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Research university faculty and the influence of gender: An examination of gender's significance in the professional satisfactions, allocation of work effort, and geographic mobility strategies of Michigan State University's faculty

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RESEARCH UNIVERSITY FACULTY AND THE INFLUENCE OF GENDER: AN EXAMINATION OF GENDER'S SIGNIFICANCE IN THE PROFESSIONAL SATISFACTIONS, ALLOCATION OF WORK EFFORT, AND GEOGRAPHIC MOBILITY STRATEGIES OF MICHIGAN STATE UNIVERSITY'S FACULTY

By

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ABSTRACT

RESEARCH UNIVERSITY FACULTY AND THE INFLUENCE OF GENDER:
AN EXAMINATION OF GENDER'S SIGNIFICANCE IN THE PROFESSIONAL
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This study investigates whether shifts in the gender balance among faculty in a research university could significantly alter the activity and culture of the research university. It analyzes whether male and female faculty at Michigan State University, a Research I institution, are significantly different from each other in the areas of professional satisfaction and the allocation of effort among teaching, research, and other academic activities. The study also tries to assess whether gender is related to perceptions of geographic mobility.

To investigate these topics a subset of data generated by a survey of Michigan State University's faculty was used. This subset of data was consolidated into a smaller group of dependent variables which were evaluated in relation to independent variables representing sex, age, rank, marital status, the presence of family children, and university colleges. Two statistical methodologies, ANOVA and regression analysis, were then used to evaluate faculty responses.

and geographic mobility. Female faculty reported less satisfaction with their work and the university's support for it. They were also less satisfied with opportunities for professional growth and development than their male counterparts. Women faculty, particularly in the lower ranks, spent a substantially smaller percentage of their time in research and larger percentage of time in teaching than did their male colleagues. The difference in teaching effort was directly explained by differences in age and rank, not by gender. However, difference in research effort was directly attributable to gender. Yet female faculty members expressed stronger desires than male faculty to restructure their professional efforts, desiring more restructuring for research than did the men. Male and female faculty did not differ significantly in the relative importance they assigned to teaching, research, and service activities for tenure, promotion, or merit salary increases. Concerning perceived geographic mobility females reported feeling slightly more constrained than did males.

Dedication

To John Roels, my husband
Daniel and Steven Roels, my children
Gertrude and Herbert Wolthuis, my parents

for believing that my education could make a Christian difference

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CHAPTER ONE

THE RESEARCH PROBLEM

During the next 25 years three quarters of current higher education faculty will need to be replaced nationwide (Bowen and Schuster, 1986). While these replacements will occur across a broad spectrum of institutions, many new faculty members will be needed in the major research universities of this nation. As the predominantly male faculty cohort hired during the expansive 1960's and 1970's retires from these universities in the years ahead, they could be replaced by a group of faculty which includes a higher percentage of women. Could this shift in gender balance among faculty significantly alter the activity and the culture of the research university?

A shift in the gender balance of faculty will affect the research university culture only if female faculty as a group are significantly different from male faculty and these differences can be attributed to gender. If there are differences between male and female faculty but they can be explained by other factors such as rank, age, or chosen discipline, it is possible that the presence of more female faculty per se will not alter the core of the research university. In such cases, factors other than gender will be much more significant in any noticeable changes. Thus three significant questions must be addressed to understand whether potential shifts in the gender balance of faculty will affect research universities in a major way. They are as follows:

1. Are male and female faculty in the research university different from each other in key areas which affect university activity and culture?
2. If differences between male and female faculty are significant, can these differences be attributed primarily and/or directly to gender?
3. If these differences cannot be attributed to gender, what other factors contribute to differences among these men and women?

Understanding the national context for these questions is important. While female faculty have been involved in higher education in the United States for over 100 years, historically there have been several key differences between the roles and careers of male and female faculty. Nationwide women faculty are still much more concentrated in part-time positions and in smaller two and four-year institutions of higher education. Even within doctoral universities women have consistently been concentrated in the lower academic ranks. They have had lower salaries, even when rank was held constant (Dwyer, 1991). However, numerous changes in female socialization patterns, social structures, and institutional policy have begun to change these traditional patterns for academic women.

Three basic factors will favor greater employment of academic women in research universities. First, the supply of women with doctorates has improved substantially since the 1960's and early 1970's, the last substantial hiring period for higher education. By 1986-87 women were awarded 35% of all doctoral degrees and were increasing their

credentials in many fields previously dominated by men (Dwyer, 1991) This shift in supply contrasts sharply with the trends from 1930-1960, when the pool of academic women with PhD's was continually declining (Bernard, 1964).

Second, the pool of female faculty already in the higher education system, from which research universities could draw, is on average younger than the male faculty pool. A comparison of male and female faculty by age in all non-proprietary accredited U.S. post-secondary institutions that grant a two-year or higher degree is shown in Table 1 to illustrate the differences.

TABLE 1 - AGE DISTRIBUTION OF REGULAR FULL-TIME FACULTY, BY GENDER - FALL 1987

Age group	Percentage	
	Male	Female
Total	100	100
Under 30	1	3
30-44	36	49
45-54	35	31
55-59	14	8
60-64	10	6
65 or older	4	3

Source: SRI International. For the National Center for Education Statistics, 1990

Thus some women faculty already in the system, who have appropriate professional backgrounds and experiences, may still have several years of professional effort ahead, years which could be used in research universities.

Third, labor market studies indicate that employment fields with growth achieve gender balance more rapidly than occupational fields in decline (Jolly, 1990). The demand of research universities for PhD faculty within the next ten years will be stronger than it has been in two decades (Bowen and Schuster, 1986). In private research institutions 32% of their faculty expect to retire by the year 2000 and 42% expect to stop teaching. In public research universities, 44% of their faculty expect to stop teaching by the year 2000 (SRI International, 1990). While higher education employment as a whole may not grow in the next decade, strong replacement needs within research universities will likely have gender-balancing effects similar to those of high growth occupational fields. Replacement demand in research universities coupled with a more highly qualified and larger female applicant pool could create a different faculty gender balance.

However, a shift in gender balance in research universities will not happen automatically. Older women pioneers may not keep their positions until age 65. The 1988 National Survey of Post-secondary Faculty found that women tended toward earlier ages of retirement and cessation of teaching (SRI International, 1990). While they might be replaceable by younger women academics, this same survey found that younger faculty were more likely to leave academia than older faculty (SRI International, 1990). If

younger cohorts of women faculty have lower retention rates in the profession and older women faculty tend to retire early, there is no guarantee that the supply of female faculty available to research universities will increase.

Questions also remain about their fit with the current configuration of research institutions. Much of the literature to date suggests that female faculty have a stronger allegiance to teaching and public service than do male faculty. Jesse Bernard observed this propensity for teaching already in the early 1960's, noting that women seemed to be particularly effective with poorer students (Bernard, 1964). Boyer's 1989 survey for the Carnegie Commission indicated that women's interest in teaching and belief in its value has persisted. Fifteen percent more women than men faculty agreed that "teaching effectiveness should be the primary criterion for promotion of faculty". Eleven percent more women than men faculty agreed that their interests leaned toward or were primarily in teaching rather than research (Boyer, 1989). Aisenberg, in her interviews with women faculty also noted a strong interest in both teaching and public service. (Aisenberg, 1988). Typically, when these general studies of female faculty find gender-based differences, early socialization, graduate school experience, degree, chosen discipline, age, rank, or relative mobility are cited as possible reasons for differences between male and female academics. Research related to the effects of socialization, graduate school, degree, and chosen discipline has been described by Aisenberg(1988), Bernard(1964), Dwyer(1991), Feldman(1974), Finkelstein(1984), Simeone(1987), and other researchers.

However, little has been done to include institutional type in the analysis. These more general studies do not differentiate research universities from other types of 4-year institutions of higher education. Thus, these general inclinations among women faculty cannot be assumed for women in research universities. The findings may simply indicate personal preference; or they may be clouded by the effects of women's locations in schools focused on teaching and community service and in non-tenured positions within research universities.

Research to date does not allow the conclusion that tenured and tenure track women faculty in research universities would necessarily respond with a strong preference for teaching. Little is actually known about whether gender itself is a significant factor for these women faculty. Self-selection and institutional screening may insure that the sources of career satisfaction, work priorities, and values among tenure track faculty in research universities, both male and female, are more alike than different. Together these faculty may be necessarily different from those in other types of higher education institutions. Olsen, in one of the few studies comparing white male and white female faculty members at Indiana University, a research university, concluded that "All three subsamples,{the third subsample being all minority faculty}...,clearly recognize the centrality of the research mission of the university".(Olsen, 1990, p. 20). Further analysis on her part showed only a borderline negative relationship between gender and the allocation of faculty time. In contrast, rank was a significant positive predictor of the percentage of time spent on teaching or service and the intrinsic satisfactions which

faculty received from their work. (Olsen, 1991). In short, Olsen's work indicates that gender is a factor at work, but may be a much less important characteristic than several others in a research university context. Yet because of the dearth of research on women faculty in research universities, the perception lingers that women's preferences will conflict with the mission of the research university.

In addition, the relative geographic mobility of women academics, whether by personal choice or social factors, also could have implications for joining and staying in research universities. If women faculty outside research institutions perceive they are less geographically mobile than male faculty, that fact alone could foster different career development strategies among these women. Women with less mobility may look for varied sources of career satisfaction and allocate their work efforts differently. They may become more interested in teaching, interdisciplinary initiatives, regional public service, or institutional governance. It is also possible that lack of geographic mobility will constrain opportunities for young women faculty just beginning careers in research universities. While gender and geographical mobility may be connected, little research has been done on this factor's effect in the research university context.

The question of female faculty's fit and career development strategies within research universities is further complicated by ongoing shifts in the nature of these institutions themselves. In The Academic Revolution (1968) Christopher Jencks and David Riesman chronicled the rise of the 20th century paradigm for research universities within the

United States. As the 21st century approaches, the mission and organizational culture of research universities are under review. In both The Conditions of the Professoriate (1989) and Scholarship Reconsidered (1990), Dr. Ernest Boyer argues that research universities must change the balance of their foci to effectively serve the future of society. Research universities must instruct graduate students in the art of teaching and must also pay more attention to the quality of learning in their own undergraduate programs. They must also raise the priority given to public service as society reckons with some of its major social ills. Boyer suggests that even within their research agendas, such schools must recognize and support more diverse research activities. If such changes are adopted the current culture within many U.S. research universities will also be transformed. Thus male/female differences in professional satisfaction and priorities could be further complicated by the changes advocated for the character of research universities themselves. The fit of women faculty with these institutions will be a dynamic and iterative process as these universities reconfigure their own futures.

To add to the knowledge about gender and its impact within research universities, this dissertation explores whether male and female faculty within a particular research university differ in significant areas of professional responsibility. It also examines potential reasons for any differences that are found.

To explore these issues a survey of faculty at Michigan State University, a school classified as a Research I university by the Carnegie Commission, was conducted. The

survey was administered by the Collegiate Employment Research Institute, an independent institute housed on Michigan State University's campus in the early spring of 1991. All Michigan State University faculty who were either tenured or on tenure-track appointments, approximately 2100 of them, were asked to complete this survey. The resulting data base, based on responses from 50.5% of this faculty population, is used to investigate the three questions posed at the beginning of this chapter for the faculty of Michigan State University. While many areas of potential differences could be explored, this dissertation will focus on possible differences in the sources and levels of professional satisfaction, patterns of work load allocation, and geographic mobility plans of male and female faculty.

The environment of Michigan State University is still predominantly one of tenured white male faculty. The overall percentage of faculty tenured is 80%. Only 11% of faculty identify themselves as members of racial and ethnic minorities. Women represent 22% of the faculty.

Within this context are the tenure track and tenured women who are now moving into and progressing within Michigan State University similar to male faculty in their work satisfactions, allocation of work effort, and geographic mobility strategies? When the sample is controlled for age or other relevant variables do they still differ? This study investigates these questions, trying to determine whether, on this particular university

campus, gender is a significant source of differences when compared to the effects of other variables.

In summary, first of all, the survey of Michigan State University's faculty is used to compare characteristics of women faculty with those of male faculty occupying similar faculty positions at Michigan State University, a Research I university, investigating professional satisfactions, allocation of work effort, and geographic mobility. Second, statistical models then examine whether those differences are primarily attributable to gender or to other significant variables in the academic work environment.

The second chapter of this dissertation reviews the current literature in areas essential to a further understanding of the research problem. Chapter three describes both the survey and statistical methodologies used to investigate the research problems that have been posed. Chapter four presents the results of the study and the analysis that has been undertaken. Chapter five comments on the analysis, noting both the implications of this study and the limitations of its findings.

CHAPTER 2

THE STATUS OF WOMEN FACULTY IN HIGHER EDUCATION

Since 1960 a diverse body of literature has developed about the involvement of women in higher education. This literature can be divided into three significant categories focusing on women as students, women's scholarship in the disciplines, and women professionals within higher education. While the first two areas of study are connected to the study of women professionals in higher education, the third area of study is the primary focus of this dissertation.

The role of women professionals in higher education is gradually being documented. Most of the literature concerns the relative progress and impact of women as faculty members. Four areas of questions repeatedly surface in the discussion of women working as faculty within higher education. They are as follows:

1. What are the relative amounts and allocation of women faculty within the higher education system including distribution by type of institution, discipline, rank and salary? How are they different than the male distributions?

2. Are female faculty different than male faculty in work-related satisfactions and the allocation of work effort to teaching, research, and service?

3. How are career development approaches influenced by graduate school experiences, initial institutional placement, advancement, and geographic mobility?

4. If women faculty differ in their distribution, approaches to their work, or career development why do they differ? Are these differences generated primarily by individual preferences or by institutional/societal settings? What predominant factors shape choice?

While much of the literature does not isolate the effects of the research university setting, probing these questions in general provides an important context for understanding this study of the possible effects of gender on faculty within a research university. Each of these questions is addressed below.

THE DISTRIBUTION OF WOMEN FACULTY

The numbers of women faculty within the higher education system can be evaluated in several ways. First, trends in total numbers over the past decades will be examined. Second, distribution by type of school, discipline, rank, and salary will in turn be reviewed.

Some significant changes in the available numbers of women faculty have occurred in the past century. Prior to 1900 women faculty were often lone pioneers. Maria Sanford, the first woman professor in the 1860's through about 1900, experienced mixed success and failure. Ellen Richards, the first married women faculty member, taught sanitary

chemistry and home economics at MIT for 27 years. Florence Sabin taught in Johns Hopkins Medical School. Vida Schudder worked at Wellesley. Yet these women were often surrounded only by male faculty or a very small cohort of other women faculty found primarily in the women's colleges of the late 1800's. In 1875 there may have been only four women PhDs in the world (Bernard, 1964).

It is not until 1900 that rapid growth in the numbers of women faculty begins. Many of these women were added because of their service in colleges of home economics that grew as the land grant institutions developed. In the decades since 1900 there has been considerable fluctuation in the supply of women faculty relative to demand. By the late 1930's women as a proportion of the total faculty peaked at 27.7% (Bernard, 1964). Women were receiving approximately 13-15% of all doctorates (Fox, 1989). After the 1930's the percentage of women faculty began to decline. By 1950 they were receiving only 10% of the all doctorates (Fox, 1989); and by 1960 they represented only 22.1% of the faculty of higher education (Bernard, 1964). After 1960 the percentage of women doctorates began to rise. By 1970 it was 14%; by 1980, 28%; by 1986, 35% (Fox, 1989).

Distribution by Type of Institution

While the available supply of women faculty has improved since 1960, this supply is not evenly disbursed among higher education institutions. Feldman's research documented that women, even expecting a PhD, were more likely to be employed in junior college

teaching than men with similar credentials. When research orientations were equivalent between men and women, men still opted for university teaching positions in greater proportions than similar women (Feldman, 1974).

Finkelstein (1984) notes that women are disproportionately employed in lower strata institutions, in a concentrated set of academic disciplines, in lower academic ranks, and in lesser paid positions even after controlling for institutional type, discipline, and rank. His findings are borne out by the data supplied by the institutions themselves. A 1989 study by the Carnegie Foundation for Advancement of Teaching found that the percentage of faculty who are women within each type of institution was as follows:

TABLE 2 - PERCENTAGE OF FEMALES BY INSTITUTIONAL TYPE

Two year institutions	40.9%
Liberal Arts colleges	39.4%
Comprehensive institutions	31.4%
Doctoral II institutions	22.3%
Doctoral I institutions	21.7%
Source: Boyer, 1989	

These data show some changes over earlier statistics which indicated that women comprised 25.6% of faculty in two year colleges, 22.7% in four year colleges, and 14.8% in universities in the early 1970's (Rossi, 1973). However, from this data it is clear that women faculty are more strongly represented in institutions which offer

associate and bachelor degrees, not in those that offer graduate work and advanced degrees. It is in undergraduate institutions that women academics experience the greatest change in the gender balance of the institutions.

By comparison women are farther below parity in numbers in larger universities. Between 1978 and 1987 there was only a 1% increase in women faculty at state and land grant institutions, most of which offer advanced degrees (Dwyer, 1991). In Table 4, a 1989 study of 20 leading U.S. research universities shows that only 16.2% of their faculty members were women (AAUP, 1989).

Distribution by Discipline

The distribution of women professionals by discipline is also skewed. Based on data from a 1969 Carnegie Commission Study on higher education, Feldman documented the unequal representation by field. The percentage of female graduate students in a field was correlated with the sex stereotyping of the field. If a field was stereotyped as a "female field" it was typically a field that was lower in prestige, economic rewards, and power. The majority of women concentrated their efforts in such fields. Few women were found as a percentage of higher prestige fields such as math, computer science, and business. Furthermore the female attrition ratios in such traditionally "masculine" fields were typically higher than attrition rates in the fields classed as "feminine" (Feldman, 1974).

By 1986 women earned 35% of all doctorates. Yet of those doctorates, they earned 32% of them in education, 13% of them in psychology, and 9.5% of them in biology. Only three disciplinary areas accounted for over half of the doctorates earned by women in 1986. In that year women also outnumber men in doctorates earned by 5 to 1 in home economics, 3 to 1 in languages, and 2 to 1 in communications, education, health, and psychology. In contrast men outnumbered women in doctorates earned by 7 to 1 in engineering, 5 to 1 in theology, and 3 to 1 in agriculture, information sciences, and math (Fox, 1989).

Even within a discipline where women doctorates outnumbered those awarded to men, women are often concentrated in a limited number of specialties. The clustering pattern within various fields that Rossi noted already in the early 1970's has continued (Rossi, 1973). For example, in psychology women are concentrated in the study of developmental, educational, and social psychology. Few women study cognitive, experimental, industrial, or organizational psychology (Chamberlain, 1988).

It is comforting to note that the number of women in science and engineering increased by 200% from 1972-1982 compared to a 40% increase for males and that engineering and computer science employment at the doctoral level rose from 100 to 700 women in each of these fields from 1973 to 1981 (Simeone, 1987). Yet despite these shifts, unless there are more radical changes in the ratios, women faculty will continue to be concentrated in certain disciplines, while playing a very small role in others.

Distribution by Rank

How are women distributed by rank? Women were concentrated in the lower ranks of the profession in earlier decades. In a 1973 Carnegie Commission report women were 17.5% of associate professors, but only 8.6% of full professors. At that time there was a significant dropoff between the associate and full professor ranks among women involved (Fleetham, 1991).

Fox (1989) notes that in 1986 women as a percentage of the total faculty employed in each rank were distributed as follows:

TABLE 3 - PERCENTAGE OF WOMEN WITHIN ACADEMIC RANKS

Professor	12.3%
Associate Professor	24.6%
Assistant Professor	38.4%
Instructor	53.3%
Lecturer	49.5%
Source: Fox, 1989	

Going up from the instructor rank their percentage declines about 12-15% with each increase in rank. If one reviews the sample in another way, the Carnegie Foundation for Advancement of Teaching in a 1989 study (Dwyer, 1991) noted that of all women 48.3% were in nontenured ranks of assistant professor, instructor, or lecturer; 33.3% were associate professors, and 19.4% were full professors. Women at associate and full

professor ranks together constituted about 17% of all faculty in those ranks (Dwyer, 1991).

When focusing more specifically on research universities, the 1989 AAUP study of 20 leading research universities confirms the general findings of the Carnegie Foundation (AAUP, 1989). The AAUP results shown in Table 4 below indicate the paucity of women faculty in research institutions in general and particularly in the full professor rank.

TABLE 4

WOMEN PROFESSORS IN 20 RESEARCH UNIVERSITIES

All faculty	Women Number	%	Full Professors Men	%	Full Professors Women	%
23,482	3808	16.2	11,524	49.1	1056	4.5
*Universities included were UC Berkeley, Stanford, Harvard, Yale, MIT, Princeton, U of Chicago, UCLA, U of Michigan, U of Wisconsin, Columbia, U of Illinois, U of Pennsylvania, Cal Tech, U of Minnesota, U of Texas, U of North Carolina, Northwestern, U of Washington, U of Arizona						
Source: AAUP, 1989						

Not only is the absolute number of women very low, the percentage of those at full professor rank is even smaller. Based on this study, Moore and Sagaria calculated that women are only 8% of all full professors in these 20 universities which represent a sample of U.S. research universities (Moore and Sagaria, 1990).

To some degree this disparity within research universities reflects differences in professional credentials. The NSOPF-88 faculty survey found that among doctoral institutions 92% of male faculty had a doctorate or first professional degree and only 76% of female faculty had such credentials (SRI International, 1990).

It is important to note that the aggregate data on rank does not tell the whole story. The magnitude of the differences in rank distribution varies significantly by academic discipline. Already in the 1970's disciplines differed in terms of their distributions of women. Controlling for type and level of academic degree, the proportion of women compared to men who were full professors in the field of physics was far smaller than the proportion in modern languages. Of all the disciplines studied sociology was the greatest laggard in this index of parity (Rossi, 1973).

Distribution by Salary

Do women differ significantly from men in their salary distribution within academia? In 1959-60 Bernard indicated that women professors were paid about $1000.00 less than men in terms of their median salaries, and that the differential was smaller for instructors than for professors. She foresaw less disparity in salaries by gender because of the tight academic labor market of the 1960's (Bernard, 1964).

However her vision did not materialize. According to Dwyer (1991), commenting on Finkelstein's review of studies conducted during the 1970's on salary disparities, "women were paid less than men even after controlling for rank, institutional type, and discipline. Astin and Bayer's studies cited in Rossi (1973) confirm the same. They likewise note that women are paid less after controlling for rank, background, achievement, and work setting. Finkelstein found that this compensation disparity grew with increased academic rank across the length of female faculty careers. The differentials were also 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% disparity between full-time female and male faculty compensation existed in 1972 which grew to a 19% disparity 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 (Dwyer, 1991). Disparity in salaries by gender did not lessen during the 1970's.

What happened in the 1980's? Ferber and Green had hypothesized in a 1978 study that academic women's compensation was more related to performance while men's was more related to longevity and the nature of departmental differentials (in Dwyer, 1991). Their 1982 performance-based study four years later showed differences between male and female compensation after degree, field, honors, and number of publications were held constant (in Pfeffer, 1990). Finkelstein(1984) argues that salaries of academic women are less predictable than academic men, that there are more intangibles at work, not less,

which are unrelated to performance and that compensation practices still seem to be defined in terms of male strengths (Finkelstein, 1984).

Yet while gender may still be a factor in salary differences, it may not be as pronounced or obvious as in earlier decades. Astin and Snyder's 1982 study concluded that with controls for degree, field, publication record, and type of institution, salaries for women had gotten closer to those of men when compared with the findings in an Astin and Bayer study eight years earlier (Simeone, 1987). Another study of land grant universities by DeReimer et al, also in 1982, found that male and female assistant professors were just as likely to attempt negotiations for higher entry level salaries and subsequent raises (Simeone, 1987). Thus, while these studies disagree on the bases for awarding compensation to women, each of these studies confirms that the bases for awarding compensation are influenced by gender, though perhaps gender is less of a factor than in previous decades.

Dwyer comments further on studies conducted during the 1980's. A study by Kelley(1989) used salary as the dependent variable and controlled for both experience levels and academic rank of faculty members. In this study " a change from female to male status would increase one's base salary by approximately $3600, all other variables in the equation being equal" (Dwyer, 1991, p. 21). Dwyer goes on to cite additional studies also indicating salary disparities by gender even after controlling for other relevant variables. Results indicated disparities ranging from 9.7% to 28% of the mean

male salary. While the reasons for these differences may be multiple, the gap which Bernard first noted in the 1960's has neither disappeared nor narrowed since that time (Dwyer, 1991).

In summary, while the percentage of women faculty in the higher education system has finally returned to the levels of the late 1930's, differences in their distribution within the system are striking. To date their place in terms of types of schools, disciplines, rank, and salary has been markedly different from that of the male faculty within the academy. Reasons for these differences in distribution, often called a two-tiered system, will be addressed below. However, it is evident that such differences exist and in several ways have influenced female faculty who become members of research universities.

FEMALE FACULTY: THE NATURE OF THEIR WORK

In addition to the issue of numerical distribution it is important to determine whether female faculty are different than male faculty in their work-related satisfactions and allocation of work effort. In the existing literature how do the two groups compare in this area?

