatibility between their socialization and career acculturation and the success routes of academe.
- The research findings on the value of mentoring as a means of career progress for female academics are mixed.

RECOMMENDATIONS

Institutional Policies

- Institutions (particularly doctoral-granting and research) should set recruitment targets for female faculty and academic leadership positions.
- Top administration must clearly articulate intolerance of discriminatory hiring practices or behavior in the work environment. Aggressive pursuit of discrimination complaints and assurances of due process for all involved should exist. Consequences for such behavior should be clear.
- At the institutional level, annual hiring and retention progress reports could provide data to inform planning and assessment of departmental progress in meeting affirmative action goals.
- Abolish anti-nepotism policies and/or practices. Promote accommodations for dual academic career families.

- Include female faculty and administrators on search and policy-making committees at departmental and institutional levels.
- Initiate and support institutional committees composed of senior female faculty members and administrators to advocate for resolution of issues relevant to graduate level education, hiring, and retention of females in faculty and administrative roles.

Institutional Outreach

- Promote math and science education for elementary and secondary education females through university outreach programs or extension programs with elementary and secondary level schools.
- Promote the national and state level funding of programs which encourage early outreach mechanisms for improving the academic pipeline for female students.

Recruitment/Hiring Practices

- Abolish practices of not hiring the institution's own doctoral graduates to enhance the probability of improving the employment status of female faculty and administrators.
- Financially reward those departments which reach the recruitment targets. Particular attention should be paid to those departments where underrepresentation is demonstrated. Hold department heads accountable for increases in female representation and retention.
- Eliminate salary inequities at the point of hire and scrutinize the hiring salaries of females and minorities so that the inequity is not extended throughout their careers.
- Institutions in small towns and cities may want to consider active recruitment of female faculty since they tend to self-select large urban areas.

Faculty Development

- Establish voluntary mentoring programs within and across disciplines utilizing established, senior male and female faculty.
- Assign course loads that enable the individual to meet tenure expectations.
- Educate departmental promotion and tenure committees in means of communicating expectations and standards and providing periodic formative feedback.

In conclusion, it is clear that the academic career progress anticipated for females as a result of increased social, economic, and legislative factors operational during the 1970s has not been fully achieved. In spite of significant increases in number of female doctorate recipients and representation of females across male-dominated fields, females are still employed at lower status institutions, and in marginal positions, some of which lack career ladders. The data illustrate that the route to academic success for females remains longer than the tenure track norm for a variety of complex societal, individual, and organizational reasons. Although a large proportion of senior faculty are expected to retire in the next decade, the current low employment status of female academics would suggest that they are not positioned to move into the increasingly limited number of tenured positions. The likelihood that academe will face a potential employment crisis in the next decade will increase if the complex factors limiting female academics' career progress are not proactively addressed.

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Measuring, Understanding, and Doing Something About the Rise in Doctorate Completion Time*

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INTRODUCTION

Research studies conducted by the National Research Council indicate that the total time required for a student to complete a doctorate had begun to rise after 1968. This increase affected new doctorates in all of the scientific and engineering fields and in the arts and humanities. It also affected a variety of demographic groups (Coyle, 1987). The evidence suggests that completion time has continued to rise through the 1980s and that an increasing number of new doctorates are being affected. It also suggests that the reasons for the rise are complex and that multiple factors are responsible for the observed trend (Tuckman, Coyle, and Bae, 1990).

The fact that it is taking longer to produce new doctorates each year has important implications for society as a whole and more especially for the education research community. It raises anew the question of whether universities are doing an effective and efficient job of training new Ph.D,s. It also rekindles the debate that raged during the 1960s as to whether a better way can be found to provide doctorate level training. Moreover, since longer periods in graduate school imply higher costs of graduate training, it raises several questions regarding both the adequacy and the effects of current methods of financing doctoral studies. For these and other reasons, the rise in completion times is likely to be a continuing source of concern to those interested in graduate education.

The purpose of this chapter is to consider a number of methodological, conceptual, and empirical questions and to explore what the literature has to say

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