The literature does not crisply divide the discussion of career satisfaction and allocation of work effort. It seems to assume that allocation of work effort reflects relative

satisfaction levels but also that sources of satisfaction influence the allocation of effort. Thus, the two are treated in an interrelated, often indistinguishable manner.

In addition, the current tri-partite definition of faculty work includes effort devoted to teaching, scholarship, and service. This has not always been the model for the work of faculty in higher education. Based on the English college model, the U.S. higher education community of the 1600's to the early 1800's embraced a model which emphasized teaching and faculty as examples for the developing moral character of their students. In the mid to late 1800's with the opening of many land grant institutions after the Morrill Act, the prevailing model balanced teaching and public service, though public service was often linked to applied research. (Rudolph, 1962; Finkelstein, 1984)

A significant change in the institutionally preferred model for faculty work occurred in the 20th century. Both Jencks and Riesman (1968) and Finkelstein (1984) document the shift which expanded the weight given to research efforts. Through both the rise in importance of the PhD degree as the preferred academic credential and the rise in funded research opportunities, the broad consensus in higher education on the best model for faculty efforts was fractured. Four-year liberal arts institutions, and later the emerging community colleges retained the earlier model emphasizing teaching and service. Universities, particularly those identified as doctoral institutions, chose a model which placed much more emphasis on research and the production of original scholarship. (Finkelstein, 1984; Baldwin, 1985).

With these differentiations in mind, consider the literature on the sources of faculty satisfaction and the ways in which women faculty use their time.

Teaching

Without distinguishing by type of higher education institution the predominant theme in the literature is that women place much more emphasis on teaching than scholarship. Bernard (1964) argued that women focused on stable subjects which they could teach at the elementary collegiate levels. They saw themselves as transmitters of knowledge, not as social critics. Women were competent in teaching standard noncontroversial bodies of knowledge but were handicapped in handling controversial materials because they were seen as less authoritative. Women were also judged to be more successful in achieving value in personal conferences with students and were more helpful to poorer students. Related data indicated that their classes showed less variance in results of teaching than those of their male counterparts.

Finkelstein (1984) concurs that women in the 1970's endorsed teaching effectiveness as their first priority. They thought it should be the primary basis for promotion. In his studies women were less likely to be involved in off-campus professional activities, less likely to have a broad network of scholarly collaboration, and less likely to engage in paid consulting.

With slight variations in their viewpoints, Simeone (1987) and Aisenberg (1988) also concur that women focus primarily on teaching. Simeone argues that women choose their disciplines based on their teaching desires and people orientation. Aisenberg argues similarly, though she parts company with Bernard regarding women's goals in teaching. Aisenberg suggests that women are interested in more than the transference of knowledge. They are interested in student transformations. Thus they prefer a pedagogy emphasizing questioning, engagement, and discussion instead of straight lecturing.

Boyer's survey for the Carnegie Commission published in 1989 confirms Simeone and Aisenberg's observations about women faculty's priorities in the 1980's compared to those of men faculty. 78% of female faculty compared to 67% of male faculty indicated their interests either lean to teaching or are primarily in teaching as contrasted with research. Similarly 73% of women faculty surveyed felt that teaching effectiveness should be the primary criterion for promotion compared with 58% of male faculty. Female faculty's priority for teaching seems to be born out in other areas of his survey as well. When asked about student characteristics, such as academic effort and standards, cheating, or substance abuse, women faculty seemed both more knowledgeable about and more sensitive to these characteristics. The frequency of their "don't know" responses was much smaller than those of the males surveyed.(Boyer, 1989).

Unfortunately the Carnegie Commission's published survey results did not break down the male/female responses by institutional type. Thus it is not possible to determine

whether or to what degree these responses are the result of women's locations primarily in colleges and universities not oriented toward research.

Some evidence exists about the effect of institutional type on reported satisfactions and effort allocation. Morlock, writing in Rossi (1973), notes that, "...Differences between time spent in research and teaching are greater in universities than in two-year or four-year colleges...Women are most likely to spend less time in research than their male colleagues in precisely those institutions with the best research facilities."(p. 283).

Yet a further difficulty with these findings over three decades are that few studies distinguished responses by discipline or marital status. The differences can be significant. Astin's 1969 research cited in Rossi (1973) indicates that women in the social sciences, arts, and humanities spent more time teaching while women in the natural sciences spent more time in research. Another Astin study of women who received doctorates between 1955 and 1960 concluded that marital status was a significant factor. Single women doctorates spent more time in teaching and administration while married women doctorates spent more time in research.

More recently in her research on career satisfaction, Dwyer notes that a 1989 study by Newell and Kuh found women faculty's satisfaction centered on teaching, while a comparative group of men's centered on salary. However, Dwyer also comments on a study by Ethington, Smart, and Zeltmann (1989) indicating that the greatest female

satisfactions were in liberal arts colleges and research I institutions. This last study would seem to indicate a dichotomy between two types of women, those with strong preferences for teaching and those with strong preferences for research. From the Ethington et al data it may be possible that there is a group of women for whom research is a greater source of satisfaction than teaching.

On the basis of these studies the presumption that women necessarily gravitate first to teaching is not completely supported. While there is evidence for that as an aggregate pattern, when other defining variables are included in studies, the pattern appears to be breaking down.

Scholarship

Beyond the studies that have been done about women's emphasis on teaching, what do these and other studies indicate about women as scholars? Reviewing the evidence without regard to institutional type, it appears that women on the whole are less productive than men. Women simply publish a smaller volume of work as is evident in both Finkelstein's (1984) and Dwyer's (1991) reviews of the literature on this topic. Looking at cumulative production and publication rates male academics were as much as three times more productive as researchers in the recent past.

Dwyer and Finkelstein's conclusions about the past are verified by other studies. Simeone notes that in a 1977 study by Freeman, within research universities, publication rates for women were lower. Seventeen percent more women faculty than men had published no books. Twenty-three percent more women faculty than men had published no articles. (Simeone, 1987). In studying publication of scientific papers Cole (1979; 1987) concludes that even when women and men are matched by field, professional age, and source of PhD, men published more and that these differences widened as careers lengthened.

The differences though are more subtle than is suggested by a focus on volume. Bernard (1964) critiques that focus on volume which ignores creativity. Simple counts of products ignore weight, quality, or the nature of the discipline involved. Bernard notes that often in studies of research productivity, degree status, rank and discipline are not controlled.

Even if scholarship by females was less characteristic of the past, by the 1980's researchers suggested that the source of women's satisfactions was changing. Chamberlain (1988) notes that in 1972 38% of women and 62% of men had some research support. By 1982 53% of women and 69% of men had similar support. Simeone argues that based on her interviews of 20 women at a large prestigious northeastern research university, women academics were now committed to the intellectual challenges of the university and not just the social and emotional development

of students. She believes that women are now engaging the world of theory, methodology, and interpretation, creating new knowledge, new data, and new paradigms (Simeone, 1987). Unfortunately her interview sampling method could well have reinforced all the biases which she wished to find since her subjects were located in a research university. If she had argued that women within research universities were engaging this new agenda, her argument would have been more credible than to generalize to the goals of all women academics regardless of location.

Aisenberg also suggests that women academics find satisfactions in both teaching and scholarship similar to men, and that there are great variations in the balance sought among women just as among men. However, Aisenberg goes on to comment that regardless of the relative balance, the nature of women' scholarship is different than that of men's. Women gravitate toward scholarship which studies human nature, not that which studies groups, social systems, organizations of power, or nonhuman subjects. They also tend to focus on interdisciplinary work that combines theory and reality, seeming to have little preference for research that is highly abstracted and rationalistic. Aisenberg summarizes the differences by stating that "overall, women scholars are heavily engaged in integrating knowledge. Their work combines disciplines, combines theory and reality, combines a commitment to change with a commitment to humane study. Its approach to knowledge is inclusive to the point of ambiguity, rather than exclusive to the point of certainty. Its social vision is of an integrated whole with the

characteristics and interests of diverse groups honored and supported" (Aisenberg, 1988, p. 105).

While Aisenberg makes some thought-provoking points about the nature of women's scholarship, again, her research on the relative satisfactions and allocation of work effort among women academics is not based on a broad sample. Aisenberg selected her interviewees from among women who had been unable to obtain or maintain a full-time academic position in the vicinity of a large north-eastern city. Because of the characteristics of her sample, any generalizations about women faculty must be treated with caution.

Finkelstein concurs that rank, location, and discipline are overlooked as control variables. He notes three interesting characteristics. First, the disparity of productivity between male and female academics narrows as women approach their 20th year after PhD receipt. Second, gender differences also lessen as women move up in institutional strata. Third, by discipline, the research women do publish tends to be less pure or basic, though women in the social and natural sciences are fairly prolific publishers. Perhaps that finding is also reflected in Boyer's survey which found women faculty as tied to their academic disciplines as men, but less tied to national and international societies of the discipline (Boyer, 1989). This tie to less pure research could also be tied to lower female computer and statistical skills in many fields. White males were much more satisfied with their skills in this area than white females, according to Olsen (1990).

In summary the review of women faculty's allocation of effort to scholarship shows very mixed results. Studies have frequently lacked control of rank, discipline, degree status, institutional location, and the nature of the output. While the past decades document less scholarly productivity by women in the aggregate, the present interest and effort of women in scholarship, particularly as one controls for non-gender variables and research university setting, is unclear.

Service

Little research has been done about relative attention to service activities as related to work effort and satisfaction. A well-constructed definition of service in higher education research on faculty effort is missing. Without such, there is little consistent evidence of patterns for women. Only Olsen and Boyer provide small insights into the current situation. Using a broad definition of work-related service Boyer's 1989 studies indicate that women do less consulting than men but that women participate more in campus wide faculty committee activity and in the faculty senate meetings than do their male counterparts. Yet Boyer's work does not differentiate by institutional type. Olsen, commenting specifically on the research university, suggests that service for women is "in large part the product of an institutional desire to have a diverse set of viewpoints represented on decision-making bodies...women's greater willingness to recognize the value of service makes their participation in the work of university committees important to the day to day functioning as well as to insuring a diversity of perspectives. Overall,

white men appear to participate most heavily in the types of service closely allied with individual research" (Olsen, 1990, p. 15). Thus it would appear that the catalyst for greater on-campus service by women faculty at least in the research university is frequently the university's need. Women are willing participants; however such service may only reflect their recognition of immediate university needs, rather than their preferred long run allocation of effort.

The Distribution of Work Effort and Type of Institution

Three decades of research on women faculty seem to indicate that the predominant faculty model for teaching, scholarship, and service used by most female faculty differs from that of male faculty. However, Olsen's 1990 study of women academics within the context of the research university indicates unexpected similarities and also some subtle areas of difference by gender in that context. In her study of 146 cases by personal interview and a related questionnaire, many factors influenced the relative allocation of work within a research university for women.

Within her sampled research university Olsen noted that 62% of white males and 56% of white females saw their interests as heavily related to research or leaning toward research (Olsen, 1990). The gap between these two groups is less substantial than that of Boyer's survey encompassing a broad mix of institutional types. Olsen also notes that her findings indicated no difference in over all job satisfaction between white males,

white females, and black faculty. All indicated moderate levels of satisfaction, which would seem to indicate that all were relatively satisfied concerning their match with a research oriented institution. In fact a higher proportion of white women in her sample group believed they were successful at research than did their white male colleagues.

Olsen did find that the males developed their career goals more clearly, at an early age, and presumed no career interruptions when compared with the female academics. They also were least likely to see their teaching as contributing a great deal to their own professional development. However white male faculty found balancing work and personal life as stressful as the white women surveyed.

In a related statistical study, Olsen also tested the significance of gender, rank, and discipline in determining faculty time allocations within the research university. Olsen concludes that rank and discipline are much more important than gender in time allocations in that setting. (Olsen, 1991). Olsen writes: "Existing research suggests a higher level of commitment to teaching and service among women and minorities and a lower rate of research productivity than found among white male faculty. The issue is more complex than this, however. Women and minority faculty are often asked to carry a heavier course load, teaching more introductory courses and are assigned fewer graduate courses...Gender-related productivity differences have also been shown to disappear when "type of institution" and discipline are controlled for" (Olsen, 1990, p. 8).

In summary, Olsen did not find that within the research university white males and white females differed substantially in their job satisfaction or their allocation of effort, though they did differ on other aspects of their career orientation. Yet her study refutes the assumption that women necessarily tend to prefer teaching over research. Instead her study adds weight to the belief that institutional location is a significant factor in any faculty member's satisfaction or work effort allocation.

The full picture of women faculty and their preferred work allocation is not yet pieced together. Many of the findings are of limited use because they do not distinguish by type of institution. Only a few studies have been done on women within the research university setting, distinguishing them from other groups of female faculty. When the institutional setting is controlled it remains to be determined through further study whether these women prefer teaching to scholarship and service as is the case in two and four-year colleges. It is not clear whether the character of women's work is by nature unique when compared with that of males. Analyzing the results within a research university may be an important factor in understanding the interaction between institutional type and the work of women faculty.

CAREER DEVELOPMENT APPROACHES

A final area of possible difference between male and female faculty is found in the literature on career development approaches. How do women's preparation for the

academic profession, initial entry into academia, and career strategies for advancement compare with those of males? Are their approaches to issues such as geographic mobility substantially different from those of male faculty?

Career entry

Aisenberg (1988) writes extensively about the entry of women into the academic profession. She suggests that women do not typically take a linear path, straight from undergraduate schools to graduate schools, and then on to employment in major colleges and universities. Instead Aisenberg hypothesizes that the catalyst for many potential women faculty is a desire to break out of traditional marriage molds. She suggests that this quest is not well defined, however. Thus women often drift and experiment, a combination she calls "veering and tacking". In her research that quest eventually led the women in her sample to graduate school. Yet the graduate school experience was often first of all a source of personal empowerment and transformation. Frequently the women in her sample confused such personal growth and intellectual engagement with the external requirements of the profession. They were naive about the need to find a mentor, attend extra conferences and seminars in their discipline, gain the benefits of teaching or research assistance, or network with established professionals in their field.

Aisenberg's findings confirm earlier evidence of such problems noted by Feldman (1974). His research also found that marriage had a great effect on the intellectual motivations of women. Married women more frequently enrolled as part-time graduate students and often were seen as the least productive by fellow students. By contrast divorced females seemed to have academic success rates about equal to those of married males. He concluded that it appears that marriage reduced conflict for men but increased conflict for women. Those conflicts often led women, particularly married women, to make suboptimal professional choices.

Similarly, Clark and Corcoran in their 1986 study documented reasons why women had not enrolled in the best graduate programs. Either because of their own ill-defined directions or subtle discrimination in their discipline, they were not chosen as proteges, lacked research resources, and were frequently marginalized in graduate school. This is the likely beginning of cumulative disadvantages which influence academic women's careers as they continue to develop(in Dwyer, 1991) and frequently prevents them from being prepared for positions in major universities.

As Caplow and McGee stated already in their 1958 studies the link between one's doctoral university and initial employment is substantial. In their words: "The initial choice of a graduate school sets an indelible mark on the student's career. In many disciplines men trained in minor universities have virtually no chance of achieving eminence...The handicap of initial identification with a department of low prestige is

hardly ever completely overcome. The system works both in channeling students into graduate school and then in channeling them out into jobs. Thus it affects where students come from and where they go." (p. 225 of The Academic Marketplace, as quoted in Bernard, 1964, p. 87).

Breneman and Youn confirmed that this pattern has continued into the 1980's. In their studies one's entry position was explained by the prestige of one's PhD institution, not by predoctoral productivity. The pedigree of one's graduate institution affected one's later opportunities. There was some variation by discipline. Prestige affected the locus of career entry more heavily in social sciences than in the humanities. The prestige factor operated differently in biology than it did in mathematics. Still entry and later mobility were greatly affected in all fields by one's doctoral institution. (Breneman and Youn, 1988).

Thus women's enrollment in second-tier graduate programs, whether through their own choice or active discrimination, affects their later ability to attain positions, particularly in research universities, which are highly selective in their sources of new faculty. Instead, it is more likely that even if the supply of women faculty is increasing they are employed in two year and four year institutions not oriented toward research.

Initial Placement

However, Bernard noted an even more unusual problem in the link between graduate education and entry level positions. She reported at that time "women receive their doctorates from universities as good as those from which men receive theirs. Berelson reported that about the same proportion of women students (47 percent) as men (43 percent) received their doctorates from the Top Twelve universities." (Bernard, 1964, p. 87). From among those top twelve schools the Phd graduates in the sciences were tracked into employment. The women much more frequently were placed in colleges than in universities, despite equivalent credentials. Thus she concludes that even education in comparable high quality universities did not have the same consequences for women as men.

Astin (Rossi, 1973) argues similarly that initial placement is critically important. In her studies she found that frequently post-undergraduate educational experiences were similar for males and females in terms of degrees, financial aid, and post doctoral study but the career development which followed was different in both compensation and promotion. She agreed with Morlock that the greatest barrier was not graduate school but finding the gateway to a standard position within higher education at a level comparable to that of males. Women were frequently hired at a lower rank even when their credentials were comparable. (Rossi, 1973).

Aisenberg and Dwyer confirm that problems in the transition from graduate school to employment have continued. Aisenberg's entire interview sample consisted of female PhD's who were either unemployed or only marginally employed in colleges and universities. Dwyer also notes that even by the late 1980's women PhD's were more likely than males to end up unemployed, not participating in the labor force, or as part-time faculty. (Dwyer, 1991). Thus, both women's preparation as academic professionals and their transition from graduate school to initial career placement appear to be characteristically different from those of males.

Career Advancement and Mobility

If women faculty do transcend the barriers to initial career employment, what characterizes their patterns of advancement and the constraints on their advancement? Initially women may need to make more adjustments than men. In a study contrasting male and female junior faculty at an elite research university, women interviewees reported more changes in their perceptions and expectations for themselves and others than did the men (Reynolds, 1989).

Beyond initial adjustments what occurs? Finkelstein suggests that faculty advancement involves five factors that are rewarded. They include longevity, seniority, terminal degree, research productivity, and institutional service (Finkelstein , 1984). However, Finkelstein's advancement factors could play out very differently in the lives of male and

female academics. Even when degree credentials are comparable Dwyer (1991) comments extensively on findings which substantiate female versions of academic career development which are very different from those of males. Female academics progress through the academic ranks more slowly, often with more undergraduate teaching and heavier teaching loads. This has been the pattern since at least the late 1960's (Rossi, 1973). Female faculty may also experience higher levels of stress than males (Connors, 1991).

Sometimes career development varies because of personal strategies chosen by women themselves. Married women employ "hidden passages" to accommodate competing demands of family and career. These are often part-time work, leaves of absence, or voluntary delays in the timing of the tenure decision. For some women academics longevity and seniority did not operate in tandem. Differences in research productivity have been documented. Institutional service by women occurs but differs from the type offered by males (Dwyer, 1991).

Career development can also be affected by institutional climate. A recent study (Brown, 1990) suggested that career advancement for women, particularly in research universities, is undergoing a transformation. In her interviews with 32 female faculty at three research universities, Brown concluded that academic departments are in different stages of gender equity development. While in stage one women are not hired at all, stage two is a revolving door. Women enter but do not stay because of an unsuitable environment.

In stage three women sometimes gain tenure but do not become full professors. Only in the fourth stage has a completely accepting environment developed where men and women are treated fairly for tenure and promotion.

Geographic mobility also plays a significant role in career development. Dwyer's review continues by examining the effects of geographic mobility on career advancement, a factor which Finkelstein himself calls the missing but potential "ace in the hole" for women (Finkelstein, 1984, p. 212). Are women academics that different in their relative mobility? If so, how does it effect their advancement?

Bernard (1964) noted that women, both married and single, were more tied to the geography of their birthplace than men. Both social factors and personal preferences seemed to discourage moving from one institution to another. Yet the effects at that time were minimal. Finkelstein found that geographic mobility was not a critical factor in advancement for most faculty during the 1960's and 1970's. He documents that few faculty, male or female, moved during these two decades; and when they did, they were responding to the optimization their interests and values, not to prestige or necessarily advancement (Finkelstein, 1984). Differences between males and female academics were not affected greatly by the issue of geographic mobility.

Yet the more constrained mobility of women was beginning to be recognized as an advancement factor that could significantly affect the future. Astin's studies of women

with doctorates obtained between 1960 and 1970 (Rossi, 1973) indicated that these women were much more likely to pursue employment in higher education rather than industry, government, or not-for-profits. These women were much less likely than men with comparable credentials to shift between the academic and nonacademic worlds. They also struggled with the issue of spouse mobility. When surveyed in the 1968 a sample of these women listed husband's mobility as the third greatest barrier to career development. Studies at that time also indicated that geographic mobility often accounted for a higher salary, although not necessarily for higher rank or tenure (Rossi, 1973).

By the 1980's the academic job market was an even more national one and advancement often depended more heavily on one's ability to relocate. The power to relocate also provided negotiating clout with a faculty member's present institution. Dwyer confirms that since the 1970's geographic mobility has become much more related to advancement. She writes that "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."(Dwyer, 1991, p. 29) .

Dwyer cites several studies by Marwell, Rosenfeld & Spilerman (1979), Tuckman and Tuckman (1981),and Rosenfeld and Jones, (1986, 1987) all of which document the differential position of women academics related to geographic mobility. According to Dwyer, "...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" (Dwyer, 1991, p. 30). The net effect is that the women studied did move but often stayed in the same rank and geographic location. Even single women less tied to family considerations now than in Bernard's earlier studies are also geographically constrained. Often because of their lower status in the academic ranks and their concentration on teaching they too have been less mobile than male faculty. By comparison men were much more likely to change their status with a change in geography. It appears that "...women do not seem to choose location for maximizing career prospects in the same way that men do..." (Dwyer, 1991, p.30).

Again, however, these studies of female geographic mobility related to advancement do not isolate the women faculty who staff research universities. The desire to be mobile may represent attempts to move up through the perceived hierarchy of higher education institutions to a research university position. For example, a position in a smaller comprehensive school may only be a stepping stone to an offer from a larger research university. However, once in a research university do women faculty perceive their mobility differently from male faculty?

Only Olsen's (1990) study focuses on women who are already employed at research universities. What does she conclude about relative geographic mobility differences? Olsen concludes that, "... the number of faculty describing themselves as 'somewhat' or 'very' likely to seek a new position in the next year was relatively large with about 36%

of white men and minorities and 44% of white women falling into these categories. For the most part, faculty would be seeking positions at other academic institutions." (p. 17). Given the location of her study at Indiana University it seems safe to assume that seeking another academic position would require geographic relocation. If Olsen's study is representative of intentions among research university faculty to move, then at least white women expect to move even more frequently than white men. Within the research university context the contention that women are more geographically bound is not supported by her evidence. Instead they see themselves as more likely to move. The reasons for moving may be multiple. They may be tied either to advancement or satisfaction with organizational fit, but the perception of capacity to move does not appear to be constrained. However, Olsen's results should be confirmed or questioned by additional study of the research university environment. Drawing broad conclusions from one study of limited scope and methodology would be inappropriate.

To summarize the literature to date most researchers have argued that female academics choose and develop their academic careers differently from their male counterparts and are often more geographically constrained. In broad studies across different types of institutions, this appears to be the case. However in the one study focused specifically on the research university context, there is some evidence to the contrary. It is possible that the women who populate research universities may be substantially different from women in other types of academic institutions in their ideas about their careers and paths to advancement.

EXPLAINING DOCUMENTED DIFFERENCES

The sections above document the literature on possible areas of difference between female and male faculty in higher education by commenting on their total numbers, their relative distribution in the system, their sources of satisfaction and allocation of work effort, and their career strategies. However, it does not explain why these differences may have occurred.

This section will examine various reasons for differences in the distribution, work effort, and career development of academic men and women. Multiple, multifaceted reasons are contributed from a variety of knowledge fields. Scholars in anthropology, history, biology, psychology, sociology, and labor economics, as well as higher education specialists consolidating contributions from these several fields all contribute their commentary. However the most developed sources of explanation appear to be psychology(both developmental and organizational), sociology, and labor economics. Yet researchers in each of these fields give different emphases in the balance of their explanations. These varied emphases reflect differing assumptions about the relationship of individual choice and societal structure. The issue is whether occupational placement primarily results from individual preference or whether individual preferences are shaped primarily by occupational placement (Smart, 1991).

For some, explanations reside in individual preferences resulting in certain career choices. They align themselves most closely with human capital theorists such as Bowen (1977) and with a functionalist's approach to individual contributions (Davis and Moore in Tumin, 1970). Other researchers place more emphasis on social structures which affect the systematic choice set and possible preferences that are available. They align themselves with either the Weberian conflict theorists which emphasize the dominance of the majority group and the emerging conflict as the majority/minority balance changes; or they align themselves with more Marxist educational theorists, such as Bowles and Gintis (1972) or Karabel and Halsey (1977), who argue that education is reproductive of the existing class structure and reinforces capitalist traditions, supplying the labor pool to meet its economic functions.

The range of explanations along this continuum will be developed, beginning with those explanations most emphasizing individual preference and ending with those explanations which most emphasize the social structure as the determinant of individual choice.

Nature As The Explanation For Individual Preferences

One argument forwarded for the differences between male and female academics is that women are inherently different in their biological and psychological make-up. This approach argues that women faculty will make different choices simply because they are uniquely different creatures. Radical feminist theorists place great credence in the belief

that the special reproductive biology of women results in a unique destiny (Stromquist,1989). They argue that this unique destiny has unfortunately not been honored in the higher education system because males serve as the gatekeepers to the system, controlling the channels of hiring, promotion, and organizational mission. The fundamental thesis is that women are inherently different in their professional orientation toward higher education's missions and strategies. These differences thus result in satisfaction, allocation of work effort, and career development strategies which vary from those of males.

Likewise, some educational researchers begin with this same thesis in their analysis of women faculty. Dwyer (1991) comments that Holland's Vocational Type Theory places great emphasis on individual career choices which parallel one's personality type and personal orientation. These factors later interact with family background and school experience to form actual choices made. However one's inherent personal being affects the choices significantly. Dwyer suggests that Cole (1979) argues in similar tones when he states that women fare less well in academia as productive researchers because they inherently enjoy collaborative projects and thus don't compete for key individual resources (Dwyer, 1991). Part of the argument appears to be that women are simply less competitive by nature. Thus they do not fit the mold of demands in higher education research.

In more recent research Simeone (1987) suggests that inherent differences are often the explanatory framework for women's relative allocation of time between teaching and scholarship. Simeone suggests that the explanation frequently forwarded about women's preference for teaching over scholarship is a nurturing "people orientation" which is unique to their character as women. While Simeone does not totally accept this as the only or best explanatory framework, she believes innate differences by gender are part of the explanation for differences.

Aisenberg (1988), is also prone to this line of argument. She indicates that women have unique pedagogical approaches in the interest of transforming their students and unique approaches to scholarship in the interest of transforming their disciplines. Aisenberg does not accept a heavy investment of women in teaching to the exclusion of scholarship as natural; yet she does argue that there are naturally unique qualities among women academics which will make both their teaching and scholarship necessarily different from that of males. She suggests that women naturally gravitate toward the study of human nature which explains the higher proportions of women in certain disciplines.

The school of explanation which puts such a heavy emphasis on "naturalistic" differences is not the dominant one. The majority of researchers and writers investigating causes of male/female differences do not seem to accept the primacy of inherent differences because that belief can be used to justify differences in gender status within the academy

and place the responsibility for change upon individuals alone. Yet several researchers believe that at least a portion of their explanation is based on innate differences.

Socialization As The Explanation For Individual Differences

A second explanation for the differential role of women in higher education is that women make difference choices, not because they are natural, but because their individual development is shaped by the certain socialization processes. The result of socialization, which differs between males and females, is that women construct a different developmental life cycle and balance a different set of societal roles than men. Career choices still follow preferences. Individual preferences are still the dominant factors in choice making, but these preference have been shaped by social, not innate biological or physiological forces.

Socialization within the family, school, and community may result in differences by gender in needs and drives, satisfaction sources, self perceptions, ethical frameworks, and societal perceptions (Sheehy, 1976; Gilligan 1982; Belenky 1986). The results of such socialization differences will be differences by gender in the adult life cycle (Sheehy, 1976; Levinson, 1977), Shakeshaft (1989) and life roles (Bernard, 1964; Fox, 1989).

For female academics the result is that their career choices are often different in terms of both the process of choice and the actual career choice made. The decisions following that career choice in terms of preferred activities within the higher education system will thus also vary from those of males. Finally the balance of professional and personal roles will be different. Because of differences in socialization women will choose to develop their total human capital differently than men.

Specifically among higher education faculty such socialized differences result in differences by gender in degree status, academic rank, disciplines of expertise, work allocation in teaching and scholarship, and the productivity of work.

Bernard (1964) first constructed the argument that women who decide on a career in higher education will have key differences in factors which socialize them. At that time women PhD's came from higher class homes and were intellectually superior to male Phd's in terms of test intelligence. Yet they were not as productive as researchers, were associated with teaching institutions, and saw themselves more as transmitters of knowledge than as social critics. Women focused on more stable subjects with less controversial bodies of knowledge already in existence.

Bernard explained productivity differences by relying heavily on the explanation of socialization. She argued that women have been socialized into two key patterns of thinking. First they are socialized not to put all of their life fulfillment eggs in one

basket-either in the basket of their paid profession or heavily in one facet of their paid profession. Women have also been socialized to expect more domestic responsibility. Thus the amount of energy that they perceive they can channel into their work is more limited. Bernard suggested that women therefore have a different attitude toward professional advancement and simply invest less of themselves in the necessary activities to achieve it. The women in her studies demanded less overall satisfaction from their paid professions.

Married women in particular saw marriage as a career hindrance and children as a potential liability to their advancement, particularly because they tended to set very high standards for their children's behavior and achievement. They also saw less income need for their advancement. Thus, if they chose to marry and bear children, they believed they were choosing against career advancement comparable to that of males.

She also noted that even within the profession, women were socialized into roles whose function was conserving, stabilizing, and appeasing. They were socialized to avoid controversy within their fields. Thus they tended to favor teaching roles of stable developed material, rather than the controversial role that the development of theory and pure research can play within a discipline (Bernard, 1964).

Aisenberg (1988) piggybacks on Bernard's socialization theme. In her interviews with women she found that most of them worked to balance sources of satisfaction between

personal/family and professional lives. She views this struggle between roles as a struggle for balance between the "marriage plot", a privatized anti-intellectual socialized role and the "quest plot", a public intellectual socialized role. The balance that women try to maintain differs from that of male academics in terms of the amount of satisfaction they seek from family life. Women in her study assumed the burden of trying to live two full lives, both those of domestic and professional fulfillment. Often women, because of beliefs that grow from their socialization, adopt a strategy of securing one of these two areas of their lives before diving into the other. Thus, sequencing, instead of the simultaneity of these roles, results in a differing amount of career progress when compared to males.

Aisenberg (1988) also believes that differential socialization has resulting in different pedagogical styles for men and women. Women prefer to use active discourse with students, questioning, engaging, and discussing with them. In contrast she suggests that males tend to lecture more, using the idea that they are handing down knowledge to students, rather than nurturing their development.

Similarly, Aisenberg suggests that in the area of scholarship it is difficult for women to speak as voices of authority after being socialized to ingratiate, self censor, self efface and avoid contention. Thus they have difficulty knowing the acceptable boundaries of their public voice in scholarship. They have been socialized toward tentativeness in

expressing their findings and viewpoint and either distrust or dislike the prevailing models for professional discourse which often require extensive debate.

She also notes that, "Overall, women scholars are heavily engaged in integrating knowledge. Their work combines disciplines, combines theory and reality, combines a commitment to change with a commitment to humane study. Its approach to knowledge is inclusive to the point of ambiguity, rather than exclusive to the point of certainty. Its social vision is of an integrated whole with the characteristics and interests of diverse groups honored and supported" (Aisenberg, 1988, p. 105).

Aisenberg believes that these characteristics of women are among the primary reasons for their exclusion from the world of accepted scholarship. Their work in her mind does not fit the existing male paradigms for scholarship within the profession. Thus she sees exclusion and devaluing of women's contribution in higher education as related to women's abilities and interests. Aisenberg writes, "What we see generally in the range of work reviewed above is a strong thread of resistance by women to academic conventions establishing the boundaries of knowledge-from the rules of scientific certainty, the logic of abstract theory, and the division of subject matter into discrete disciplines, to the rules that include or exclude material as relevant to a particular discipline" (Aisenberg, 1988, pp. 100-101)

Finkelstein (1984) too argues that prior socialization is one of the key reasons for differentiation of men and women academics. He documents the fact that choosing to enter an academic profession is based on intellectual abilities and family statuses that are shared by both males and females; but then individual choices resulting from sex role socialization have a differential impact on men and women academics. Once choosing an academic profession, males and females develop differently within it. He explains women's stronger orientation toward teaching and at schools ranked lower in the institutional strata as the result of prior socialization. He notes that the perception of one's academic role differ for men and women with women seeing it as a role which competes with other familial roles much more frequently than men. Finkelstein documents that academic women spend twice as much time on family chores as academic men and that academic women frequently revert to traditional sex roles in their family lives. In his mind this may account in part for lesser degree attainment or less geographic mobility related to career development. His explanation does not necessarily question the appropriateness of the socialization which women experience. Typically it accepts that socialization as a given and then proceeds to examine the differences in human capital development which result from it.

Chamberlain (1988) seems as well to attribute some significant gender-related differences to socialization. She suggests that women have been socialized to view the resources needed for research productivity differently than men. She concludes that women attribute research productivity to "personal" variables like hard work, motivation, interest

in the topic and skills while men attribute it to organizational factors, such as assistants, funds, and institutional resources. She writes that "...women are less likely than men to endorse the importance of organizational and/or structural variables in enhancing their research or scholarly productivity..."(Chamberlain, 1988. p. 267).

In summary this second position emphasizes that women academics, while not by birth different than male academics, become different from male academics because of their entire socialization. That socialization results in differences in educational background, experience in graduate school, degree attainment, and choice of institutional type of employment. This school of thought emphasizes that women must be socialized differently so that they make different choices in the development of their human capital, choices which will guarantee them more rewards, secure placement, and prestigious positioning within the academy.

Structures As The Explanation For Individual Preferences

A third set of theorists argues that the role and functioning of women in academia is differentiated primarily because of institutional and societal structures and their effect on women's roles and effectiveness in academia. All researchers grant that overt discrimination against women has sometimes been a problem; however this group of theorists believes that the cumulative disadvantage of women faculty results from more than individual discrimination. It is the result of systemic forces. This tradition

emphasizes that external constraints on women, often outside their individual control, have significantly hampered the advancement of women faculty in academia (Clark and Corcoran, 1985; Smart, 1991). Those who argue from within the liberal feminist tradition typically attached themselves to this stream of argument. They see the state as the agent of redress because it is the one entity which can alter the institutional and societal structures which hamper the progress of women academics. Such groups favor strong affirmative action programs within colleges and universities, laws defining sexual harassment and penalizing its perpetrators, and publicly financed support for programs encouraging women in academia. (Stromquist, 1989). Within this third set of theorists three sets of foci emerge, those emphasizing organizational behavior theory, those emphasizing bias in the broader culture of academia, and those examining gender inequality from the standpoint of labor economics.

The organizational behavior theorists emphasize the effects of the specific organizations in which women participate. Often women do not fit the current configuration of the organization, feel uncomfortable with the lack of fit, and may choose to leave the organization as a result. Both Kanter (1977) and Morrison et al (1987) suggest that organizational structures, cultures, and climate result in traditional roles for women as nurturers, tokenism for the few women who function as equals, and harassment for women who threaten the male-dominant cultures. Such theorists argue that organizational cultures, such as those of colleges and universities, will only change in their reward structures and organizational values when a sizeable number of women have joined them,

becoming not tokens but a viable force for change. They also stress that institutional policies must change to allow acceptance of women. Such theorists stress the importance of mentors for women, women's support networks, and a careful definition of job responsibilities not based on gender.

Such theorists also recognize that organizational behavior does not always follow a rational linear path. Yoder, Crumpton, and Zipp (1989) noted that particularly in academic hiring, women candidates were favored in departments that had moderate numbers of females already in their ranks, represented between 16% and 65% of their total academic faculty. In contrast, departments with more than 65% females were not too willing to hire additional women; and departments with few or no women were also less likely to hire women. A linear logic might suggest that the departments with few or no women would be the most likely to work at redressing the balance. Yet organizational theorists contend that group dynamics and organizational culture in that environment may prevent serious consideration of women applicants.

A different group of theorists focuses on another level of structural influence. They emphasize bias in the broader culture of academia, arguing that the whole structure of academia in the United States is male dominated. For some this male dominance has resulted in broadly shared institutional morays which thwart the success of women faculty. The hiring and evaluation processes typical to many higher education institutions frustrate access to and promotion within the system for many women. Fox (1989) notes

that women were often less likely to be chosen for a teaching and research assistantship in graduate school. This often led to the exclusion of women from the informal networks of their discipline and resulted in a marginality that continued to afflict their futures in finding employment and research funding. Kaufman and Perry (1989) cite traditional and broadly shared university policies which prohibit the hiring of spouses, the hiring of one's own graduates, and the shift to tenure track positions by previously employed lecturers as examples of policies which have discriminatory effects. Cole (1979), Theodore (1986), and Simeone (1987) note that the criteria for promotion in rank often included those which were not related directly to performance in teaching and scholarship but also considered issues of marital status and undocumented presumptions about future productivity.

For other researchers within this school of thought, the primary structural barriers for women desiring a wider range of academic career options focus on reasons typically given for lower rates of productivity among women scholars. They see this as a key issue in the development and promotion of women faculty for positions in major research universities.

The whole issue of how scholarly productivity is counted is an open question. Bernard (1964) first pointed out the flaw of counting quantity of publications without evaluating quality. Dwyer(1991) argues that quality of scholarship is consistent with that of males even though quantity is not equal. However she also points out that quantity varies

across the disciplines and that blanket statements about gender-related productivity should be suspect. Chamberlain (1988) similarly questions the idea that scholarly productivity can be easily counted. She notes that married women and single women publish different kinds of results. While married women are often counted as more productive than single women because of the number of publications, single women have the higher book publication rate over a career span. In fact single women publish books at a more prolific rate than married men.

Access to the inner circles of scholarship within a discipline is also hampered by the lack of women who function within that inner circle (Dwyer,1991). Cole argued that scholarly productivity differences did not correlate significantly with differences in either occupational location or marriage and family status(except for 3 or more children). Thus he rejected the argument that differential productivity in scholarship occurs because of institutional location or family situation. Instead he ascribes more of the difference to the invisibility and differing perceptions of work quality which arise because women are not part of the informal inner circles within a discipline.(Cole, 1979, 1987).

Moore and Sagaria (1990) note the absence of women who function as editors of leading journals in many fields and suggest that the result is a lack of sponsorship of women's scholarship and an inability for many women to penetrate the editorial networks required to secure publication in the field. Though Cole(1987) argues that the turn down rate by journals is not higher for women scholars, he still agrees that there are substantial

differences in visibility and in the perceived quality of work produced by men and women. He attributes this invisibility and perception of lesser quality to the lack of entry into these informal inner circles.

Many of these writers also recognize that women faculty often have not had a conducive environment for research. Traditional locations have hampered productivity and access to research networks. Bernard (1964), Cole (1979), Finkelstein (1984), Simeone (1987), and Dwyer (1991) noted that the primary location of women in smaller colleges and institutions further from the mainstreams of their disciplines has placed women at a considerable disadvantage in finding time and disciplinary circulation for their research.

Professional rank also influences scholarly productivity. Productivity increases for both sexes with promotions in rank (Astin and Davis 1980 study in Chamberlain, 1988). Since women's rates of promotion are slower than those of men, the access to resources and the potential shift in responsibilities that accompanies a promotion in rank accrue to them more slowly as well (Dwyer, 1991).

Overall, the conventions for assessing scholarly productivity, limited access to the inner circle of editors, traditional geographic locations, and slower promotions in rank have thwarted the ability of women academics to both enter and thrive as scholars and thus as faculty for research universities.

In sum, writers in this subset believe that the primary reasons for the differential progress of women academics in higher education are related to policies, procedures, and norms for scholarship within the higher education culture that have fit reasonably well with male needs and experience, but thwart the needs, access, and development of women faculty.

A final subset among those who lean most heavily toward institutional and structural causes are those who examine the results from the standpoint of labor economics. Their analyses concentrates heavily on the supply of and demand for faculty in higher education, the relative effect of that balance on gender desegregation, the income levels of academics, and mobility within the academic market. They lean most heavily on the presumption that a faculty member's goals and values, work satisfactions, and allocation of work effort are the result, not the cause, of placement in a given position.

Bernard (1964) first commented on the placement of women faculty. She noted the relatively low numbers of women faculty, but also that they were located primarily in institutions ranked lower in the higher education hierarchy. In her analysis of this situation Bernard argued that between 1930 and 1960 the supply of qualified women faculty had declined substantially. Thus the low numbers were the results of an insufficient number of women choosing to pursue academic credentials at the doctoral level. She also cited the lack of doctorates as one substantial reason for the differential contribution of women academics. Without the doctorates which provided some

important research skills and credibility among peers, women's primary focus was teaching with much less energy committed to scholarship. Part of her solution was for women to improve their degree qualifications so that they became a qualified labor pool for the developing demand in major universities. Improving the supply of qualified women would help their placement and their ability to function in diverse academic roles.

Rossi (1973) analyzed the situation somewhat differently. She argues that the supply of women doctorates in raw numbers has increased steadily since the 1920's. She writes, "...for the past fifty years there has been a steady increase in the number of women who earned the doctoral degree. It is striking that the number of degrees granted to women continued to climb during the 1950's and 1960's despite the great pressure on women to live in conventional domesticity. What is especially important is that there was a dramatic increase in women's numbers in the late 1960's, that is, before academic women became actively concerned about their position in higher education."(p. 516).

However, the great difficulty occurred because the rates of increase differed proportionately between female and male academics. While the supply of women was consistently growing, the supply of white male academics was growing even faster in the 1950's and 1960's. The result was that women's proportion of the aggregate supply was smaller. Rossi argues that this contributed greatly to their loss in relative status (Rossi, 1973).

Chamberlain (1988) and Dwyer (1991) both indicate that the supply and demand for faculty have changed substantially since Bernard did her research. Chamberlain notes the significant rise in the number of women doctorates since the mid-1960's. In fact "the number of doctorates awarded to men peaked in 1972 and has declined steadily since then, while the number awarded to women has continued to grow" (Chamberlain, 1988, p. 256). The relative proportion of women in the academic supply pool has increased.

However, that supply has not resulted in massive increases in the number of women faculty in major universities. As Dwyer notes, during the 1970's and 1980's major universities were not expanding their academic staffs substantially. Many had made a substantial number of new appointments during the 1960's and had no need to conduct massive hiring campaigns into tenure-track positions after that time. While there were some growth fields such as business and engineering, these were not fields that had traditionally attracted significant numbers of women. Thus, the limited areas in which university demand did grow still did not match the areas in which women doctorates were in greatest supply.

Instead the growth in demand occurred much more heavily among the community colleges as they steadily expanded during the past two decades. Thus, Dwyer and others (Freeman in Becker, 1979) suggest that a share of the differential placement of women among types of higher education institutions can be attributed to strong demand for

faculty in the community colleges and weaker and highly selective demand for faculty in four-year institutions and research universities.

Other researchers criticize the presumption that a faculty member initially hired at the community college level will necessarily stay in the community college circuit. They suggest that faculty can move into major four-year institutions from that initial placement. However, given weak demand in general among major universities, the path into them frequently requires geographic mobility. Kaufman (1989) documents the "moving ethic" for faculty as they try to improve their relative positioning in the mainstream of teaching and research. She suggests that this ethic has hampered opportunities for women academics who frequently perceived their geographic mobility to be more constrained than that of male academics.

Yet Breneman and Youn issue a caution. From their research on the academic labor markets and prestige, it appears much less likely that such a transition from two-year to four-year institutions will occur. They indicate that one's career path is determined primarily by the prestige of one's graduate institution and the prestige associated with a faculty member's first appointment. Furthermore they also note that it is more likely for a faculty member to move from research into teaching than vice versa. Strong teaching evaluations and high scholarly productivity at the two-year college level may be insufficient to overcome the prestige bias. (Breneman and Youn, 1988).

Even for women who have found some marginal employment with universities, typical university policies related to hiring often promote this "moving ethic" as the route to tenure track employment, advancement, or a better fit of a faculty member's interests and needed resources with what an institution will readily provide. Rossi (1973) and later Kaufman (1989) document several typical university policies which thwart the promotion of women in oversubscribed fields when a tenure-track opportunity does arise. Often policy stipulates that tenure track appointments may not be filled by spouses of faculty, those who have previously lectured in the department, or the university's own graduates. Some schools even have policies that require non-tenure track lecturers to shift to part time status after a certain number of full time years of teaching. There appear to be few good routes from a marginal position into a tenure-track one without moving to another institution.

Pfeffer and Ross (1990) hypothesize that the strength of the moving ethic and the geographical constraints on women, whether external or self-imposed, have contributed to substantially less bargaining power related to salaries. In their studies of higher education salaries, after controlling for variations in education and relevant experience, they attribute much of the remaining difference in salaries between academic men and women to differences in negotiating strength. Because of geographical limitations, women seem to have a much small set of viable alternatives to their present situation. Thus they have much less power in arguing for market adjustments to their salaries in institutions that have discretionary funds available for salary adjustments.

Pfeffer and Ross extend the impact of mobility further. They suggest that those who are geographically bound within the higher education system frequently have less discretionary power within an organization. They then relate it to gender-based wage discrimination. Their research indicates that greater compensation discrimination related to gender occurs in private, larger colleges and universities with slack resources. (Pfeffer and Ross, 1990). In other words those institutions with more resources balance their discretionary spending decisions related to compensation against the negotiating power of individual faculty members. That power of faculty members is frequently tied to issues of relative geographic mobility. Thus, women with less geographic mobility wield less negotiating power and are frequently paid less.

During the 1970's several studies noted that women academics were still more likely to regard their spouse as the more significant determinant of where they would live.(Centra, 1974 and Wallston, 1978 in Simeone, 1987). These researchers would agree with Cole's reasoning about geographic mobility when he wrote: "Nonetheless, on the whole, women scientists are not as mobile as men, more often feeling tied to a particular geographic location because of the work requirements of their husbands. To what extent do women scientists refrain from applying for or accepting positions in outstanding departments located away from their husbands' place of work? How does this limit their bargaining position, as compared to men scientists, in the use of offers from competing colleges and universities to improve their salaries and other perquisites at their own institutions? The combined results of accommodative self-selection resulting in restrictions on the actual

mobility of married women scientists and the immobility imputed to women scientists by their colleagues obviously contribute to a process of accumulating disadvantage." (Cole, 1979, p. 12).

The later 1990's could open new opportunities for replacement faculty as those hired during the expansive 1960's retire. However, institutions will be looking nationally for those replacements. If women academics are still less mobile or at least perceive themselves to be less mobile than men, their ability to seize such opportunities is severely hampered. (Bowen and Shuster, 1986).

The above findings fit a more general pattern of occupational sex desegregation related to supply and demand in professional fields as researched by Jolly, Grimm, and Wozniak(1990). These researchers found that sex desegregation occurred most rapidly in fields with high levels of occupational growth, a trait not characteristic of academic employment in the past two decades. Furthermore their research indicated that women tend to enter professional fields that are male dominated as demand in those fields begins to decline. Typically, although these fields are paying men relatively less, they are paying women relatively more than other professions in which their gender is dominant. These general findings about patterns of occupational sex desegregation seem to fit the situation of higher education during the past two decades. With the exceptions engineering, business, and computer science, the 1970's and 1980's were not decades of strong demand for faculty. The purchasing power of faculty declined because of severe

inflation. (Bowen and Shuster, 1986). Greater numbers of academic women entered the profession as demand was declining and real income levels were decreasing. Typically their specialties were not in the few growth fields. Yet for many of them it still represented a better income opportunity than many traditional avenues of career employment.

The income of the academic profession related to labor demand when compared to other professions has a significant impact on women faculty. Because peak incomes in higher education as an occupation are substantially lower than those in some other professional fields such as law or medicine, the occupation itself begins to shape the choices which women make. Cooney and Uhlenberg (1989) in their research on family building patterns of professional women note that the decisions of women regarding marriage, divorce, and child birth differ among these three occupations significantly. Women faculty are less likely to marry, divorce more frequently, and have fewer children than women doctors. They are also more likely to work part time than women in either of the two other professions. While these differences might be explained in part by personality, values, and the structure of career paths, Cooney and Uhlenberg suggest that the opportunity costs for women vary among these professions. Because academia pays less than the medical or legal fields, women in the other two professions can more easily afford quality child care and household help. Thus marriage and children are more of a detriment to career progress and related income for women within the academic profession than they are in professions with higher levels of income.

As a school of thought socialist feminists align themselves most closely with the explanations outlined above. They would suggest that the white male majority, operating from positions of capitalistic and patriarchal power in society have both the economic and political resources to oppress the females in society. They would indeed agree that the individual's role is predominantly and perhaps essentially shaped by the broad structures of society (Stromquist, 1989). There is little belief in the possibilities of human agency, resistance, and change in the struggle against currently dominant forces. For socialist feminists the struggle pits white, well-educated, financially endowed males as a class against women, black and white, who are both less economically and politically powerful. Class struggle ideology assigns a clearer perspective on reality to those who are oppressed; but short of an uprising among the oppressed there would be little hope that the dominantly male structure of influence and power in academia would change. They would agree that past legislation against sex discrimination and protests against unfair university personnel practices have brought little or no success to women victims of discrimination personally; instead such efforts have only negative consequences for their future careers (Theodore, 1986).

In summary various explanations for the differences in status, work allocation and preference, and career strategies and mobility are given. Both theorists with varied disciplinary backgrounds and feminists with differing strategies and ideologies for change fall at different points along the explanatory continuum. Some theorists along with radical feminists place more emphasis on individual choices which result from natural

differences. In such cases the burden is on individuals. They must develop their human capital to fit a seemingly gender-neutral structure of activity, evaluation, and reward. The argument is that women more likely fit different functional niches than men academics, with more emphasis on teaching, a different type of scholarship agenda, and different professional needs. With more developed individual capital via excellent channels of education and experience, natural differences will be allowed to flourish.

However, this strategy may not lead to balanced faculty staffing in all types of higher education institutions. Therefore other theorists argue that the root differences are socialized ones. Many of them along with liberal feminists agree that changing the socialization of females will be necessary to expand the range of individual preferences that find their fulfillment in a broader set of institutions. Yet in both cases placement and function follow individual preference. Neither of these two groups argues otherwise; the only question is the origin of individual preferences.

A different set of theorists places more emphasis on male-dominant structures, cultures, and policies which determine and constrain individual activity and choices. In their eyes placement and function have effected individual preference. In such cases organizational policies, the whole academic culture, and the larger labor market structures must be changed. Only then will more diverse options in preferred work roles be allowed to flourish and further change the climate of higher education institutions.

COMMENTARY ON THE LITERATURE ON WOMEN FACULTY IN HIGHER EDUCATION

How should the above literature be critiqued? There are several difficulties with the descriptive and explanatory literature as it has been developed to date. They involve either the nature of the analytical sample and the resulting content of the analysis, the assumptions of the analysis, or the disciplinary source of the analysis.

The Content of the Analysis

The first difficulty is a lack of consistent categorization of the women academics who have been sampled. While one study will differentiate female academics by disciplinary interest, another will not. Thus some studies offer general explanations without examining the variety of responses that may be tied to different academic interests. While very little research has focused on differences in activities among the disciplines, the small amount of research that has been completed indicates that the preferred allocation of time varies by discipline. It appears that faculty in education and the fine arts have a stronger preference for teaching than those in natural science.(Austin and Gamson, 1983). Astin and Bayer (in Becker and Lewis, 1979) also found that scholarly productivity is greatly affected by one's discipline. Natural science faculty produced more books and articles than social scientists and those who taught in the arts or humanities.

Similarly, when analyzing differences between male and female academics, the type of employing institution from which responses are drawn is often not a controlled variable. Such studies do not frequently differentiate whether their responses related to measures of work satisfaction and preferred allocation of work time vary by type of institution. Such a lack of differentiation is counter to evidence that the allocation of faculty members' time is related to the type of institution (Austin, 1983). Furthermore, scholarly productivity is high even in universities of lower quality than in schools classed as colleges (Fulton and Trow, 1974 as cited in Becker and Lewis, 1979).

In addition the studies that have been done do not differentiate female academics by personal factors which may be key sources of differences. Only Rossi (1973) substantially addresses the perspective of black women academics differentiating it from that of white women academics. Only Bernard(1964) and Chamberlain(1988) differentiate the choices of women by looking at their marital status, though they did find substantial differences. There appear to be no substantial analyses which evaluate the cross-section of women faculty by either class origin or religion, two factors which could make substantial differences in their perspectives and motivation.

Some studies such as those of Aisenberg and Simeone do not control for sampling variations because of geography. Both of their studies drew their sample from women academics in northeastern urban areas of the United States. Their findings may not represent a broad cross section of women academics since the northeast United States has

certain factors unique to its historical involvement in the enterprise of higher education. The strong population of well endowed private universities and of traditional women's colleges in that geographic area may have a significant effect on the sampled population. These studies placed limited control on and discussion of factors other than gender which could significantly affect the findings.

Conclusions from research findings are also hampered by the shifting time frames in which the research was conducted. Research has been gathered over approximately thirty years. During the 1960's only Bernard's book (1964) could be counted as a major work. The same is true of Rossi's work (1973)in the 1970's. Not until the mid to late 1980's are there more researchers in this field. Over the decades the women academics who have responded to these studies have certainly changed in character. The proportion who have married is higher. The range of disciplines in which they are involved is substantially broader. The range of institutions in which they are employed and in what capacities has diversified somewhat. Thus generalizations about current women faculty based on past research must be regarded with caution. While there may be some enduring characteristics, it is much more likely that by the 1990's the character of women as faculty members has changed from what it was in the 1960's. Historical findings about women academics must be treated historically, not as generalizations about current women faculty.

The content of the research findings also seems to focus heavily on analyzing women's scholarly productivity and documenting salary differentials by gender. While both of these are worthy topics for research and analysis, by comparison, less has been done with other worthwhile topics. Almost no researchers have substantial comments (Olsen, 1991 excepted) about service opportunities both within and outside the academy. There is very little known about whether male and female academics shape their careers in distinctly different ways related to service opportunities.

Finally, although geographic mobility or lack thereof is often the source of musings, it is not always a factor that is carefully documented in terms of real differences between male and female academics. Differences between one's perceived mobility and one's actual ability to move are not clearly distinguished. Nor have many links been drawn between perceived mobility and one's choices in career development. Could it be that a perceived lack of mobility is a significant factor in one's decision to invest energies in teaching, service, or administration? As geographic mobility becomes a more important factor in the national academic market possibly affecting rank, salary, and academic recognition, it should be a factor for more attention.

The Assumptions of the Analysis

Professional rewards come from personal, institutional, and disciplinary sources, and the importance of each of these reward sources has shifted over time (Finkelstein, 1984;

Baldwin, 1985). The stakeholders in higher education have not embodied a constant culture of values and the rewards associated with them. Historical research documents significant shifts from early 19th century colleges emphasizing teaching to growing institutions that balanced teaching and public service in the mid 19th century to the development of large universities and professional disciplinary societies that have been increasingly focused on research since the 1950's (Jencks and Reisman,1968). Differing assumptions about institutional cultures, faculty life cycles within them, and faculty reactions to rewards offered influence the resulting analyses that have been done.

Furthermore, women may have different sensitivities to rewards than men. Male and female faculty members may react differently to the institutional cultures represented in their systems of reward, evaluation, and development. In some ways male and female faculty are becoming more similar in their sources of rewards. For males, the power of the institutional reward system over their behavior has been tempered by their strong ties to national societies in their disciplines and the related research visibility. Women, though less tied to such societies in the past, now regard them important like the men. Yet in other ways male and female faculty are still dissimilar in their valued sources of reward. While women and men have equal regard for their disciplines, women faculty are still less loyal to the concept of faculty tenure than their male counterparts (Boyer, 1989). Given such shifting valuation of reward sources, male and female faculty may not react to rewards in the same way.

In addition, incongruence with one's institutional reward system may or may not result in significant dissatisfaction with the institution and a decision to change institutions. Finkelstein (1984) citing research by Borland(1970) and DeVries(1975) is not convinced that incongruities between personal work load preferences and institutional evaluation/ reward systems result in changed individual choices. Responsiveness to the institutional reward system is conditioned by how much weight an individual attaches to it and how much power it has over them. Research by McKeachie (in Becker, 1979) suggests that the job itself, its intellectual stimulation, collegial environment, and social significance may provide personal rewards that are much more highly valued than rewards provided by any outside group. Not all faculty members, particularly in larger institutions, believe they must conform closely to the prevailing institutional model. Thus, even when institutional rewards are not as congruent for females as for males, they may not proclaim serious public dissatisfaction or a desire to change institutions.

Furthermore, most of the research does not link findings about faculty to the emerging literature about faculty life cycles. Research to date has been based on the presumption that the norm for a faculty career is the straight path from undergraduate to graduate school, from graduate school to full-time employment, and from an entry level position to a consistent climb through the faculty ranks, typically moving from more emphasis on teaching to more emphasis on scholarship.

During the 1970's and 1980's new research began to link adult life cycle theories (Sheehy, 1976, Levinson, 1978, Aslanian and Brickell, 1981) with theories of faculty evaluation and career development. Both Furniss(1981) and Baldwin(1982, 1985) described faculty development as a series of stages, each of which may have differing needs and therefore differing emphases on teaching, service, or scholarship. Austin(1983) cites research indicating a saddle-shaped curve for scholarly productivity over the course of a faculty career may be more normative. It also appears that faculty service increases as faculty members progress in their careers. Baldwin(1985) along with others began to argue for more flexible models of faculty work. He emphasized the need for structuring faculty reward systems to foster faculty vitality and to create greater emphasis on systematic faculty development. Based on a broader approach to faculty life cycles and development Eble and McKeachie(1985) recommended changes in faculty development approaches to improve the quality of undergraduate instruction. Most recently Schuster (Bowen and Schuster 1986; Schuster, 1990) has argued that because the quality of the national professoriate is endangered, special attention must be given to systems which enhance faculty motivation, productivity, and effectiveness throughout the course of faculty life cycles. Life cycle theory may not be the perfect basis for faculty development; yet at least such strategies require that institutional systems of faculty evaluation, reward, and development recognize differences in the process of faculty development and respond appropriately.

Researchers in the area of faculty development provide important background for understanding differences in positions, behaviors, and concerns that are found among male and female academics. Their findings result in institutional strategies for cultivating an institution's faculty, namely the structures for rewarding, evaluating, and developing faculty, strategies that embody the operational culture of a college or university. Yet these recent findings about faculty life cycles and arguments for more flexible faculty evaluation and reward systems have not yet been tied to the literature on the work efforts of academic women. Major researchers, with the exception of Jesse Bernard (1964, 1981) have not carefully linked distinct differences between the work efforts of male and female academics to differences in the male and female life cycle. Even faculty life cycle theory to date seems to presume a reasonable homogeneous stage theory that does not differentiate by gender. It presumes a similar set of stages at a similar pace for both sexes. Overlooking possible gender differences in faculty life cycle leaves a tremendous gap in the foundation of most scholarship about male and female faculty differences.

The Disciplinary Source of the Analysis

Finally, it is clear that the research is fragmented by discipline. With the exception of Bernard and Dwyer, other researchers seem to search for explanations about differences between male and female academics only from the perspective of their home disciplines without full recognition of the multitude of factors involved. The explanation for the current state of affairs is a complex combination of personal, organizational, economic,

and cultural variables. Researchers who tend to generalize from one discipline miss the rich contributions of other disciplines to the explanation.

Explanations from the field of organizational behavior seem particularly underdeveloped. The primary work that has been done is either by psychologists, sociologists, or economists. Psychologists may attribute too much influence to personal factors. Sociologists and economists focus on societal factors. There has been little recognition of the role that discrete organizations play in shaping the behavior patterns and preferences of individuals. While some of these organizations may reflect more dominant patterns in society, it is also quite possible that their organizational cultures run contrary to the dominant culture for a variety of reasons. Such reasons may have to do with powerful leaders, unique histories, unique missions, unusual faculty cohorts, or peculiar resource configurations which congeal into unique organizational cultures. With the exception of Kanter (1977) and Morrison (1987) few theorists have evaluated the status of women academics from the perspective of organizational theory. Kanter and Morrison's works are focused on organizational analysis within business corporations, not within higher education. There appear to be no major theorists who have developed analytical frameworks from the school of organizational behavior and culture, carefully using an institutional typology to evaluate the status of women in higher education.

THE RESEARCH UNIVERSITY AS A CONTEXT FOR THIS STUDY

The women attracted to a research university climate may be far different from those who choose employment in liberal arts colleges. Both Jencks and Reisman (1968) and Finkelstein (1984) document the development of the unique character of the research university. Since World War II American society has gradually developed and supported a limited set of higher education institutions in which research is a key justification for existence. The development of such institutions was spurred by the growth in federally funded research in the past four decades, the spreading affirmation of PhD specialization among faculty, the rise of the graduate research model of professional development, and the broadening power of faculty and their disciplinary societies regarding the range and configuration of the curricula.

It is important to note that the difference between the research university and other types of higher education institutions is not in whether faculty have an allegiance to their disciplines. Boyer documents that self-reported allegiance to one's discipline is about the same for faculty across all institutional types. While 77% of faculty in research universities regard such allegiance as "very important", so do 76% of those in liberal arts colleges and 81% of those in two year schools (Boyer, 1989).

The difference is how that allegiance is manifested. It is confounded by institutional type. Institutions, identified as Research I and II schools in the Carnegie classification

scheme, are distinctly different from other types of higher education institutions in the operation of disciplinary allegiance. Clark (1987) compares the unique patterns of time allocation in the research university with those of other schools. The general pattern for Research I and II universities is a teaching load of 4-6 hours per week. This compares with a normal load of 9-12 hours per week at other four year institutions. Thus much more time is available for scholarship in the research universities. In Research I schools 58% of faculty spend over ten hours per week in research compared to 23% in the Liberal Arts I college (Clark, 1987).

The 1988 NSOPF Faculty Survey (SRI International, 1990) confirms these results. From the table below it is apparent that faculty spend a higher percentage of their time doing research in the research and doctoral universities than in other types of institutions. While percentages of time spent in administration, community service, and professional development do not differ appreciably by type of school, the shift from teaching to research activities is a major one for those in research institutions.

TABLE 5 - PERCENTAGE OF TIME SPENT ON VARIOUS ACTIVITIES BY FULL-TIME REGULAR FACULTY, BY TYPE AND CONTROL OF INSTITUTION - FALL 1987

Type and control of institution	Percentage of time spent:					
	Teaching	Research	Admin.	Community Service	Other work	Prof. Devel.
All institutions	56	16	13	4	7	5
Public research	43	29	14	3	7	4
Private research	40	30	14	2	11	4
Public doctoral	47	22	14	3	9	5
Private doctoral	39	27	13	2	14	4
Public comprehensive	62	11	13	4	5	4
Private comprehensive	62	9	14	5	6	4
Liberal arts	65	8	14	5	4	4
Public two-year	71	3	10	5	5	5
Other	59	9	15	5	7	6

Source: SRI International for the National Center for Education Statistics, 1990.

Furthermore, in Research I universities 66% of the faculty teach undergraduate students less than four hours per week; Thirty-one percent of them teach no undergraduates. Seventy-nine percent of these faculty teach some graduate students; twenty-three percent of them teach only graduate students. By comparison in the Liberal Arts I college only 12% of the faculty teach undergraduate students less than four hours per week; only 1% of faculty in such colleges teach only graduate students. (Clark, 1987). It is apparent that when teaching does occur, the research universities have a very strong orientation toward graduate students.

Both the orientation toward graduate students and the time available for investigation shape research university character. The research interests of the faculty are the primary force in the organizational culture. These faculty do not believe that the primary criterion for promotion should be quality teaching (Boyer, 1989). As a replacement for that belief, 94% of them see the number of publications as important for tenure, a measure of merit in which research faculty place great faith. (Boyer, 1989). Faculty power is dominant, particularly related to their disciplinary involvements and commitments. In general there is little faith in central academic administration; the structure of it is typically lean and control over faculty is loose. Clark does note that the structure of control varies by discipline with the humanities having the loosest structure of control within the research university and the professional schools having the tightest structure. Yet, overall, the research university is characterized by great professional flexibility, power and commitments at the departmental level, and a sense of calling first to one's disciplinary research, not to institutional missions in education. These are the highest sources of career satisfaction for faculty in research institutions.

The resulting pattern of organization represents a loose coupling between the technical core and the administrative core of the university. In some typologies of higher education institution, such patterns are referred to as "organized anarchy" (Birnbaum, 1988). Yet there is an underlying logic to the resulting power of departments and individual scholars if one accepts the premise that individual research and scholarship are the driving forces of such institutions.

As has been noted throughout this literature review, research and writing about women academics has not treated differences in institutional typology carefully. Thus there is little scholarship specifically about women faculty in research universities. What is known is that they are few in number and typically spread in the lower ranks. They comprised only 8.0% of the full professors in 20 major research universities in 1989 (AAUP, 1989). Yet very little is known about their job satisfaction, allocation of time, or their geographic mobility. Often the presumption is that they fit more general patterns among female faculty who seem to prefer teaching, gravitate toward a few selected disciplines, have complex career development paths, and prefer scholarship which is applied instead of basic. Only Olsen's 1990 study at Indiana University, a Research I institution, gives some indication that their career paths and preferences may be more similar to the male faculty in that institution than to female faculty who populate other types of higher education institutions.

Further investigation of the research university context is needed to provide a fuller picture of women as academic professionals. Thus, the exploratory research of this dissertation on the faculty within Michigan State University, a Research I university, was undertaken. The purpose of the study was to begin to fill this gap in knowledge about possible gender differences among faculty within such research institutions. By looking intensively at the experiences of faculty in one institution, an in-depth investigation can provide a nuanced analysis of professional satisfactions, the allocation of work effort, and geographic mobility. By studying one institution, these variables can be closely

examined. The results should contribute to knowledge about any differences between male and female faculty and possible reasons for these differences in the research university context.

CHAPTER 3

RESEARCH METHODOLOGY

Researching whether faculty gender differences are significant in a research university context requires a substantial data base which can be analyzed from several vantage points to address key questions. This chapter will describe the source and configuration of the original data base on Michigan State University's faculty used for this study. It will then explain how that data base was manipulated for the purposes of this study. Finally the chapter will focus on the research methodologies used on this data base to explore the following specific questions:

1. Are male and female faculty in Michigan State University, a Research I institution, different from each other on measures of professional satisfaction, allocation of work effort, and geographic mobility?

2. If significant differences between male and female faculty are found, can they be primarily and/or directly attributed to the effects of gender?

3. If these differences cannot be directly attributed to gender, what other factors are significant contributors to differences between male and female faculty on these three

measures? Specifically do age, marital status, children in the family, or the culture of one's college within the university, contribute to noticeable male/female differences?

These foci, professional satisfaction, allocation of work effort, and geographic mobility, were chosen for investigation because little is known about these factors and their relation to gender in the research university context. The literature search revealed that much more investigation had occurred into differences in professional degree, rank, salary, and some other factors of career mobility in the research university. However, it appears that differences between male and female faculty regarding the nature of the work itself, namely effort exerted and satisfactions gained, and the issue of geographic mobility related to career mobility have been less carefully explored. The intent of this exploratory dissertation is to begin to fill some of the gaps in the knowledge base about gender and faculty in the research university context.

THE SURVEY DATA BASE

The research data base was constructed from a survey which was sent to all tenured and tenure track faculty at Michigan State University during the spring of 1991.

Several researchers contributed to the development of the survey instrument. The chief contributors were Dr. Kathryn Moore, chairperson of the Department of Educational Administration at Michigan State University; Dr. Philip Gardner, Director of the

Collegiate Employment Research Institute housed on the campus of Michigan State; and Dr. Linda Forrest, Professor of Counseling and Educational Psychology at Michigan State University. They were ably assisted by Bob Nienhuis, then graduate assistant to Dr. Kathryn Moore.

The primary objective of the survey was to explore faculty career choices and challenges in a changing academic environment. Particular emphasis was placed on relative job satisfaction, the allocation of work effort between a variety of academic tasks, the likelihood and rationale for leaving or staying at Michigan State University, challenges presented by dual career employment among academic partners, and university issues of concern to faculty. Some sections of the survey were constructed by the researchers. Other sections were borrowed from related national surveys of faculty with the hope that some of the data gathered could be compared with national norms. The survey as administered is shown in Appendix A. All respondents to the survey were promised confidentiality regarding their responses.

The survey was mailed to all Michigan State University faculty who were tenured or in tenure track appointments. Subsequent to the initial mailing, a second copy of the survey with a cover letter was sent to all non-respondents to increase the response rate. Phone calls were made to several colleges within the university to encourage higher response rates in schools with low response rates. A decision was made not to further pursue non-respondents beyond this point. The end of the spring academic term was approaching;

the researchers did not want to unnecessarily irritate busy faculty; and the response rate was judged to be sufficient for the researchers' purposes.

A comparative summary of the survey response rates to total university faculty by unit of university appointment and gender is shown in Table 6. The table indicates that a slightly higher percentage of women than men faculty responded. Yet in both cases a usable sample of those surveyed did respond.

TABLE 6-COLLEGE DISTRIBUTION OF UNIVERSITY FACULTY AND THEIR SURVEY RESPONSE RATES BY GENDER

College	Total College Faculty			Total survey respondents			Survey respondents as % of college population		
	M	F	T	M	F	T	M	F	Total
1	246	42	288	156	15	171	63.4	35.7	59.4
2	178	70	248	81	44	125	45.5	62.9	50.4
3	119	24	143	49	11	60	41.2	45.8	42.0
4	47	15	62	29	10	39	61.7	66.7	62.9
5	96	56	152	64	31	95	66.7	55.4	62.5
6	124	9	133	48	7	55	38.7	77.8	41.4
7	11	33	44	5	27	32	45.5	81.8	72.7
8	94	21	115	49	14	63	52.1	66.7	54.8
9	16	3	19	5	3	8	31.3	100.0	42.1
10	271	43	314	113	20	133	41.7	46.5	42.4
11	2	24	26	2	10	12	100.0	41.7	46.2
12	106	30	136	35	7	42	33.0	23.3	30.9
13	152	43	195	82	27	109	54.0	62.8	55.9
14	1	-	1	3	-	3	100.0	-	100.0
15	88	12	100	37	5	42	42.0	41.7	42.0
16	24	11	35	8	1	9	33.3	9.7	25.7
17	13	4	17	7	5	12	53.8	100.0	70.6
All colleges	1588	440	2028	773	237	1010	48.7	53.9	49.8
				plus missing cases = 14 survey respondents = 1024			50.5% response rate		
College Key:	1 = Agriculture and Natural Resources 2 = Arts and Letters 3 = Business 4 = Communications Arts 5 = Education 6 = Engineering			7 = Human Ecology 8 = Human Medicine 9 = James Madison 10 = Natural Science 11 = Nursing 12 = Osteopathic Medicine			13 = Social Science 14 = Urban Affairs 15 = Veterinary Medicine 16 = Non-College Faculty 17 = Other		

The survey data base can also be compared in the distribution of responses by academic rank to the total university rank distribution as shown in Table 7 below.

TABLE 7-COMPARATIVE RESPONSE RATE BY ACADEMIC RANK

Academic Rank	MSU faculty distribution	Survey response distribution
Professor	54%	55%
Associate	27%	24%
Assistant	15%	17%
Specialist and Other*	4%	4%
TOTAL	100%	100%
*Note: Specialist and other includes all members of the academic staff who have teaching/advising responsibilities but do not have faculty rank.		

From Table 7 it is clear that the survey elicited responses by rank which approximate the rank distribution in the university.

Survey responses can also be described by examining the number of male and female respondents by academic rank in each unit of appointment as shown in Table 8. Most colleges had a substantial number of respondents, although the number was very small in a few colleges.

TABLE 8-SURVEY RESPONDENTS BY UNIT OF APPOINTMENT, RANK, AND GENDER

Unit of Appointment	Specialist		Assistant		Associate		Full		Other		Total
	M	F	M	F	M	F	M	F	M	F	
1	2	2	18	5	30	3	105	5	1	-	171
2	-	-	8	14	14	14	59	16	-	-	125
3	1	1	6	6	14	4	28	-	-	-	60
4	-	3	8	4	9	3	12	-	-	-	39
5	-	1	3	7	18	12	42	11	1	-	95
6	1	4	13	2	7	1	27	-	-	-	55
7	-	2	1	4	-	12	4	9	-	-	32
8	-	1	5	2	12	7	32	4	-	-	63
9	-	-	2	2	-	-	3	1	-	-	8
10	3	5	18	4	15	5	77	6	-	-	133
11	-	-	2	5	-	2	-	3	-	-	12
12	-	-	2	4	13	2	20	1	-	-	42
13	2	3	13	9	18	6	49	9	-	-	109
14	-	-	-	-	2	-	1	-	-	-	3
15	-	-	7	1	10	4	20	-	-	-	42
16	-	-	-	1	1	-	7	-	-	-	9
17	-	-	-	-	-	-	-	-	7	5	12
Totals	9	22	106	70	163	75	486	65	9	5	1010
										Plus missing cases	14
											1024

Key:			
	1 = Agriculture and Natural Resources	7 = Human Ecology	13 = Social Science
	2 = Arts and Letters	8 = Human Medicine	14 = Urban Affairs
	3 = Business	9 = James Madison	15 = Veterinary Medicine
	4 = Communications Arts	10 = Natural Science	16 = Non-College Faculty
	5 = Education	11 = Nursing	17 = Other
	6 = Engineering	12 = Osteopathic Medicine	

Finally, the relationship of survey respondents' age to their rank and sex should be noted. Table 9 displays the mean age of the survey respondents by both rank and sex.

TABLE 9-MEAN AGE OF SURVEY RESPONDENTS BY RANK AND SEX

Rank / Sex	Full Professor	Associate Professor	Assistant Professor	All Ranks
Female	53	44	39	45
Male	54	45	37	50
Note: Average age of all survey respondents is 49.				

There is little difference between the male and female respondents in terms of the relationship between their mean ages and related academic ranks. At most they differ by an average of two years. Yet the total mean across all ranks varies a bit more with females averaging five years younger than males. To a large degree this simply reflects the larger percentage of women respondents from the assistant and associate ranks. As Table 8 shows, female respondents are more evenly spread by rank, while the average of the male respondents is much more heavily weighted by those in the full professor rank.

In general the survey respondents' group corresponds well to the rank distribution of the university. The survey results also indicate that age of respondents, whether male or

female, is very similar by rank. In these regards the survey is a very adequate sample of the population.

Yet the response rates by college show more variation. The range by college is from a 25.7% to 72.7% response rate. Thus it is clear that some colleges are more strongly represented in the survey results than are others. While the respondents' rank distribution may be representative, their distribution by college is less representative.

There are also significant variations in the male versus female response rates. The average female respondent was younger than the average male by five years. The female response rate to the survey was also 5.2% higher than the male response rate. These variations do color the aggregate results. The variation in response rate was also greater when it was reviewed in particular colleges. Only three of the colleges have response rates for males and females within five percentage points of each other. In all of the other colleges the spread in response rates is larger. In the remaining fourteen colleges men have higher response rates in six of them and women have higher response rates in the other eight. In examining individual colleges with differences between male and female response rates greater than 25%, it is clear that in most cases it is the result of a very small group of males or females from whom to draw responses. For example, in the College of Nursing, males have a 100% response rate. However, this simply indicates that the two total male faculty in that college did respond. When there are only two faculty of a given sex who could possibly respond, the differences in response rates

are understandable. Only in the College of Agriculture and Natural Resources and the College of Human Ecology are the pools of both males and females large enough to conclude that the differences in response rates are highly significant.

Given that the survey results show such differences in response rates by colleges and by the male and female faculty within them, it is more logical to work with the survey data in the aggregate than by specific college. Specific differences by college will be smoothed out in a larger pool, although it is still important to note the overall higher response rate of female faculty.

USE OF THE SURVEY

Given the broad range of questions asked in the original survey it could be used to investigate a wide range of faculty characteristics and attitudes. However, given this study's focus on selected areas of analysis related to possible gender differences, only certain survey questions were used for further statistical analysis. Each of these questions appears below with the assigned variable names appearing on the right side of the page with their respective questions. The following questions were used from the Faculty Mobility Survey (see Appendix A for original survey):

FACULTY MOBILITY SURVEY - SELECTED QUESTIONS

Part I. **Questions in this section concern your academic appointment and the general level of job satisfaction you experience in your current position.**

1. What is your current academic rank at Michigan State University? (PLEASE CIRCLE ONE NUMBER) *Original Variable name: Rank*

Professor	1
Associate Professor	2
Assistant Professor	3
Instructor	4
Specialist	5
Other: _____	6

5. In which college or unit is your primary appointment? (PLEASE CHECK ONE) *Original Variable Name: College*

___a. Agriculture and Natural Resources	___i. James Madison
___b. Arts and Letters	___j. Natural Science
___c. Business	___k. Nursing
___d.Communication Arts	___l. Osteopathic Medicine
___e. Education	___m. Social Science
___f. Engineering	___n. Urban Affairs
___g. Human Ecology	___o. Veterinary Medicine
___h. Human Medicine	___p. Non-College Faculty
	___q. Other:_____

8. How satisfied or dissatisfied do you *personally* feel about each of the following aspects of your job at Michigan State University? (PLEASE CIRCLE ONE NUMBER FOR EACH ITEM)

	Very Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Very Satisfied	Not Applicable	Original Variable Name
My work load	1	2	3	4	5	8	Sat1
My job security	1	2	3	4	5	8	Sat2
The authority I have to make decisions about what courses I teach	1	2	3	4	5	8	Sat3
The authority I have to make decisions about content and methods in the courses I teach	1	2	3	4	5	8	Sat4
The authority I have to make decisions about other (noninstructional) aspects of my job	1	2	3	4	5	8	Sat5
Time available to work on scholarship and research	1	2	3	4	5	8	Sat6
The mix of teaching, research, administration, and service (as applicable) that I am required to do	1	2	3	4	5	8	Sat7
Opportunity for my advancement in rank at Michigan State University	1	2	3	4	5	8	Sat8
Time available for working with students as an advisor, mentor, etc.	1	2	3	4	5	8	Sat9

	Very Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Very Satisfied	Not Applicable	Original Variable Name
Availability of support services (including clerical support)	1	2	3	4	5	8	Sat10
Availability of equipment (personal computers, etc.)	1	2	3	4	5	8	Sat11
Freedom to do outside consulting	1	2	3	4	5	8	Sat12
My salary	1	2	3	4	5	8	Sat13
My benefits, generally	1	2	3	4	5	8	Sat14
Overall reputation of Michigan State University	1	2	3	4	5	8	Sat15
Institutional mission to carry out teaching, research, and public service	1	2	3	4	5	8	Sat16
Quality of leadership in my department/program	1	2	3	4	5	8	Sat17
Quality of chief administrative officers at Michigan State University	1	2	3	4	5	8	Sat18
Quality of my colleagues in my department/program	1	2	3	4	5	8	Sat19
Quality of graduate students whom I have taught here	1	2	3	4	5	8	Sat20
Quality of undergraduate students whom I have taught here	1	2	3	4	5	8	Sat21
Teaching assistance that I receive	1	2	3	4	5	8	Sat22
Research assistance that I receive							
Opportunities for professional growth and development offered by my academic unit	1	2	3	4	5	8	Sat23
Cooperation offered by support staff at Michigan State University	1	2	3	4	5	8	Sat24
Quality of faculty leadership (e.g., Academic Senate) at Michigan State University	1	2	3	4	5	8	Sat25
Relationship between administration and faculty at Michigan State University	1	2	3	4	5	8	Sat26
Interdepartmental cooperation at Michigan State University	1	2	3	4	5	8	Sat27
Spirit of cooperation among faculty at Michigan State University	1	2	3	4	5	8	Sat28
Quality of my research facilities and support	1	2	3	4	5	8	Sat29
My job here, overall	1	2	3	4	5	8	Sat30

9. Please estimate the percentage of your total working hours that you spent on each of the following activities during the 1990 Fall Term. (PLEASE GIVE YOUR BEST ESTIMATES IF NOT SURE: IF NONE, ENTER "0")

Note: The percentages you provide should sum to 100% of the total time you spent on professional activities.	Percent	Original Variable Name
Teaching (preparing courses; developing new curricula; teaching; grading papers.)	_____	Pteach
Research and Scholarship (planning for and conducting research; preparing for and giving performances and exhibitions in the fine arts; preparing or reviewing articles or books; preparing for and attending professional meetings or conferences; seeking outside funding, including proposal writing.)	_____	Prsp
Advising Students (advising undergraduate and graduate students; working with student organizations.)	_____	Pads
Professional Development (taking courses; pursuing an advanced degree or participating in other practices to remain current in your discipline.)	_____	Ppdt
Service and Extension (preparing and giving speeches that build upon your professional expertise; providing of technical assistance, policy analysis, program evaluation, medical or veterinary services, psychological counseling and therapy; consulting outside with or without remuneration.)	_____	Psex
Administration and Governance (participating in faculty governance; participating in departmental or institutional committees and task forces; managing and coordinating programs or personnel.)	_____	Padgv
Other (PLEASE SPECIFY):_____ _____	_____	Poth
Please be sure that your percentages total:	*100%*	

Part II. In this section, we ask you to consider the likelihood of leaving your current position to do something else.

1a. If you had the opportunity to restructure your current position, would you want to do more, less, or about the same amount of each of the following? (PLEASE CIRCLE ONE NUMBER FOR EACH ITEM)

	Much Less	Somewhat Less	Same Amount as I Now Do	Somewhat More	Much More	Original Variable Name
Teaching	1	2	3	4	5	Rscp1
Research and Scholarship	1	2	3	4	5	Rscp2
Advising Students	1	2	3	4	5	Rscp3
Professional Development	1	2	3	4	5	Rscp4
Service/Extension	1	2	3	4	5	Rscp5
Administration & Governance	1	2	3	4	5	Rscp6

2. Given your situation at Michigan State University and the job market in your field, how likely are you to take these actions within the next two years:

	Very unlikely	Somewhat Unlikely	Neutral	Somewhat Likely	Very Likely	Original Variable Name
a. Seek a new position at Michigan State University	1	2	3	4	5	Tkact1
b. Look for a position at another institution	1	2	3	4	5	Tkact2

3. Faculty consider many factors when weighing an opportunity to leave an institution like Michigan State University. Listed below are factors that you may contemplate in deciding to leave the university. Indicate the relative degree of importance each factor could have in making your decision.

	Not An Important Reason At All To Leave	Somewhat Important Reason to Leave	Fairly Important Reason to Leave	Very Important Reason to Leave	Extremely Important Reason to Leave	Original Variable Name
Reputation of institution	1	2	3	4	5	Deglv1
Service Load	1	2	3	4	5	Deglv2
Availability of internal research funds	1	2	3	4	5	Deglv3
Congeniality of colleagues	1	2	3	4	5	Deglv4
Job Security/tenure	1	2	3	4	5	Deglv5
Rapport with departmental leadership	1	2	3	4	5	Deglv6
Promotion in rank	1	2	3	4	5	Deglv7
Career advancement	1	2	3	4	5	Deglv8
Reputation of associates	1	2	3	4	5	Deglv9
Base salary	1	2	3	4	5	Deglv10
Research load	1	2	3	4	5	Deglv11
Benefit package	1	2	3	4	5	Deglv12
Administrative load	1	2	3	4	5	Deglv13
Research opportunities	1	2	3	4	5	Deglv14
Teaching load	1	2	3	4	5	Deglv15
Teaching assignments and/or opportunities	1	2	3	4	5	Deglv16
Rapport with university leadership	1	2	3	4	5	Deglv17
Availability of internal research funds	1	2	3	4	5	Deglv18
Reputation of department	1	2	3	4	5	Deglv19
Institutional mission/philosophy	1	2	3	4	5	Deglv20
Influence in department	1	2	3	4	5	Deglv21
Competence of colleagues	1	2	3	4	5	Deglv22
Secretarial support	1	2	3	4	5	Deglv23
Receipt of merit pay	1	2	3	4	5	Deglv24
Influence in college	1	2	3	4	5	Deglv25
Library facilities	1	2	3	4	5	Deglv26
Laboratory/research facilities	1	2	3	4	5	Deglv27
Office facilities	1	2	3	4	5	Deglv28

	Not An Important Reason At All To Leave	Somewhat Important Reason to Leave	Fairly Important Reason to Leave	Very Important Reason to Leave	Extremely Important Reason to Leave	Original Variable Name
Reduced tuition for family	1	2	3	4	5	Deglv29
Rapport with college leadership	1	2	3	4	5	Deglv30
Emphasis on publishing	1	2	3	4	5	Deglv31
Sabbatical, leave, travel, and study policies	1	2	3	4	5	Deglv32
Consulting opportunities	1	2	3	4	5	Deglv33
Spouse's career opportunities	1	2	3	4	5	Deglv34
Geographic considerations	1	2	3	4	5	Deglv35
Cultural, recreational, and social opportunities	1	2	3	4	5	Deglv36
Climate of region	1	2	3	4	5	Deglv37
Housing costs	1	2	3	4	5	Deglv38
Proximity of extended family	1	2	3	4	5	Deglv39
Extensive and/or close network of friends living locally	1	2	3	4	5	Deglv40
Loyalty to institution	1	2	3	4	5	Deglv41
Loyalty to department/program	1	2	3	4	5	Deglv42
Appreciation for my work	1	2	3	4	5	Deglv43
Influence in institution	1	2	3	4	5	Deglv44

III-7. Considering all the factors that can influence your employment, how interested are you in leaving or remaining at Michigan State University? (PLEASE CIRCLE ONE NUMBER) *Original Variable Name: LVORM*

Very Interested in Leaving for Another Position	Somewhat Interested in Leaving for Another Position	About Equally Interested in Leaving and Staying	Somewhat Interested in Remaining in Present Position	Very Interested in Remaining in Present Position
1	2	3	4	5

IV-16. In making a final decision about leaving or staying, how free (based on your individual desires) or constrained (based on job, family or relationship factors that you may not be able to control) do you believe your decision would be?

Original Variable Name: FREE

Totally Free	Fairly Free		Fairly Constrained	Totally Constrained
1	2	3	4	5

C. How important do you think the following should be in determining faculty rewards:

	Not Very Important	Somewhat Important	Fairly Important	Very Important	Extremely Important	Original Variable Name
1. Tenure						
Teaching	1	2	3	4	5	Tenu1
Research/Scholarship	1	2	3	4	5	Tenu2
Advising	1	2	3	4	5	Tenu3
Service/Extension	1	2	3	4	5	Tenu4
Admin./Governance	1	2	3	4	5	Tenu5
2. Promotion in Rank						
Teaching	1	2	3	4	5	Promr1
Research/Scholarship	1	2	3	4	5	Promr2
Advising	1	2	3	4	5	Promr3
Service/Extension	1	2	3	4	5	Promr4
Admin./Governance	1	2	3	4	5	Promr5
3. Merit Increases						
Teaching	1	2	3	4	5	Mtin1
Research/Scholarship	1	2	3	4	5	Mtin2
Advising	1	2	3	4	5	Mtin3
Service/Extension	1	2	3	4	5	Mtin4
Admin./Governance	1	2	3	4	5	Mtin5

PART VI. Demographic Information

1. In what year were you born? 19____ *Original Variable Name: Born*

2. What is your sex? Male ____ Female ____ (PLEASE CHECK ONE)

Original Variable Name: Sex

4. What is your current marital status? (CIRCLE ONE NUMBER)

Original Variable Name: Marry

Single, never married	1	Divorced	4
Married, Cohabitating	2	Widowed	5
Separated	3		

5. If you have children, how many do you have? _____ What are their ages?
Original Variable Name: NChild

These questions were selected by the researcher as those which most clearly addressed the exploratory scope of this dissertation without introducing unnecessary overlap into the study. The questions listed above relate to the chosen areas of investigation in the following way:

TABLE 10 - USE OF SURVEY QUESTIONS

AREAS OF INVESTIGATION	SURVEY QUESTIONS USED
Dependent variables	
Work Satisfaction	I-8; II-3
Allocation of Work Effort	I-9; II-11, V-C, 1-3
Geographic Mobility	III-7, II-2a,b; IV-16
Independent variables	
Demographic characteristics	I-1; I-5; VI-1,2,4,5

There are several reasons these questions were selected from the survey and others were not used. Several sections of unused questions did not focus on the topics of this dissertation. A significant number of questions asked respondents about their salaries, careers in relationship to those of partners, and alternative plans, if they believed it likely they'd leave Michigan State University. In general these questions focused either on negotiating a change in current status or hypothetical outcomes of that change rather than on work itself at Michigan State. While these are worthy topics of research they were outside the scope of this dissertation.

However, one set of responses which might be perceived as focused on leaving the university was used, namely section II-3 of the survey. This section was used to evaluate the importance of these factors to the respondent as sources of satisfaction. It was used in relationship to section I-8 of the survey which asked about respondent satisfaction in several different categories. The intent of using section II-3, therefore, was only to measure whether possible sources of satisfaction in I-8 were important to the respondents. Section II-3 in the survey was not used to specifically investigate leaving Michigan State University since the focus of this research was work effort and satisfaction and the likelihood of geographic mobility, not the reasons for mobility.

Some of the demographic questions were also eliminated as variables for analysis. The focus of this dissertation is current employment and gender. Thus information gathered about previous employment and minority status was also outside the focus of this dissertation.

Information related to tenure also was not used as a central part of this analysis. While tenure status would seem to be a logical variable for analysis the high levels of tenure at Michigan State University (80%) and the strong relationship between rank and tenure make data about tenure less useful. A crosstabulation of rank and tenure reveal a very strong relationship between these variables within the faculty. Table 11 illustrates that relationship among survey respondents.

TABLE 11 - CROSSTABULATION OF RANK AND TENURE STATUS OF SURVEY RESPONDENTS

	Rank		
Status	Full Prof.	Assoc. Prof.	Asst. Prof.
Not tenure track	4	4	2
Tenure track	3	13	162
Tenured	553	229	14

Given this strong relationship between rank and tenure, rank was chosen as the variable on which to conduct further analysis.

Other questions appeared to overlap unnecessarily with chosen questions noted in Table 10. Relevant responses in sections V-A and B were also covered in section V-C. Thus, sections V-A and B were not used in this analysis.

CONSTRUCTING THE SET OF RESEARCH VARIABLES

Several of the chosen questions had multiple items to which survey participants were asked to respond. Examining the survey in Appendix A, using Question I-8 as an example, it is apparent that responses on the issue of professional satisfaction were further segmented into 31 areas of response. Thus question I-8 in its initial configuration yielded 31 different variables to be measured and manipulated. Among the other

questions chosen, several of them were similarly constructed. In total there were 112 original variables which this researcher handled.

Focusing on an analysis with this large number of variables is difficult. Since many of these variables overlapped in their foci, it seemed reasonable to consolidate at least some of these variables. From reviewing the survey questions some consolidations seemed logical to this researcher. However they were then tested for the reliability of these consolidations by investigating the correlations among the items and using Cronbach's Alpha as a test of reliability for the consolidations that were done. The net result was that of the 112 variables, 82 of them were collapsed into 14 new variables. If items could not be consolidated with a Cronbach's Alpha of at least .7, the anticipated consolidations were not carried out. Table 12 documents which variables were consolidated and the names of the new variables:

TABLE 12-CONSOLIDATION OF SELECTED RESEARCH VARIABLES

New variable name	New variable meaning	Old variables consolidated	Cronbach's Alpha
WORKSAT	Satisfaction with the work itself	SAT1, SAT6, SAT7, SAT9,	.8330
CLIMSAT	Satisfaction with the departmental and university climate for work	SAT3, SAT4, SAT5, SAT12, SAT15, SAT16, SAT17, SAT18, SAT19, SAT26, SAT27, SAT28, SAT29	.8301
SUPPSAT	Satisfaction with institutional support for one's work	SAT10, SAT11, SAT22, SAT23, SAT25, SAT30	.7946
IWORKSAT	Importance to respondent of satisfaction with work	DEGLV2, DEGLV11, DEGLV13, DEGLV15, DEGLV16, DEGLV21, DEGLV25, DEGLV31, DEGLV44	.8283
ICOSESAT	Importance to respondent of satisfaction with compensation and job security	DEGLV5, DEGLV10, DEGLV12, DEGLV24, DEGLV29	.7754
ICLIMSAT	Importance to respondent of departmental and university climate	DEGLV1, DEGLV4, DEGLV6, DEGLV8, DEGLV17, DEGLV19, DEGLV20, DEGLV22, DEGLV30, DEGLV41, DEGLV42, DEGLV43	.8809
IOPPSAT	Importance to respondent of career opportunities	DEGLV7, DEGLV8, DEGLV14, DEGLV32, DEGLV33	.7634
ISUPPSAT	Importance to respondent of institutional support	DEGLV3, DEGLV18, DEGLV23, DEGLV26, DEGLV27, DEGLV28	.7846
INOINSAT	Importance to respondent of noninstitutional satisfactions	DEGLV34, DEGLV35, DEGLV36, DEGLV37, DEGLV38, DEGLV39, DEGLV40	.8371
RETTTRM	Importance of teaching for tenure, promotion, and merit increases	TENU1,PROMR1,MTIN1	.9547
RERTRM	Importance of research for tenure, promotion, and merit increases	TENU2, PROMR2, MTIN2	.9486
REATRM	Importance of advising for tenure, promotion, and merit increases	TENU3, PROMR3, MTIN3	.9361
RESTRM	Importance of service for tenure, promotion, and merit increases	TENU4, PROMR4, MTIN4	.9564
REGTRM	Importance of administration/ governance for tenure, promotion, and merit increases	TENU5, PROMR5, MTIN5	.9110

It is important to note that the collapse of a few variables was not carried out as planned. Because numerous combinations of these variables resulted in Cronbach's Alphas below .7, much closer to .5, it was deemed more reasonable to allow these variables to remain in their original form. These variables were Sat2, Sat8, Sat13, Sat14, Sat20, Sat21, and Sat24.

In collapsing variables it is important to note the treatment of missing values. A missing values code was entered when survey respondents did not provide a response to an item or provided responses that violated the survey's instructions. In SPSS, the statistical software used for this analysis, each time a missing value occurs, that respondent case is normally dropped from the process of consolidating values for a new variable. Thus, if some numerical response is not inserted when old variables have missing values, the number of cases on which a new variable was based might drop below 50% of the survey respondents. This occurred particularly when several old variables were being collapsed into one new variable. To resolve this problem missing responses were replaced with the mean response for each of the old variables. While this kept almost all cases in the pool upon which new variables were created, such a strategy does introduce a bit more conservatism into the statistical results. To some degree it counteracts sensitivity to the range of the responses by using this central measure with missing value cases. However, this researcher deemed this strategy preferable to eliminating up to half of the possible cases in the respondent pool in the construction of many of the new variables.

In addition to these new variables created through the collapse of several related variables, several other variables in the survey were used in their original form. All variables used in the original form are shown in Table 13.

TABLE 13-OTHER SURVEY VARIABLES USED

Variables examining work satisfaction:	
Sat2	Sat20
Sat8	Sat21
Sat13	Sat24
Sat14	
Variables examining the allocation of work time:	
Pteach	RSCP1
Prsp	RSCP2
Pads	RSCP3
Ppdt	RSCP4
Psex	RSCP5
Padgv	RSCP6
Poth	
Variables examining geographic mobility:	
TKACT1	
TKACT2	
LVORM	
FREE	
Variables examining demographic characteristics:	
BORN	
SEX	
MARRY	
NCHILD	
RANK	

Together the variables in tables 12 and 13 comprise the entire set of 43 research variables that was used to focus on issues of professional satisfaction, allocation of work

time, and geographic mobility in relation to the demographic characteristics. The 5 demographic characteristic variables functioned as independent variables and the other 38 as dependent variables.

STATISTICAL METHODOLOGIES

Findings are analyzed at an aggregate all-university level to investigate whether there are significant differences between the male and female faculty at Michigan State University using both one-way and multiple analysis of variance. Initially a simple methodology is used to examine the effects of a single independent variable, namely SEX, on the 38 dependent variables noted above. This is an initial examination of the effect of gender on work satisfaction, allocation of work time, and geographic mobility.

In this first step of analysis, given gender as a nominal category and Likert scaled responses which can be treated as interval data, the appropriate statistical test is the one-way anova and its corresponding F-test. The null hypothesis, Ho, is that there is no difference between male and female faculty members in the population on mean responses to variables about work satisfaction, allocation of work time, and geographic mobility. Alpha is set at .05. The larger the F statistic, the smaller the F significance, and the more likely that this researcher can reject the null hypothesis of no difference in the mean scores of males and females within the population. The one-way ANOVA test assumes normally distributed sample means and homoscedasticity.

Following some initial investigation, the ANOVA methodology is then more extensively used to evaluate the effects of multiple classification variables at the same time, testing not only for the main effects of individual variables, but also for the combined effects between variables, namely the interaction effects. This methodology provides an easily accessible evaluation of effects. It also provides a foundation for developing appropriate regression equations. If there are significant interaction effects, interactions terms must be introduced into later regression equations.

With this ANOVA two null hypotheses are being tested, Ho-1, that each of the independent variables individually has no significant effect on the dependent variables being evaluated, and Ho-2, that there is no significant interaction effect between the independent variables.

ANOVAS at an all-university level are run combining variables SEX, RANK, MARRY, NCHILD, with BORN as a covariate to investigate both the individual and interactions effects among these variables. An alpha level of .05 will also be used in this portion of the analysis. Again if an F statistic generated by the two way anova is larger, the F significance is smaller. If the F significance is less than .05, the null hypothesis can be rejected. If an F significance is greater than .05, the null hypothesis about the relationship between the variables cannot be rejected.

As a final step in this study selected variables are analyzed in more detail using regression analysis to investigate some of the key findings regarding allocation of work effort. The central mission of a research university involves the balance of commitments to research and teaching. Preliminary analyses have indicated that this balance differs by sex. Regression analysis is used to investigate the degree of direct gender effects as well as the effects of other variables which may contribute to differences in the allocation of work time among males and females.

Since the core culture of a research university is to the greatest degree determined by its dual commitments to both the creation and dissemination of knowledge, regression analysis focuses on four dependent variables which analyze these two activities. They are PTEACH, PRSP, RSCP1, and RSCP2. These variables measure both the current allocation of time to teaching (PTEACH) and research (PRSP) and the preferred allocation of time to teaching (RSCP1) and research (RSCP2).

The independent variables in these four regressions are SEX, RANK, BORN, MARRY, NCHILD, and two newly created variables named GC and ROC. SEX, RANK, BORN, MARRY, and NCHILD are independent variables which represent a faculty member's personal characteristics or situation. GC and ROC as defined below try to capture the culture of the college structures in which faculty members operate. The intent is, therefore, to allow both personal and structural explanations for differences to surface.

GC, one of the two new independent variables, reflects the gender composition of faculty in each of the colleges. The underlying assumption is that the balance of male and female faculty members may effect the culture of the college and resulting attitudes about teaching and research. GC was constructed by calculating the percentage of female faculty members in each of the colleges. This calculation, therefore, presumes that the gender composition of the entire college, not just those who responded to the survey, may influence the allocation of work effort. GC for each of the colleges is shown below:

TABLE 14 - FEMALES AS A PROPORTION OF MSU COLLEGE FACULTIES

College	GC
Agriculture and Natural Resources	.146
Arts and Letters	.282
Business	.168
Communication Arts	.242
Education	.368
Engineering	.068
Human Ecology	.750
Human Medicine	.183
James Madison	.158
Natural Science	.137
Nursing	.923
Osteopathic Medicine	.221
Social Science	.221
Urban Affairs	.000
Veterinary Medicine	.120
(Note: Non-College Faculty who retain faculty status were excluded from the analysis)	

ROC, the second of two new independent variables, is used as a measure of the relative research orientation of each of the colleges. The measure of ROC in each college is the mean survey response on the variable PRSP of those who represent the majority sex among faculty in each college. The PRSP variable measures the current percentage of time allocated to research among survey respondents. This presumes that numerical dominance equates to power in shaping the relative nature of the research/teaching culture within the school. The use of this dominant faculty group mean prevents a blurring of distinctions between males and females within each college. Such a blurring may occur if an average combining male and female scores on research orientation within each college is used instead.

The ROC for each of the colleges is shown below:

TABLE 15 - PERCENTAGE OF TIME SPENT ON RESEARCH (ROC) FOR MAJORITY SEX AMONG FACULTY BY COLLEGE

College	ROC	Majority Sex
Agriculture and Natural Resources	27.89	Male
Arts and Letters	20.47	Male
Business	32.02	Male
Communication Arts	21.72	Male
Education	21.59	Male
Engineering	31.06	Male
Human Ecology	17.84	Female
Human Medicine	26.78	Male
James Madison	17.00	Male
Natural Science	34.90	Male
Nursing	13.32	Female
Osteopathic Medicine	20.31	Male
Social Science	25.58	Male
Urban Affairs	26.67	Male
Veterinary Medicine	25.13	Male
(Note: Non-College Faculty who retain faculty status were excluded from the analysis)		

The assumption underlying the use of both GC and ROC is that one's college of appointment will provide an appropriate basis on which to differentiate. It likely does differentiate the organizational culture in which faculty members work to some degree. However, it can be argued that a better differentiator would be a faculty member's field of study. Unfortunately, survey respondents were not asked to indicate their academic disciplines. In addition no department codes, indicating department within a college, were included in the data base. Instead respondents were only asked in which college

they held appointment. Thus, differentiations at the all-college level must suffice to simulate some of the effects of chosen field of study and specific college culture.

To run regression analysis four nominal variables were converted to dummy variables. SEX, being a dichotomous variable, was already effectively in dummy form. RANK was changed by differentiating only between assistant professors (primarily non-tenured but tenure track) and a grouping of associate and full professors (tenured with very few exceptions - see Table 11). Thus RANK now reflected primarily differences in experience as well as tenure status. MARRY was converted into a dummy variable by collapsing the response categories of single, separated, divorced, and widowed into one category reflecting current non-partnered status. This could be contrasted with "married/cohabitating" which reflected partnered status. Thus, in effect, the variable MARRY now compares partnered and non-partnered status. Similarly NCHILD was converted into a dichotomous variable. All distinctions in numbers of children were blended together to form a dichotomy between no children and any children. Thus NCHILD now represents that dichotomy.

Tests for linearity, normality and homoscedasticity have been run on PTEACH, PRSP, RSCP1, and RSCP2 to determine whether the assumptions of regression analysis methodology, namely linearity, normality, and homoscedasticity in the population, can be met. Scatterplots were examined for evidence of non-linearity. Skews and their standard errors were reviewed to detect whether the residuals were normally distributed

in the population. Tests for homoscedasticity were run to determine whether the variance in the dependent variables in the population was the same at all levels of the independent variables, using Cochran's C as a measure of equality of variance. The results of these tests are reported in Chapter four.

LIMITATIONS OF THIS STUDY

While this study may prove helpful in unraveling the complex differences between male and female faculty, it is important to recognize its limitations because of its sample population, the survey itself, and the methodologies employed in the analysis.

This dissertation presents only a snapshot of one university at one point in its development by surveying the faculty population of Michigan State University. It is important to recognize this study as an intrauniversity analysis. Given that, the results at other institutions may vary. While classified as a Research I institution, Michigan State University is also one of 68 land grant colleges and universities in the United States. The land grant nature of the institution along with other historical and political factors affect the configuration of colleges and universities. Many non-land grant schools would not have a College of Human Ecology in which female faculty are predominant; nor would many of these universities have Colleges of Agriculture and Natural Resources. Many other research I institutions would have law schools while Michigan State University does not. Not all research I universities would include human medical schools, while Michigan State University has two such entities. With a different

configuration of colleges, it is possible that another institution may find somewhat different results if this survey were administered.

Besides the range of colleges in the university, differences might also arise because of Michigan State University's status as a Midwestern public university located in Michigan. It is possible that Midwestern culture may affect professional satisfactions and allocation of time among faculty differently than either of the coastal U.S. cultures. Furthermore, the changing economic fortunes of Michigan over the past fifteen years may have influenced the range of faculty who have chosen to affiliate with its state universities in ways which differ from those in other states or in private institutions. Thus, it would be unwise to claim too much from the results of this study by attempting to generalize to all Research I institutions.

The survey itself could have been improved to provide better results. The large number of response items could have lulled some survey participants into unthinking patterns of response, resulting in less clear distinctions than may have been possible with a somewhat shorter survey. Because these many response items were consolidated into a smaller number of workable variables, it is also likely that some nuances in responses have been lost.

One crucial piece of information not asked in the survey was each respondent's disciplinary field. While such information (i.e. department of respondent) was known

by those to whom the survey was returned, it was not entered into the survey data base. With such information a better analysis could have been conducted on the effects of one's chosen field of study on satisfactions, allocation of time, and even mobility considerations. After the survey was already administered, the literature search, later conducted, indicated that field of study is a very influential factor, particularly in the allocation of work time. Certain disciplines are more prone to activities traditionally classified as research than others. Without this information in the data base, it was not possible to adequately examine disciplinary field as a factor of influence. GC, gender composition of the college, and ROC, research orientation of the college, are rougher approximations of the effects of faculty members' disciplines. However, they do not allow the finer distinctions that could have been drawn with knowledge of disciplinary field. It is quite possible that gender affects chosen field of study which in turn determines relative teaching or research orientation. Analyzing the effects of disciplinary field would open up another branch of research.

While an aggregate survey response rate of 50.5% is within an acceptable range for survey methodologies, it is important to note that variations among the response rates of the colleges and between the male and female faculty within them are limitations. Some colleges are more strongly represented in the survey data than others. Some colleges have substantial differences in the male and female response rates. These variations also limit the value of any college level analyses. Thus, the picture of the university which emerges from this data must be balanced against these limitations.

The statistical methods used also have some limitations. When significance is reported, this simply indicates that, based on the sample's results, at a 95% confidence level the null hypothesis can be rejected for the population. Such a result will frequently mean that a null hypothesis of no difference between the groups is equated to the conclusion that the two groups are indeed different in the population. It is possible that such a conclusion is incorrect. Thus, conclusions about the population from which the sample is drawn should be regarded somewhat tentatively. One can conclude that there is every appearance that groups differ in the population. Yet there is always a chance that such a conclusion is wrong. Inferences about differences should be handled carefully.

In addition, there may be some lingering difficulties in the regression analyses caused by heteroscedasticity and multicolinearity which will be noted in chapter four. With almost all variables, the assumptions necessary for regression were met. However, the low P-level of Cochrane's C for the variable PTEACH and RSCP1 should add a bit of caution to use of those regression results. Furthermore, the higher levels of correlation between some of the variables could create a small colinear effect in the regression results. Neither of these problems were deemed material in light of other factors which supported the appropriateness of regression analysis. However, it is important to recognize that the assumptions for regression analysis may not have been perfectly met.

Finally, this study does not purport to respond to all the reasons for gender differences posited by different groups of scholars and described in chapter two. While it appears

that gender does have a significant effect on differences among faculty in the university, the reasons for those differences have not been completely resolved. This dissertation does not draw clear distinctions between biological nature and sociological nurture. Nor can final conclusions be reached about the relative strength of personal versus structural explanations for differences. The sensitivity of the structural variables in the regressions is simply too limited to draw such conclusions.

In summary, the research methodology proposed in this chapter is based on the Michigan State University Faculty Mobility Survey from which selected questions were used to investigate possible faculty differences by gender on measures of professional satisfaction, allocation of work effort, and geographic mobility. In this investigation several variables were collapsed into more condensed categorical variables when the consolidations met the Cronbach's Alpha standard of .7. ANOVAS were then run on the new dependent variable set, checking first and singly the effects of SEX and then the effects of SEX in interaction with RANK, MARRY and NCHILD with BORN as a covariate. Regression analysis was then used to explore the relative strength of gender in relation to other personal and structural variables which might explain both current and preferred allocations of effort to teaching and research. Within the limitations of the university, the survey, and the statistical methods proposed, the intention is to look closely at selected areas of possible gender differences.

Chapter four of this dissertation presents the results of these research methodologies.

CHAPTER 4

STATISTICAL RESULTS

Chapter four presents the statistical results of the research methodologies proposed in Chapter three. First, the one way ANOVA with sex as the independent variable and 38 dependent variables will be examined. Second, the ANOVA using SEX, RANK, MARRY, and NCHILD as independent variables with BORN as a covariate will be reported for this same set of dependent variables. Third, the testing of the proposed regression models will be explained. Fourth, the regression analyses themselves will be reported.

ONE-WAY ANOVA RESULTS

Table 16 presents the results of the one way anova for the 38 dependent variables.

TABLE 16
RESPONDENT RESULTS-ONE-WAY ANOVA

Dependent variables Professional Satisfaction	Female Mean	Male Mean	F Statistic	Sig of F
*Worksat	2.71	3.38	70.255	.000
Climsat	3.46	3.52	1.407	.236
*Suppsat	2.97	3.20	11.177	.001
*Sat2	4.17	4.55	27.068	.000
*Sat8	3.45	3.85	23.040	.000
Sat13	3.39	3.41	.030	.863
Sat14	4.02	4.08	.607	.436
Sat20	3.75	3.83	1.347	.246
Sat21	3.39	3.29	1.934	.165
*Sat24	3.00	3.38	13.535	.000
Importance of Professional Satisfaction				
Iworksat	2.82	2.71	2.971	.085
Icosesat	2.85	2.92	.744	.389
Iclimsat	2.90	2.86	.517	.472
*Ioppsat	3.09	2.92	5.503	.019
Isuppsat	2.80	2.82	.042	.837
Inoinsat	2.47	2.48	.046	.831
Current allocation of work time				
*Pteach	38.07	33.66	5.906	.015
*Prsp	21.84	27.20	12.488	.000
Pads	8.24	7.96	12.888	.621
Ppdt	2.94	2.52	1.339	.248
Psex	11.31	11.64	17.943	.807
Padgv	16.96	15.76	.609	.435
Poth	.73	1.19	.535	.465
Preferred Allocation of Work Time				
*Rscp1	2.48	2.84	32.849	.000
*Rscp2	4.14	3.80	29.423	.000
*Rscp3	2.83	3.03	14.232	.000
*Rscp4	3.83	3.59	19.760	.000
Rscp5	2.88	2.90	.110	.741
Rscp6	2.32	2.34	.112	.737
Import. of tasks for tenure, rank, and merit increase				
Rettrm	4.06	4.02	.313	.576
Rertrm	4.26	4.27	.024	.876
Reatrm	2.78	2.68	1.404	.236
Restrm	2.94	2.98	.265	.607
*Regtrm	2.45	2.21	10.391	.001
Geographic mobility				
Tkact1	1.72	1.76	.189	.664
*Tkact2	2.81	2.57	4.399	.036
*Lvorm	3.41	3.63	4.914	.027
*Free	3.18	2.86	15.479	.000

N = 955, 747 males, 209 female
*Variables for which null hypothesis can be rejected

As the table above indicates, on 16 of the 38 variables the null hypothesis (no difference between the male and female faculty in the population) can be rejected. For these 16 variables the significance of F falls below an alpha of .05, the basis for rejecting the null hypothesis. The null hypothesis can be rejected for some variables in each of the three research foci, professional satisfaction, allocation of work time, and geographic mobility.

Results related to professional satisfaction

Specifically the significance of F is below the alpha of .05 for the variables WORKSAT, SUPPSAT, SAT2, SAT8, SAT24, and IOPPSAT within the ategory of professional satisfaction. WORKSAT as a variable reflects satisfactions with the work itself and SUPPSAT measures satisfactions with institutional support for one's work. In both cases female faculty respondents to the survey were less satisfied.

The pattern of survey results with other satisfaction variables should also be noted. SAT2 measured satisfaction with job security. SAT8 measured satisfaction with opportunities for advancement at Michigan State University. SAT24 measured satisfaction with opportunities for growth and development within one's current academic unit. In all three cases females were less satisfied than males. While female faculty did not differ significantly from males on ICOSESAT, the importance of satisfaction with job security, they did differ on their satisfaction with job security, SAT2. Furthermore, female respondents regarded IOPPSAT, the importance of their satisfaction with opportunities, as more important than did the males, yet deemed actual satisfaction, with

opportunities for advancement and professional development, SAT8 and SAT24, to be at lower levels than did the male faculty. The gap between male and female respondents on each of these variables measuring work satisfaction is great enough to allow rejection of the hypotheses that their levels of satisfaction in these selected areas and their sense of the importance of satisfaction with opportunities are the same as males in the Michigan State University faculty population.

On several other measures of professional satisfaction there were insufficient differences to reject the null hypothesis. These included CLIMSAT, SAT13, SAT14, SAT20, SAT21, IWORKSAT, ICOSESAT, ICLIMSAT, ISUPPSAT, INOINSAT. These results indicate that it is possible that male and female faculty in the population have similar reactions to the departmental and university climate for their work(CLIMSAT), similar satisfactions with levels of salary and benefits (SAT13, SAT14), and similar reactions to the quality of students at Michigan State University (SAT20, SAT21).

There is also no basis for rejecting the null hypothesis about the <u>importance</u> of many aspects of their job to them (IWORKSAT, ICOSESAT, ICLIMSAT, ISUPPSAT, INOINSAT). It is quite possible that males and females in the faculty population weigh the importance of satisfactions with the work itself, compensation and job security, the departmental and university climate, institutional support for their work, and noninstitutional satisfactions similarly.

Allocation of Work Time

Among the variables measuring current, preferred and ideal allocations of work time there were some notable differences. Specifically PTEACH, PRSP, RSCP1, RSCP2, RSCP3, RSCP4, and REGTRM had an F significance allowing the rejection of the null hypothesis in the population. Female respondents spent a significantly larger percentage of their time in teaching(PTEACH) and a significantly smaller percentage of their time in research(PRSP) when compared to male respondents. On other current work effort variables related to advising(PADS), professional development(PPDT), service and extension(PSEX), administration and governance (PADGV), and other activities(POTH), there were insufficient differences between the respondent groups to allow rejection of the null hypothesis.

When asked what one would change with the opportunity to restructure one's position, female respondents wanted somewhat less teaching time(RSCP1) and somewhat more research time(RSCP2) than did their male counterparts. Female respondents also preferred significantly less time in advising students(RSCP3) and more time in professional development(RSCP4). The null hypothesis can be rejected for the population on these four variables. However, it cannot be rejected concerning desired time for service and extension(RSCP5) or administration and governance(RSCP6).

Despite the possibility of differences between male and female faculty in current and preferred allocations of time, their sense of relative importance of teaching(RETTRM),

research(RERTRM), advising(REATRM), and service/extension(RESTRM) for tenure, promotion in rank, and merit pay increases may be the same in the population. None of these four variables had a F significance below .05. Interestingly, only on the importance of administration/governance activities (REGTRM) for tenure, promotion, and merit increases can the null hypothesis be rejected. On this variable female faculty in the population seemed to think that such activity was more important than did male faculty.

Geographic Mobility

While males and females in the population may have similar responses regarding their likelihood of seeking a new position at Michigan State University (TKACT1), the null hypothesis can be rejected for the other three variables measuring perceived geographic mobility. The likelihood of seeking a position at another institution(TKACT2) and the level of interest in leaving Michigan State University(LVORM) are not likely the same for male and female faculty in the population. Female respondents are somewhat more likely to seek a new position outside Michigan State and somewhat less likely to remain at Michigan State. However, females perceive that they are more constrained than males in their freedom to make a final decision about staying or leaving(FREE).

MULTIPLE ANOVA

The one-way ANOVA by sex begins to provide some insight into possible differences between male and female faculty in the population. However, SEX as a variable may

be masking the effects of interactions with other variables with which it may be associated such as age(BORN), academic rank(RANK), commitments to a partner(MARRY), or commitments to children(NCHILD). Therefore an ANOVA including SEX, RANK, MARRY, and NCHILD as independent variables with BORN as a covariate was run to determine main and interaction effects which are significant in the population. Tables 17 through 23 present the main effects of this ANOVA sorted by seven groupings of dependent variables. These tables are presented below.

TABLE 17
ANOVA ON PROFESSIONAL SATISFACTION VARIABLES

Dependent Variables Independent Variables	Worksat	Climsat	Suppsat	Sat2	Sat8
Covariate					
Born					
F-Stat	51.330	5.590	7.264	96.870	.822
Sig. of F	.000	.018	.007	.000	.365
Grand Mean	3.25	3.51	3.16	4.48	3.78
Main Effects					
Sex					
Female Mean	2.74	3.48	2.98	4.21	3.45
Male Mean	3.38	3.52	3.20	4.55	3.86
F-Stat	36.042	.122	4.879	1.304	14.093
Sig. of F	.000	.727	.027	.254	.000
Marry					
Not partnered - mean	2.91	3.40	2.96	4.14	3.39
Partnered - mean	3.30	3.53	3.19	4.54	3.84
F-Stat	5.530	3.298	5.206	5.341	11.422
Sig. of F	.019	.070	.023	.021	.001
NChild					
No child - mean	2.99	3.42	3.00	4.16	3.75
Child - mean	3.27	3.52	3.17	4.51	3.78
F-Stat	.354	.289	.257	.061	1.858
Sig. of F	.552	.591	.612	.805	.173
Rank					
Full/Assoc. - mean	3.30	3.52	3.15	4.69	3.80
Asst. - mean	3.00	3.44	3.19	3.54	3.65
F-Stat	1.604	.063	8.565	151.525	.299
Sig. of F	.206	.802	.004	.000	.584
Two-Way Interactions					
Sex/Marry					
F-Stat	.041	7.375	.175	1.138	1.408
Sig. of F	.840	.007	.676	.286	.236
Sex/NChild					
F-Stat	2.440	.518	.043	.524	.010
Sig. of F	.119	.472	.836	.469	.921

TABLE 17 (Continued)

	Worksat	Climsat	Suppsat	Sat2	Sat8
Marry/NChild					
F-Stat	.008	.006	.735	1.088	.692
Sig. of F	.927	.941	.391	.297	.406
Rank/Sex					
F-Stat	1.187	6.147	1.980	1.008	.743
Sig. of F	.276	.013	.160	.316	.389
Rank/Marry					
F-Stat	.262	.227	.088	.014	.152
Sig. of F	.609	.634	.767	.904	.697
Rank/NChild					
F-Stat	1.525	.075	.800	6.269	.658
Sig. of F	.217	.784	.371	.012	.418
Three-Way Interactions					
Sex/Marry/NChild					
F-Stat	.953	.145	.030	3.860	.942
Sig. of F	.329	.703	.862	.050	.005
Sex/NChild/Rank					
F-Stat	.739	1.239	.620	2.631	1.120
Sig. of F	.390	.266	.431	.105	.290
Sex/Marry/Rank					
F-Stat	1.681	.059	.399	.422	3.068
Sig. of F	.195	.809	.528	.516	.080
NChild/Marry/Rank					
F-Stat	3.665	.031	.915	.195	.848
Sig. of F	.056	.861	.339	.659	.357
Four-Way Interaction					
Sex/NChild/Marry/Rank					
F-Stat	1.516	.276	2.420	.286	.020
Sig. of F	.219	.600	.120	.593	.887
Explained					
F-Stat	7.218	1.618	2.199	18.278	2.801
Sig. of F	.000	.058	.004	.000	.000
N-916					

TABLE 18
ANOVA ON PROFESSIONAL SATISFACTION VARIABLES - PART II

Dependent Variables Independent Variables	Sat13	Sat14	Sat20	Sat21	Sat24
Covariate					
Born					
F-Stat	2.130	.756	19.101	15.043	6.537
Sig. of F	.145	.385	.000	.000	.011
Grand Mean	3.42	4.07	3.80	3.30	3.27
Main Effects					
Sex					
Female Mean	3.41	4.02	3.72	3.31	2.99
Male Mean	3.43	4.08	3.82	3.30	3.35
F-Stat	.181	.001	.017	1.053	5.158
Sig. of F	.670	.978	.897	.305	.023
Marry					
Not partnered - mean	3.20	3.89	3.66	3.29	2.91
Partnered - mean	3.45	4.10	3.83	3.30	3.33
F-Stat	4.227	4.029	1.366	.004	7.422
Sig. of F	.040	.045	.243	.948	.007
NChild					
No child - mean	3.45	3.81	3.52	3.24	3.03
Child - mean	3.41	4.09	3.83	3.30	3.29
F-Stat	.098	3.884	2.346	.028	.127
Sig. of F	.754	.049	.126	.867	.722
Rank					
Full/Assoc. - mean	3.41	4.05	3.84	3.36	3.29
Asst. - mean	3.44	4.16	3.61	3.12	3.20
F-Stat	.150	6.399	.112	.447	1.692
Sig. of F	.698	.012	.738	.504	.194
Two-Way Interactions					
Sex/Marry					
F-Stat	.000	.087	1.048	.155	1.529
Sig. of F	.991	.768	.306	.694	.217
Sex/NChild					
F-Stat	.019	.020	4.119	1.480	.074
Sig. of F	.891	.889	.043	.224	.785

TABLE 18 (Continued)

Marry/NChild					
F-Stat	.137	1.957	1.504	3.026	.573
Sig. of F	.712	.162	.220	.082	.449
Rank/Sex					
F-Stat	.205	.445	.001	.047	4.278
Sig. of F	.651	.505	.976	.828	.039
Rank/Marry					
F-Stat	.338	3.308	.793	.197	1.517
Sig. of F	.561	.069	.373	.658	.218
Rank/NChild					
F-Stat	5.255	9.586	2.038	1.382	1.246
Sig. of F	.022	.002	.154	.240	.265
Three-Way Interactions					
Sex/Marry/NChild					
F-Stat	.261	.900	.235	.338	.127
Sig. of F	.610	.343	.628	.561	.721
Sex/NChild/Rank					
F-Stat	1.477	.403	.250	.162	.025
Sig. of F	.225	.526	.617	.687	.875
Sex/Marry/Rank					
F-Stat	.018	1.413	.035	.950	.153
Sig. of F	.893	.235	.852	.330	.696
NChild/Marry/Rank					
F-Stat	.199	2.111	.017	.336	.841
Sig. of F	.656	.147	.895	.562	.359
Four-Way Interaction					
Sex/NChild/Marry/Rank					
F-Stat	.001	.053	.033	3.396	1.670
Sig. of F	.978	.818	.857	.066	.197
Explained					
F-Stat	1.019	2.242	2.426	1.734	2.295
Sig. of F	.433	.003	.001	.036	.003
N-948					

TABLE 19
ANOVA ON IMPORTANCE OF PROFESSIONAL SATISFACTION VARIABLES

Dependent Variables Independent Variables	IWorksat	ICosesat	IClimsat	Ioppsat	Isuppsat	Inoinsat
Covariate						
Born						
F-Stat	7.739	5.595	8.663	52.425	7.710	25.054
Sig. of F	.006	.018	.003	.000	.006	.000
Grand Mean	2.73	2.90	2.87	2.96	2.81	2.48
Main Effects						
Sex						
Female Mean	2.83	2.85	2.91	3.11	2.82	2.50
Male Mean	2.71	2.91	2.85	2.92	2.81	2.48
F-Stat	1.303	.821	.064	.806	.568	.040
Sig. of F	.254	.365	.801	.370	.451	.841
Marry						
Not partnered - mean	2.86	2.87	2.93	3.08	2.87	2.30
Partnered - mean	2.71	2.91	2.85	2.94	2.80	2.51
F-Stat	3.112	.025	1.096	1.081	.798	6.821
Sig. of F	.078	.874	.295	.299	.372	.009
NChild						
No child - mean	2.67	2.70	2.79	2.94	2.85	2.42
Child - mean	2.74	2.92	2.87	2.96	2.81	2.49
F-Stat	3.541	5.449	3.008	5.005	.109	1.648
Sig. of F	.060	.020	.083	.026	.742	.199
Rank						
Full/Assoc. - mean	2.72	2.88	2.84	2.87	2.78	2.44
Asst. - mean	2.81	2.98	2.96	3.36	2.94	2.65
F-Stat	.149	.027	.004	7.790	.611	.355
Sig. of F	.700	.870	.953	.005	.435	.551
Two-Way Interactions						
Sex/Marry						
F-Stat	.282	.966	.166	.273	.163	.935
Sig. of F	.596	.326	.684	.601	.687	.334
Sex/NChild						
F-Stat	.958	1.873	.158	.961	.082	.054
Sig. of F	.328	.172	.691	.327	.774	.817

TABLE 19 (Continued)

	lWorksat	Icosesat	Iclimsat	Ioppsat	Isuppsat	Inoinsat
Marry/NChild						
F-Stat	.600	3.091	1.460	1.813	1.894	1.852
Sig. of F	.439	0.79	.227	.178	.169	.174
Rank/Sex						
F-Stat	.180	.377	.617	1.077	3.284	.038
Sig. of F	.672	.539	.432	.300	.070	.846
Rank/Marry						
F-Stat						
Sig. of F	.005	2.846	.015	1.552	.274	.378
	.944	.092	.901	.213	.601	.539
Rank/NChild						
F-Stat	.312	.111	.001	.971	2.305	.004
Sig. of F	.577	.739	.974	.325	.129	.949
Three-Way Interactions						
Sex/Marry/NChild						
F-Stat	1.730	1.956	2.194	1.456	.970	.087
Sig. of F	.189	.162	.139	.228	.325	.768
Sex/NChild/Rank						
F-Stat	.033	.387	.080	.933	.205	.464
Sig. of F	.855	.534	.777	.334	.650	.496
Sex/Marry/Rank						
F-Stat	.456	3.710	.240	2.139	.020	2.964
Sig. of F	.500	.054	.625	.144	.887	.085
NChild/Marry/Rank						
F-Stat	.166	.143	.810	.853	.019	.091
Sig. of F	.683	.705	.368	.356	.891	.763
Four-Way Interaction						
Sex/NChild/Marry/Rank						
F-Stat	.071	.624	.270	2.058	.790	.008
Sig. of F	.720	.430	.603	.152	.374	.931

TABLE 20

ANOVA ON ALLOCATION OF WORK TIME VARIABLES

Dependent Variables / Independent Variables	Pteach	Prsp	Pads	Ppdt	Psex	Padgv	Poth
Covariate							
Born							
F-Stat	4.059	17.293	10.192	1.041	.005	4.242	2.090
Sig. of F	.044	.000	.001	.308	.944	.040	.149
Grand Mean	34.32	26.05	8.06	2.63	11.69	16.08	1.12
Main Effects							
Sex							
Female Mean	37.01	22.37	8.43	3.06	11.45	16.99	.78
Male Mean	33.60	27.04	7.96	2.52	11.76	15.84	1.20
F-Stat	2.408	14.896	.116	1.719	.051	1.847	.001
Sig. of F	.121	.000	.734	.190	.822	.174	.975
Marry							
Not partnered-mean	38.65	23.00	7.93	3.19	10.61	16.81	.37
Partnered - mean	33.60	26.56	8.08	2.54	11.87	15.96	1.24
F-Stat	2.743	2.859	.139	1.303	.189	.494	.826
Sig. of F	.098	.091	.709	.254	.663	.482	.364
NChild							
No child - mean	35.01	29.78	7.99	3.57	8.36	15.05	.43
Child - mean	34.25	25.72	8.07	2.55	11.99	16.17	1.18
F-Stat	.004	3.115	.608	3.233	2.741	.025	.056
Sig. of F	.951	.078	.436	.072	.098	.874	.813
Rank							
Full/Assoc-mean	33.99	25.02	7.84	2.82	11.79	17.28	1.26
Asst. - mean	35.78	30.75	9.09	1.82	11.25	10.64	.44
F-Stat	3.599	4.293	.193	7.745	.047	13.102	.110
Sig. of F	.058	.039	.661	.005	.828	.000	.740
Two-Way Interacts							
Sex/Marry							
F-Stat	4.761	2.313	.152	1.678	1.077	.043	.048
Sig. of F	.029	.129	.697	.195	.300	.836	.826
Sex/NChild							
F-Stat	1.015	.168	.935	1.429	.673	.840	.003
Sig. of F	.414	.682	.334	.232	.412	.360	.960

TABLE 20 (Continued)

	Pteach	Prsp	Pads	Ppdt	Psex	Padgv	Poth
Marry/NChild							
F-Stat	.633	.242	2.588	3.316	.724	.221	.130
Sig. of F	.426	.623	.108	.069	.395	.639	.719
Rank/Sex							
F-Stat	.375	.541	.262	1.315	1.101	.340	.019
Sig. of F	.540	.462	.609	.252	.294	.560	.889
Rank/Marry							
F-Stat	.533	.537	2.662	.091	.043	.247	.116
Sig. of F	.466	.464	.103	.763	.836	.619	.733
Rank/NChild							
F-Stat	.002	1.859	.109	1.595	.077	1.433	.067
Sig. of F	.966	.173	.741	.207	.781	.232	.796
Three-Way Interacts Sex/Marry/NChild							
F-Stat	.662	.160	.665	1.147	.209	.367	.119
Sig. of F	.416	.689	.415	.284	.647	.545	.730
Sex/NChild/Rank							
F-Stat	5.710	.187	.658	6.006	5.529	.023	.038
Sig. of F	.017	.665	.417	.014	.019	.879	.846
Sex/Marry/Rank							
F-Stat	2.934	.472	.011	.006	.087	2.393	.041
Sig. of F	.087	.492	.916	.936	.768	.122	.840
NChild/Marry/Rank							
F-Stat	.009	2.482	.343	.013	7.534	.339	.018
Sig. of F	.924	.116	.558	.908	.006	.561	.892
Four-Way Interacts Sex/NChild/Marry/ Rank							
F-Stat	.620	.435	.586	.042	.521	.213	.002
Sig. of F	.431	.510	.444	.837	.470	.645	.963
Explained							
F-Stat	1.980	3.216	1.498	2.036	1.157	1.559	.262
Sig. of F	.012	.000	.093	.009	.298	.073	.998
N-980							

TABLE 21
ANOVA ON PREFERRED ALLOCATION OF WORK TIME VARIABLES

Dependent Variables Independent Variables	Rscp1	Rscp2	Rscp3	Rscp4	Rscp5	Rscp6
Covariate						
Born						
F-Stat	16.743	37.254	1.179	13.339	14.905	10.944
Sig. of F	.000	.000	.278	.000	.000	.001
Grand Mean	2.77	3.88	2.99	3.64	2.90	2.33
Main Effects						
Sex						
Female Mean	2.49	4.12	2.82	3.83	2.89	2.30
Male Mean	2.84	3.81	3.03	3.59	2.91	2.34
F-Stat	16.755	11.833	17.863	16.091	.190	.101
Sig. of F	.000	.001	.000	.000	.663	.750
Marry						
Not partnered - mean	2.55	4.00	2.98	3.64	2.99	2.38
Partnered - mean	2.80	3.86	2.99	3.64	2.89	2.33
F-Stat	4.056	.429	.324	1.129	1.283	.521
Sig. of F	.044	.513	.569	.288	.258	.470
NChild						
No child - mean	2.63	4.07	3.03	3.70	2.97	2.31
Child - mean	2.78	3.86	2.98	3.64	2.90	2.34
F-Stat	.245	.032	1.736	.241	1.810	.068
Sig. of F	.621	.857	.188	.623	.179	.795
Rank						
Full/Assoc. - mean	2.80	3.84	2.99	3.62	2.90	2.35
Asst. - mean	2.60	4.06	2.99	3.74	2.92	2.28
F-Stat	.102	.174	1.373	.015	6.967	.998
Sig. of F	.750	.677	.242	.902	.008	.318
Two-Way Interactions						
Sex/Marry						
F-Stat	.925	.051	2.921	.086	.100	.226
Sig. of F	.336	.821	.088	.770	.752	.635
Sex/NChild						
F-Stat	2.763	1.086	.184	.142	.361	1.405
Sig. of F	.097	.298	.668	.707	.548	.236

TABLE 21 (Continued)

	Rscp1	Rscp2	Rscp3	Rscp4	Rscp5	Rscp6
Marry/NChild						
F-Stat	1.317	3.952	2.035	.091	4.929	.140
Sig. of F	.251	.047	.154	.763	.027	.709
Rank/Sex						
F-Stat	.857	.957	.677	.044	2.013	4.221
Sig. of F	.355	.328	.411	.834	.156	.040
Rank/Marry						
F-Stat	.055	.088	1.236	2.144	.451	.008
Sig. of F	.814	.767	.266	.143	.502	.928
Rank/NChild						
F-Stat	.438	.141	3.689	.001	.281	.004
Sig. of F	.508	.708	.055	.975	.596	.951
Three-Way Interactions						
Sex/Marry/NChild						
F-Stat	.281	2.895	.196	5.257	.774	.003
Sig. of F	.596	.089	.658	.022	.379	.956
Sex/NChild/Rank						
F-Stat	2.352	1.008	.384	1.491	.036	.368
Sig. of F	.125	.316	.536	.222	.850	.544
Sex/Marry/Rank						
F-Stat	.032	.251	.437	.034	.003	.289
Sig. of F	.858	.616	.509	.853	.953	.591
NChild/Marry/Rank						
F-Stat	.003	.004	.833	1.179	.377	.747
Sig. of F	.954	.948	.362	.278	.539	.388
Four-Way Interaction						
Sex/NChild/Marry/Rank						
F-Stat	1.241	.103	1.255	5.104	.070	.780
Sig. of F	.265	.748	.263	.024	.791	.377
Explained						
F-Stat	3.334	3.895	2.105	2.824	2.500	1.287
Sig. of F	.000	.000	.007	.000	.001	.198
N-980						

TABLE 22

ANOVA ON IMPORTANCE OF TASKS FOR TENURE, RANK, AND MERIT INCREASES

Dependent Variables Independent Variables	Rettrm	Rertrm	Reatrm	Restrm	Regtrm
Covariate					
Born					
F-Stat	30.753	19.558	13.811	12.109	3.547
Sig. of F	.000	.000	.000	.001	.060
Grand Mean	4.03	4.27	2.71	2.98	2.26
Main Effects					
Sex					
Female Mean	4.04	4.26	2.77	2.95	2.44
Male Mean	4.03	4.27	2.69	2.99	2.21
F-Stat	2.754	1.176	2.751	.516	10.820
Sig. of F	.097	.279	.098	.473	.001
Marry					
Not partnered - mean	4.00	4.28	2.71	2.86	2.33
Partnered - mean	4.03	4.27	2.71	3.00	2.25
F-Stat	.039	.028	.246	1.090	.010
Sig. of F	.843	.867	.620	.297	.921
NChild					
No child - mean	3.76	4.41	2.55	2.70	2.26
Child - mean	4.05	4.26	2.72	3.01	2.26
F-Stat	4.470	1.264	.974	2.214	.071
Sig. of F	.035	.261	.324	.137	.790
Rank					
Full/Assoc. - mean	4.06	4.26	2.69	3.02	2.26
Asst. - mean	3.88	4.33	2.76	2.83	2.24
F-Stat	.113	1.970	10.225	.007	.223
Sig. of F	.737	.161	.001	.931	.637
Two-Way Interactions					
Sex/Marry					
F-Stat	4.235	.830	1.226	2.524	2.999
Sig. of F	.040	.362	.268	.113	.084
Sex/NChild					
F-Stat	.414	.503	.663	.549	1.260
Sig. of F	.520	.478	.416	.459	.262

TABLE 22 (Continued)

	Rettrm	Rertrm	Reatrm	Restrm	Regtrm
Marry/NChild					
F-Stat	3.213	.036	4.763	.165	.000
Sig. of F	.073	.850	.029	.685	.995
Rank/Sex					
F-Stat	.006	1.891	5.699	2.061	.078
Sig. of F	.938	.169	.017	.151	.780
Rank/Marry					
F-Stat	.000	.238	.196	.663	.410
Sig. of F	.991	.625	.658	.416	.522
Rank/NChild					
F-Stat	1.746	1.990	4.789	2.101	.038
Sig. of F	.187	.159	.029	.148	.846
Three-Way Interactions					
Sex/Marry/NChild					
F-Stat	1.122	.012	3.291	2.245	.375
Sig. of F	.290	.912	.070	.134	.540
Sex/NChild/Rank					
F-Stat	6.148	.038	.040	2.705	.068
Sig. of F	.013	.846	.842	.100	.794
Sex/Marry/Rank					
F-Stat	.038	13.258	1.062	.008	.007
Sig. of F	.846	.000	.303	.929	.931
NChild/Marry/Rank					
F-Stat	.444	9.229	.782	.463	.167
Sig. of F	.506	.002	.377	.497	.683
Four-Way Interaction					
Sex/NChild/Marry/Rank					
F-Stat	.218	.114	.006	.184	.266
Sig. of F	.641	.736	.940	.668	.606
Explained					
F-Stat	3.450	3.031	3.082	1.779	1.306
Sig. of F	.000	.000	.000	.030	.186
N-980					

TABLE 23
ANOVA ON GEOGRAPHIC MOBILITY VARIABLES

Dependent Variables Independent Variables	Tkact1	Tkact2	Lvorm	Free
Covariate				
Born				
F-Stat	.520	165.440	38.456	21.377
Sig. of F	.471	.000	.000	.000
Grand Mean	1.75	2.61	3.59	2.93
Main Effects				
Sex				
Female Mean	1.70	2.79	3.45	3.17
Male Mean	1.76	2.57	3.63	2.87
F-Stat	.004	.789	.001	6.807
Sig. of F	.948	.375	.980	.009
Marry				
Not partnered - mean	1.63	2.81	3.31	3.09
Partnered - mean	1.77	2.58	3.64	2.91
F-Stat	.348	1.660	5.861	1.199
Sig. of F	.555	.198	.016	.274
NChild				
No child - mean	1.65	3.07	3.26	3.19
Child - mean	1.76	2.57	3.62	2.91
F-Stat	.031	.079	.503	.763
Sig. of F	.861	.778	.479	.383
Rank				
Full/Assoc. - mean	1.82	2.48	3.65	2.92
Asst. - mean	1.43	3.23	3.34	2.98
F-Stat	16.588	.266	.649	6.850
Sig. of F	.000	.606	.421	.009
Two-Way Interactions				
Sex/Marry				
F-Stat	.167	.225	.104	2.981
Sig. of F	.683	.635	.747	.085
Sex/NChild				
F-Stat	.023	1.300	2.354	.071
Sig. of F	.880	.254	.125	.790

TABLE 23 (Continued)

	Tkact1	Tkact2	Lvorm	Free
Marry/NChild				
F-Stat	2.273	.180	.022	1.044
Sig. of F	.132	.672	.882	.307
Rank/Sex				
F-Stat	.163	.319	.786	4.306
Sig. of F	.686	.572	.375	.038
Rank/Marry				
F-Stat	.009	.028	.768	1.525
Sig. of F	.926	.867	.381	.217
Rank/NChild				
F-Stat	1.656	3.881	4.088	.046
Sig. of F	.198	.049	.043	.830
Three-Way Interactions				
Sex/Marry/NChild				
F-Stat	.004	.019	.114	.428
Sig. of F	.950	.891	.736	.513
Sex/NChild/Rank				
F-Stat	.644	1.038	.005	.896
Sig. of F	.423	.309	.945	.344
Sex/Marry/Rank				
F-Stat	.031	.342	.179	1.925
Sig. of F	.859	.559	.673	.166
NChild/Marry/Rank				
F-Stat	2.349	3.517	3.502	1.254
Sig. of F	.126	.061	.062	.263
Four-Way Interaction				
Sex/NChild/Marry/Rank				
F-Stat	.020	.190	.140	1.907
Sig. of F	.889	.663	.708	.168
Explained				
F-Stat	1.610	11.167	3.685	3.412
Sig. of F	.060	.000	.000	.000
N-980				

ANOVA RESULTS

By drawing from Tables 17 through 23 above it is possible to isolate the dependent variables for which the null hypotheses can be rejected when the effects of age(BORN) are removed. Table 24 below summarizes the dependent variables for which main and interactions effects had an F significance below alpha.

TABLE 24
DEPENDENT VARIABLES FOR WHICH NULL HYPOTHESIS CAN BE REJECTED

Independent Variables	Professional Satisfaction	Work Time Allocation	Geographic Mobility
Main Effects Sex	Worksat Suppsat Sat8 Sat24	Prsp Rscp4 Rscp1 Regtrm Rscp2 Rscp3	Free
Rank	Suppsat Sat2 Sat14 Iopsat	Prsp Ppdt Padgv Reatrm Rscp5	Tkact1 Free
Marry	Worksat Suppsat Sat2 Sat8 Sat13 Sat14 Sat24 Inoinsat	Rscp1	Lvorm
Nchild	Sat14 Icosesat Ioppsat	Rettrm	
Interactions Sex/marry	Climsat	Pteach Rettrm	

TABLE 24 (Continued)

Sex/Nchild	Sat20		
Marry/Nchild		Rscp2 Rscp5 Reatrm	
Rank/Sex	Climsat Sat24	Reatrm Rscp6	Free
Rank/Nchild	Sat2 Sat13 Sat14	Reatrm	Tkact2 Lvorm
Sex/Marry/Nchild		Rscp4	
Rank/Marry/Sex		Rertrm	
Rank/Marry/Nchild		Rertrm Psex	
Rank/Nchild/Sex		Pteach Ppdt Psex Rettrm	
Rank/Sex/Marry/Nchild		Rscp4	

Main effects of SEX

Among the three independent variables, SEX is one of the two variables for which the null hypothesis can be most frequently rejected. For 11 of the 38 dependent variables the null hypothesis can be rejected even when age is no longer a factor. It appears that males and females may differ in certain areas of professional satisfaction, work allocation, and geographic mobility.

Specifically, female survey respondents seem less satisfied than their male counterparts regarding the work itself (WORKSAT), support for their work(SUPPSAT), opportunities for advancement(SAT8), and opportunities for professional growth and development(SAT24). In each case the mean satisfaction response of the female respondents was less than that of the males.

Sex also appears to influence the current and preferred allocation of work time as well as perceptions of the importance of governance in evaluation and promotion. While differences in the current percentage of time spent in teaching(PTEACH) were not significant once the effects of age were controlled, the female mean for percentage of time spent in research(PRSP) was 22.37%, while the male mean was 27.04%. That represents a significant difference in the population.

In terms of preferred allocation of work time it appears that there may be significant differences among male and female faculty in the areas of teaching, research, advising, and professional development. On several measures of preferred work allocation, the null hypothesis can be rejected for the population. The female means for restructuring their time indicate that they would like to do somewhat less teaching(RSCP1=2.49) and advising (RSCP3=2.82) and spend somewhat more time on research(RSCP2=4.12) and professional development(RSCP4=3.83). This compares with male faculty mean responses that are looking for somewhat less restructuring. Males desire to teach somewhat less(RSCP1=2.84) but not as much as the females. Males, overall, appear to be content with their advising loads(RSCP3=3.03). While they would like to spent

more time in research(RSCP2=3.81) and professional development (RSCP4=3.59), it does not appear that their desires to restructure their work time are as strong as those of female faculty. Thus, while many of the preferences for change are the same for male and female faculty, the strength of the preferences is not the same.

Despite these desires for a similar shifts in the direction of their responsibilities, in the population the importance of governance activities for determining tenure, rank, and merit increases were not the same for males and females when age was controlled. The female mean(REGTRM) for importance was high, 2.44, compared with the male mean of 2.21.

In terms of geographic mobility females in the population may be similar to the males on several measures when age is controlled. There is no basis on which to reject the null hypothesis for their seeking a new position at Michigan State (Tkact1), or at another institution (Tkact2). Nor can it be concluded that males and females are different in their relative desires to leave or stay at Michigan State University as faculty members. However, the male and female faculty may be different in their relative sense of constraint about a decision to leave or stay. Females report a mean sense of constraint(Free) of 3.17, which is significantly higher than that of the males at 2.87. This remains a significant difference in the population when age is removed from consideration.

In summary, when age is held constant, there may be real significant differences between male and female faculty at Michigan State University. It appears that females allocate less time to research than males. Yet female faculty have stronger preferences for shifting more of their professional time to research and professional development than do their male counterparts. However, curiously, females place more importance on administration/governance activities for tenure, promotion, and merit increases than do male faculty.

There appear to be some conflicts for female faculty. They seem to value teaching and advising as do their male colleagues but have stronger desires to redirect their energies into research and professional development than do their male colleagues. The effects of age differences have been neutralized. Thus such differences must arise from other sources.

Despite these apparent conflicts few significant differences were found in the desire or likelihood of leaving Michigan State University. Though female faculty perceive themselves as more constrained in such decisions, the effect of such perceptions on real decisions may be quite limited.

Main Effects of RANK

Rank is a second independent variable which has a significant effect on several measures of professional satisfaction, work time allocation, and geographic mobility. Those in the rank of assistant professor are slightly more satisfied with support for their work than

those of superior rank (SUPPSAT=3.19 vs. 3.15) as well as compensation-related benefits (SAT14=4.16 vs. 4.05). Yet they express much less satisfaction with job security (SAT2=3.54 vs. 4.69) when compared with those of associate and full professor rank. The higher score given to the importance of satisfaction with opportunity (IOPPSAT=3.36 vs. 2.87) is significant. They appear to value satisfaction with opportunity more highly than those of higher rank. Apart from these four measures it appears that those of lower rank are as professionally satisfied as those of higher rank.

Several measures of work time allocation were affected by rank. The allocation of current work time to research is significantly higher for those in the assistant professor rank (PRSP=30.75 vs. 25.02) than those of associate and full rank. Yet the allocation of current work time to professional development is lower (PPDT=1.82 vs. 2.82) among assistant professors as is the allocation of time to administration and governance (PADGV=10.64 vs. 17.28). Only two other small differences surfaced in this part of the analysis. Assistant professors appear to desire less restructuring of time related to service and extension than their counterparts of higher rank (RSCP5=2.92 vs. 2.0). They also appear to value advising somewhat more highly for tenure, rank, and merit increases (REATRM=2.76 vs. 2.69).

Rank also appears to effect geographic mobility. Assistant professors were somewhat more likely to seek a new position at Michigan State University (TKACT1=1.43 vs. 1.82) than their superiors in rank. That may match with their perception that they are

more geographically constrained (FREE=2.98 vs. 2.92) than the associate and full professors.

Overall, RANK is a significant independent variable which appears to affect many of the dependent variables in several areas. In some instances, such as job security satisfaction, the nature of the effect seems very logical and reasonable. Yet in other areas the effect of rank on faculty satisfactions, work time allocation, and mobility focus on variables and directions of findings that seem somewhat surprising.

Main effects of MARRY

When MARRY is used a an independent variable to distinguish the effects of a faculty member currently being in an adult partnership, there are ten dependent variables for which the null hypothesis can be rejected. Most of these variables are in the area of professional satisfaction. The non-partnered faculty members seem less satisfied with the work itself(WORKSAT), having a mean of 2.91 compared to 3.30 for those who were partnered. They are also less satisfied with university support for their work (SUPPSAT), with a mean of 2.96 compared to 3.19 for partnered faculty. Similarly the non-partnered faculty register less satisfaction with job security(Sat2, Mean=4.14), their current salaries and benefits (SAT13=3.20; SAT14=3.89), opportunity for advancement (Sat8, Mean=3.39), and opportunities for professional development (Sat24, mean=2.91), when compared with their partnered colleagues who register respective mean satisfactions of 4.54, 3.45, 4.10 and 3.33 on these five measures.

Interestingly, the importance of different sources of professional satisfaction does not appear to vary significantly in the population by one's marital status (Only INOINSAT, the importance of satisfactions with noninstitutional factors differs). Thus while it is likely that whether one is partnered does have an effect on actual professional satisfaction, the importance of different sources of satisfaction may be unaffected by marital status.

MARRY, as an independent variable appears to influence only two other dependent variables significantly. The null hypothesis can be rejected for the preferred amount of time allocated to teaching (RSCP1). The non-partnered group indicated a stronger preference for somewhat less teaching (2.55) than did the partnered group (2.80). Aside from this variable there were no clear differences in the two groups in terms of their preferred allocations of work time.

The null hypothesis can also be rejected in reviewing whether these two groups have similar levels of desire to stay at Michigan State University(LVORM). While both express a desire on balance to stay, the nonpartnered group's mean desire is weaker (3.31) than that of the partnered group (3.64).

In summary, the main effects of marital status in the population are somewhat more limited in range than the main effects of sex. The null hypothesis can be rejected primarily in the area of professional satisfaction, where the nonpartnered group registers significantly less satisfaction on eight different measures.

Main effects of NCHILD

When NCHILD is analyzed as the independent variable it appears that it have main effects on only four of the dependent variables. The null hypothesis can be rejected for two variables measuring the importance of satisfaction with compensation and security (ICOSESAT) and with professional opportunities(IOPPSAT). In each case those with children reported a significantly higher mean importance of these as factors in their decisions than did those without children. Yet despite these differences in the importance of these sources of satisfaction, only one significant differences in actual professional satisfaction within the population could be detected for those with or without children. That was satisfaction with compensation-related benefits(SAT14), with those with children expressing greater satisfaction.

Whether one has children does not appear to affect the allocation of work time. Those without children reported a similar mean percentage of time spent in teaching(PTEACH), research(PRSP), and advising(PADS) and other variables measuring work time allocation to those with children.

On only one other dependent variable does having children have an apparent effect. Those with children appear to place a higher mean importance on teaching (Rettrm) for tenure, promotion, and merit increases than do those without children.

In summary, the effects of faculty members having children appear to be limited to a very few areas. While those with children may deem a couple areas of satisfaction as

more important, there is no indication that they are any different in real satisfactions from faculty without children. Not only was there no indication that the presence or absence of children made any significant difference in how faculty viewed the likelihood or freedom to move; but also the allocation of work time appeared to remain similar for faculty members with or without children.

Overall, the main effects show a pattern in which SEX and RANK may have more significant effects than marital status or having children in the family. The most consistent areas of effect may be in professional satisfaction and allocation of work time with less effect on issues of geographic mobility.

Significant interaction effects

The analysis of possible interactions between and among the four independent variables yielded only a few significant results for the population. While it would be hypothetically possible to find 228 significant two-way interactions, only 18 such interactions were found, and while 152 three-way interactions were possible, only 8 such interactions were found to be significant. Of 38 possible variables with four-way interactions, only one variable showed a significant four-way interaction. Thus most of the significant effects were main effects. Far fewer involved interactions among the independent variables.

It is, however, instructive to note the dependent variables and the interactions terms for which there was significance. In cases where significance is found, the null hypothesis

of no interaction effect can be rejected. Thus for a few selected dependent variables the interaction of two or more independent variables may be significant in the population.

It appears that SEX and MARRY have a significant interaction for one's satisfaction with the climate of one's work(CLIMSAT), the percentage of time spent in teaching(PTEACH) and the importance attached to teaching(RETTRM). Each of these variables and their means are presented in Table 25.

TABLE 25

DEPENDENT VARIABLE MEANS FOR SIGNIFICANT TWO-WAY INTERACTIONS BETWEEN SEX AND MARRY

Variable/ Marital Status	Sex	Male	Female
Climsat			
Partnered		3.54	3.46
Non-partnered		3.28	3.54
Pteach			
Partnered		33.60	33.65
Non-partnered		33.60	44.11
Rettrm			
Partnered		4.04	4.00
Non-partnered		3.89	4.12

For CLIMSAT, the satisfaction for non-partnered males is the lowest with partnered males and all females appearing to be closer to each other in their satisfaction with the climate for their work. For PTEACH, the greatest difference occurs for non-partnered females. Their mean percentage of time spent in teaching is far above that of both married females and all males. For RETTRM, the lowest importance attached to teaching related to tenure, promotion and merit increases occurs for non-partnered males. The non-partnered females attachment of importance is consistent with the fact that they spend a higher percentage of their time in actual teaching.

Significant interaction between SEX and NCHILD is limited to one dependent variable, SAT20, the means of which are shown in Table 26.

TABLE 26
DEPENDENT VARIABLE MEANS FOR SIGNIFICANT TWO-WAY INTERACTIONS BETWEEN SEX AND NCHILD

Variable/ Sex Nchild	Male	Female
Sat20		
No children	3.23	3.79
Children	3.86	3.70

SAT20 findings, namely satisfaction with the quality of graduate students, indicate that the most satisfied group is males with children, closely followed by all females. The least satisfied group is males without children. While the statistical results indicate that the null hypothesis of no interaction effect can be rejected, it is difficult to determine a connections between satisfaction with students, one's sex, and whether one has children.

Significant interactions between MARRY and NCHILD are limited to three dependent variables, RSCP2, RSCP5 and REATRM. Their means are shown in Table 27.

TABLE 27

DEPENDENT VARIABLE MEANS FOR SIGNIFICANT TWO-WAY INTERACTIONS BETWEEN MARRY AND NCHILD

Variable/ Marry Nchild	Partnered	Non-Partnered
Rscp2		
No children	4.15	3.93
Children	3.84	4.02
Rscp5		
No children	3.08	2.79
Children	2.88	3.05
Reatrm		
No children	2.72	2.28
Children	2.71	2.82

RSCP2, the desire to restructure time allotted to research, resulted in a pattern of similarity between partnered faculty with children and non-partnered faculty without children. Yet partnered faculty without children and non-partnered faculty with children expressed a stronger desire to restructure their time toward more research.

RSCP5, restructuring time allotted to service/extension work, showed the same pattern, grouping partnered faculty with children and non-partnered faculty without children as desiring a little less time spent in such activities. Partnered faculty without children and non-partnered faculty with children appear to desire a little more time spent in such work.

REATRM, the importance of advising for tenure, promotion, and merit increases, indicates that the non-partnered faculty without children are quite different from all partnered faculty as well as from non-partnered faculty who have children.

While the number of two-way interactions generated by the combinations discussed above are quite limited, the interactions of RANK with other independent variables produced many more significant sources of interaction. While there were no significant interactions between RANK and MARRY, there were several significant interactions between RANK and SEX and between RANK and NCHILD. Table 28 documents the interactions between RANK and SEX below.

TABLE 28
DEPENDENT VARIABLE MEANS FOR SIGNIFICANT TWO-WAY INTERACTIONS BETWEEN RANK AND SEX

Rank / Sex	Male	Female
Climsat		
Assoc./Full Prof.	3.52	3.56
Asst. Prof.	3.50	3.32
Sat24		
Assoc./Full Prof.	3.34	3.06
Asst. Prof.	3.42	2.84
Rscp6		
Assoc./Full Prof.	2.34	2.37
Asst. Prof.	2.37	2.14
Reatrm		
Assoc./Full Prof.	2.67	2.83
Asst. Prof.	2.83	2.66
Free		
Assoc./Full Prof.	2.88	3.12
Asst. Prof.	2.80	3.27

For CLIMSAT, satisfaction with the university climate for work, female assistant professors reported lower levels of satisfaction than those in all other categories including female professors of higher rank. Female assistant professors were also the least satisfied with opportunities for professional growth and development, SAT24. However, in this case female professors of higher rank were also less satisfied than males of all ranks who were similarly satisfied.

Only two differences in the allocation of work time were noted for this two-way interaction. Again, female assistant professors were more eager to be less involved in governance, RSCP6, than were any of the other three groups which were similar. Yet in the area of the value of advising for tenure, promotion, or merit increases, REATRM, a similar grouping did not exist. In this case the female assistant professors were similar to the male associate/full professor group, both of which assessed advising's import at a lower level than the male assistant professors and the female full professors.

The interaction of RANK and SEX did generate differences in the perceptions of constraints on geographic mobility. Interestingly, those feeling the most constrained were female assistant professors while male assistant professors felt the least constrained of the four groups. Yet all females experienced a higher sense of constraint regardless of rank than did the males.

The two-way interaction between RANK and NCHILD also generated some significant results as noted in Table 29 below.

TABLE 29
DEPENDENT VARIABLE MEANS FOR SIGNIFICANT TWO-WAY INTERACTIONS BETWEEN RANK AND NCHILD

Rank / Sex	No Children	Children
Sat2		
Assoc./Full Prof.	4.84	4.68
Asst. Prof.	3.19	3.62
Sat13		
Assoc./Full Prof.	3.12	3.43
Asst. Prof.	3.90	3.33
Sat14		
Assoc./Full Prof.	3.43	4.09
Asst. Prof.	4.32	4.12
Reatrm		
Assoc./Full Prof.	2.38	2.71
Asst. Prof.	2.81	2.75
Lvorm		
Assoc./Full Prof.	3.13	3.68
Asst. Prof	3.45	3.32
Tkact2		
Assoc./Full Prof.	3.26	2.44
Asst. Prof	3.08	3.06

The three satisfaction variables, SAT2, satisfaction with job security, SAT13 and SAT14, satisfaction with salary and with benefits respectively, do not have similar results. The group least satisfied with job security is assistant professors with no children. While assistant professors with children are the second least satisfied group, there is a

reasonably large gap between others in their rank without children. Yet all assistant professors are less satisfied than those with higher rank.

Satisfaction with salary and with benefits show the same pattern. In both cases professors of higher rank without children are the least satisfied with compensation. Faculty of all ranks who have children are similarly satisfied at a somewhat higher level. Yet the most satisfied are those without children at the assistant professor level.

In terms of work time allocation there was only one significant two-way interaction related to restructuring of advising time, REATRM. Professors of higher rank without children clearly desire to do less advising than their counterparts with children or anyone in the assistant professor rank.

Finally, the interaction of RANK and NCHILD showed significant effects on the likelihood of leaving or remaining at Michigan State University, LVORM. Faculty of all ranks with children and assistant professors without children all had a stronger propensity for remaining at the university than did professors of higher rank without children. A similar pattern was found regarding the likelihood of seeking a new position at another institution, TKACT2, with associate and full professors without children expressing the greatest likelihood of doing so.

This statistical analysis yielded only eight three-way interaction which showed any significance. Of those only one of eight was unrelated to RANK in some way. In that case it appears that the interaction of one's sex, marital status, and children does affect a faculty member's desire to restructure time for professional development(RSCP4). The results are shown in Table 30.

TABLE 30

DEPENDENT VARIABLE, RSCP4, MEANS FOR SIGNIFICANT THREE-WAY INTERACTIONS AMONG SEX, MARRY, AND NCHILD

	No Children		Children	
	Non-partnered	Partnered	Non-partnered	Partnered
Male	3.22	3.72	3.57	3.59
Female	3.90	3.67	3.71	3.89

Table 30 indicates that those who least desire a restructuring of time to allow for more professional development as non-partnered males with no children. Their mean is most distant from that of non-partnered females with no children and partnered females with children, both of who have a stronger desire for restructuring than do these males.

The other seven three-way interactions are related to RANK in combination with other independent variables. The three-way interaction of RANK with MARRY and SEX

generated some significant differences on the variable, RERTRM, the value placed on research for tenure, promotion, or merit increases. These results are shown in Table 31.

TABLE 31
DEPENDENT VARIABLE, RERTRM, MEANS FOR SIGNIFICANT THREE-WAY INTERACTIONS AMONG RANK, MARRY, AND SEX

	Asst. Prof.		Assoc./Full Prof.	
	Male	Female	Male	Female
Non-partnered	4.08	4.53	4.30	4.15
Partnered	4.45	4.01	4.25	4.33

Those groups lending the least and most importance to research were both within the assistant professor ranks. However within that rank non-partnered females and partnered males were most similar in their stronger belief in the importance of research. The other end of the spectrum joined non-partnered males and partnered females together in similar views. Interestingly the males and females of higher rank were more similar and represented views between the highs and lows generated by the assistant professor cells.

Two significant three-way interactions were generated by the combination of RANK with MARRY and NCHILD. Tables 32 and 33 show the results for the variable RERTRM, the importance placed on research for tenure, promotion and merit increases, and the variable PSEX, the percentage of time spent in service/extension activities.

TABLE 32
DEPENDENT VARIABLE, RERTRM, MEANS FOR SIGNIFICANT THREE-WAY INTERACTIONS AMONG RANK, MARRY, and NCHILD

	Asst. Prof.		Assoc./Full Prof.	
	Non-partnered	Partnered	Non-partnered	Partnered
No Children	4.25	4.76	4.47	4.24
Children	4.41	4.24	4.18	4.26

TABLE 33
DEPENDENT VARIABLE, PSEX, MEANS FOR SIGNIFICANT THREE-WAY INTERACTIONS AMONG RANK, MARRY, AND NCHILD

	Asst. Prof.		Assoc./Full Prof.	
	Non-Partnered	Partnered	Non-Partnered	Partnered
No Children	16.46	5.00	5.00	8.66
Children	7.83	12.58	11.90	12.09

For RERTRM the import given to research is highest for partnered assistant professors without children while it is lowest for non-partnered professors of higher rank with children. The range of responses is also broader at the assistant professor level than at the associate professor level.

For PSEX, time spent in service and extension, the range is from 5% for two of the ranked groups without children to 16.46% for non-partnered assistant professors without children. Those with children did differ but within a narrower range. Yet in general

those with children in most ranks and marital situations tended to devote more time to service and extension than did those without children.

The interaction of RANK with NCHILD and SEX results in four three-way interactions with significance for the variables PTEACH, the percentage of time spent in teaching, PPDT, the percentage of time spent in professional development, PSEX, the percentage of time spent in service and extension, and RETTRM, the importance placed on teaching for tenure, promotion, and merit increases. Tables 34-38 below indicate the results.

TABLE 34
DEPENDENT VARIABLE, PTEACH, MEANS FOR SIGNIFICANT THREE-WAY INTERACTIONS AMONG RANK, NCHILD, AND SEX

	Asst. Prof.		Assoc./Full Prof.	
	Male	Female	Male	Female
No children	26.17	42.63	36.23	31.32
Children	35.46	36.09	33.35	37.40

From Table 34 it is apparent that male and female assistant professors without children represent the greatest disparity in results on teaching time (PTEACH). These males report the smallest percentage of time spent in teaching while these females report the largest. Aside from these two lower-rank groups without children, all other groups are reasonably similar. It is interesting to note however that there is some difference among females in the higher ranks on the basis of NCHILD. Those without children report a smaller percentage of time spent in teaching.

TABLE 35
DEPENDENT VARIABLE, PPDT, MEANS FOR SIGNIFICANT THREE-WAY INTERACTIONS AMONG RANK, NCHILD, AND SEX

	Asst. Prof.		Assoc./Full Prof.	
	Male	Female	Male	Female
No children	3.42	1.11	2.96	6.98
Children	1.60	2.14	2.62	3.10

The percentage of time spent in professional development, PPDT, fluctuates widely as noted in Table 35. Female assistant professors without children report the least amount of time spent followed closely by male assistant professors with children. Female associate/full professors without children report the greatest amount of time spent and as a group appear to be quite different from all other groups.

TABLE 36
DEPENDENT VARIABLE, PSEX, MEANS FOR SIGNIFICANT THREE-WAY INTERACTIONS AMONG RANK, NCHILD, AND SEX

	Asst. Prof.		Assoc./Full Prof.	
	Male	Female	Male	Female
No children	10.83	9.16	3.96	12.00
Children	10.34	14.02	12.33	10.69

Table 36 shows that the percentage of time spent on service and extension work, PSEX, also varies widely. Female assistant professors with children report the highest percentage of time spent in this way while male professors at the associate and full rank report the lowest percentage of effort. All other groups fall in a relatively small range.

TABLE 37
DEPENDENT VARIABLE, RETTRM, MEANS FOR SIGNIFICANT THREE-WAY INTERACTIONS AMONG RANK, NCHILD, AND SEX

	Asst. Prof.		Assoc./Full Prof.	
	Male	Female	Male	Female
No children	4.17	3.58	3.60	3.91
Children	3.78	4.13	4.08	4.10

From Table 37 above, it is apparent that the importance placed on teaching for tenure, promotion, and merit increases, RETTRM, also varied by the interaction of one's rank with one's sex and household children. The range was broadest among those without children. Curiously the biggest gap among those without children was between male associate/full professors with the lower rating of import and male assistant professors with the highest rating of import. Female assistant professors were quite similar to the male professors of higher rank in their rating.

Among those with children there was less disparity. Yet the male assistant professors with children still rated teaching of less importance than did the other three groups.

The statistical analysis yielded one significant four-way interaction among the independent variables of RANK, SEX, MARRY, and NCHILD shown in Table 38 below.

TABLE 38
DEPENDENT VARIABLE, RSCP4, MEANS FOR SIGNIFICANT FOUR-WAY INTERACTIONS AMONG RANK, SEX, MARRY, AND NCHILD

	Asst. Prof.		Assoc./Full Prof.	
	Male	Female	Male	Female
Partnered and No children	4.00	3.44	3.60	3.89
Partnered and Children	3.68	4.07	3.58	3.82
Non-partnered and No children	3.00	4.00	3.33	3.80
Non-partnered and Children	3.54	3.56	3.58	3.80

On the variable RSCP4, the desire to restructure the amount of time spent in professional development, there was substantially more diversity among assistant professors than among those of higher rank. Yet in all categories for analysis except one, the female professors desired more restructuring than did their male counterparts in a like category. Only among partnered females with no children did their desire for additional professional development time lag behind that of partnered males with no children.

In summary, the two, three, and four-way interactions effects are somewhat limited. However, the bulk of the significant interactions are related to RANK in some way. Of 27 interaction effects in total, only 7 are not related to RANK. Among those, there appears to be no definitive pattern, although the interactive effect on specific dependent variables is of interest. Those results do not lead to obvious conclusions.

However, it is clear that RANK as a variable interacts very significantly on many variables related to professional satisfaction, work time allocation, and geographic mobility. With this background the regression analyses were undertaken to further explore teaching and research activities.

THE REGRESSION ANALYSES

The regression analyses investigated some of the findings about current and preferred allocation of work effort in regard to teaching and research efforts, the two activities in which faculty spend the majority of their time. Legitimate regression analysis may be conducted only when the assumptions of regression analysis have been met. The sections below first present evidence that the assumptions of regression analysis have been met and then present the results of the regressiona analyses that have been conducted.

Meeting the Basic Assumptions of Regression Analysis

Regression analyses can only be run when the results of tests for linearity, normality, and homoscedasticity indicate that regression analysis is an appropriate methodology. These tests were run for the four dependent variables, PTEACH, PRSP, RSCP1, AND RSCP2, which were not constants. Scatterplots were examined for evidence of nonlinearity and homoscedasticity. Sample Skews were examined to determine whether population skews were likely to be between +1 and -1, an acceptably range of skew. Cochrane's C and its p-level were used to examine homoscedasticity as well, using the criterion that the C-

value should not exceed .667 for a two-group analysis. The results of these tests are shown in Table 39 below.

TABLE 39
RESULTS OF TESTS ON REGRESSION ASSUMPTIONS

Tests / Dependent Variable Tested	Analysis of Scatterplot Residuals	Standardized Sample Residual Skews	Standard Error of Skew	Cochrane's C	P-level
PTEACH Current % of time spent in teaching	No evidence of nonlinearity. Some evidence of unequal variance.	.461	.079	.5603	.010
PRSP Current % of time spent in research	No evidence of nonlinearity. Some evidence of unequal variance.	.964	.079	.5147	.545
RSCP1	No evidence of nonlinearity. Some evidence of unequal variance.	.131	.079	.6463	.000
RSCP2	No evidence of nonlinearity. Some evidence of unequal variance.	-.611	.079	.5191	.457

Although the scatterplots showed some evidence of unequal variance for all four cases, the skews of the standardized residuals fell into an acceptable range in all four of the cases. In each case the Cochrane's C was within the range that indicates acceptable levels of homoscedasticity. Yet on PTEACH and RSCP1 there were some questions because the p-levels of Cochrane's C were .010 and .000 respectively. However, because of the large sample, small differences in the sample variances may show statistical significance but still be substantively trivial. In this particular case, the ratio between the maximum and minimum variances should also be considered. In the case of PTEACH this ratio is 1.274 and for RSCP1 it is 1.827. Such results would seem to indicate that, despite the p-level, the data is sufficiently homoscedastic to work with it effectively.

Thus the results of these tests indicate that the data is sufficiently linear, that residuals have a reasonably normal distribution in the population, and that the variance in the dependent variables in the population is reasonably the same for all levels of the independent variable. Given these results, the assumptions of regression analysis have been met without the need for data transformations.

The regression analyses focused on the effects of seven independent variables, SEX, RANK, BORN, MARRY, NCHILD, ROC and GC on four dependent variables, PTEACH, PRSP, RSCP1, AND RSCP2. The zero order correlation for the independent variables is shown below in Table 40.

TABLE 40

ZERO ORDER CORRELATIONS FOR INDEPENDENT VARIABLES

	Sex	Rank	Born	Marry	NChild	Int1	Int2	Int3	ROC	GC
Sex	1.000									
Rank	-.202	1.000								
Born	.201	-.535	1.000							
Marry	-.268	.147	-.053	1.000						
NChild	-.211	.176	-.212	.206	1.000					
Int1	.790	-.119	.175	.166	-.080	1.000				
Int2	-.280	.099	-.156	.833	.613	.0661	1.000			
Int3	.716	-.286	.199	-.106	.124	.676	-.0397	1.000		
ROC	-.270	.022	.068	.072	-.025	-.211	.054	-.254	1.000	
GC	.374	-.033	-.046	-.085	.013	.319	-.062	.334	-.691	1.000

Most of the correlations among the independent variables are below .375, indicating a reasonably low level of correlation among the independent variables. One of the exceptions to this relatively low level of correlation was the correlation of RANK and BORN at -.535. Although, it appears to be a negative correlation, the appropriate interpretation of it is that as birth year declines, e.g. faculty are older, rank increases. Although this correlation was relatively high, the importance of both variables to the analysis precluded the option of dropping either of them.

Another high correlation, at -.691, was between GC, gender composition of the college, and ROC, research orientation of the college. Both GC and ROC are specific numerical

calculations for each of the 15 colleges included in the analysis. The strong correlation indicates that the lower the percentage of female faculty in the college, the higher the research orientation of the college.

There were also some understandably high correlations related to interaction term variables which were newly created for the regression analyses. Because of the significant two-way interaction in the ANOVA of SEX and MARRY related to PTEACH, INT1 was created as a new variable for the regression analysis of PTEACH. Similarly, INT2, the two-way interaction of MARRY and NCHILD, was created as a new variable for the regression analysis of RSCP2, since it had shown significance related to this dependent variable in the ANOVA. INT3, the three-way interaction of RANK, NCHILD and SEX also affected PTEACH significantly in the ANOVA and was entered into the analysis as well. Because each of these interaction terms includes the independent variables of SEX, MARRY, RANK, and NCHILD in combination with each other, the high correlations of INT1 with SEX (.790), INT2 with MARRY (.833), and NCHILD(.613), and INT3 with SEX (.716) and INT1 (.676) are not surprising.

Although these higher correlations may cause some problems related to multicolinearity in the regression analysis, the overall impact on the R^2 may not be significant enough to require their removal from the analysis.

The results of the regression analysis on the four dependent variables are shown in Table 41 through 44.

TABLE 41

REGRESSION RESULTS ON PTEACH -
CURRENT PERCENTAGE OF TIME SPENT IN TEACHING

Variable	Unstandardized Equation	Standard Error	Sig. of T
GC	9.336118	7.518692	.2147
NChild	-1.234773	3.125249	.6929
Rank	-5.590537	2.629547	.0338
Born	-.267300	.097007	.0060
Marry	.549046	2.954116	.8526
Sex	6.783652	4.636663	.1438
ROC	.059177	.200660	.7681
Int1	-11.102484	4.651656	.0172
Int3	4.994440	4.120152	.2257
(Constant)	49.831615	9.503022	.0000

R^2 for PTEACH	= .02829
Standard Error of Estimate	= 22.99653
F Statistic	= 2.96983
F Significance	= .0017

TABLE 42
REGRESSION RESULTS ON PRSP -
CURRENT PERCENTAGE OF TIME SPENT IN RESEARCH

Variable	Unstandardized Equation	Standard Error	Sig. of T
GC	9.819539	-1.708542	.0949
NChild	-3.787041	-8.302730	.1001
Rank	-4.659461	-6.061154	.0000
Born	.149691	.019296	.0245
Marry	2.875124	.655543	.1104
Sex	-3.950075	-7.203335	.0174
ROC	1.031019	.720297	.0000
(Constant)	-3.717136	-16.202265	.5592

R^2 for PRSP = .12340
Standard Error of Estimate = 18.40213
F Statistic = 19.10469
F Significance = .0000

TABLE 43
REGRESSION RESULTS ON RSCP1 -
DESIRE TO RESTRUCTURE AMOUNT OF TEACHING TIME

Variable	Unstandardized Equation	Standard Error	Sig. of T
GC	-.623375	.249171	.0125
NChild	-.057250	.097603	.5576
Rank	.139850	.030297	.0000
Born	-.004776	.002818	.0905
Marry	.134066	.076313	.0793
Sex	-.259192	.070317	.0002
ROC	-.022947	.006716	.0007
(Constant)	3.585283	.269857	.0000

R^2 for RSCP1 = .06484
Standard Error of Estimate = .78057
F Statistic = 9.40985
F Significance = .0000

TABLE 44
REGRESSION RESULTS ON RSCP2 -
DESIRE TO RESTRUCTURE AMOUNT OF RESEARCH TIME

Variable	Unstandardized Equation	Standard Error	Sig. of T
GC	-.050835	.250422	.8392
NChild	.196571	.164341	.2319
Rank	-.048188	.030444	.1138
Born	.013212	.002836	.0000
Marry	.236496	.184081	.1992
Sex	.181365	.070709	.0105
ROC	-.008450	.006750	.2109
Int2	-.344389	.200457	.0861
(Constant)	3.443123	.289053	.0000

R^2 for RSCP2	=	.05565
Standard Error of Estimate	=	.78434
F Statistic	=	6.99001
F Significance	=	.0000

In each of the four regressions the Rho-squared was significant, indicating that the null hypothesis, that Rho-squared is zero in the population, can be rejected. Thus it appears that this set of independent variables is significant in explaining differences among female and male faculty in the population related to teaching and research. However, since the total proportion of each regression's variance explained by this model is small, other variables not included in these regression equations must play a significant role in the explanation.

The standard errors of estimate should be handled carefully. In PTEACH and PRSP the responses were calculated in percentages. In RSCP1 and RSCP2 the responses were on a Likert scale from 1 to 5. Thus standard errors should not be compared across the regressions because they are calculated in two different units. However, within their units of the same type, the larger standard errors indicate wider variability around of the slope of the regression line.

A summary of the slopes between the independent and dependent variables is shown in Table 45. For the cases where "Yes" is noted in the table, the slope of the regression line was significant using an alpha of .05. With non-dummied variables this indicates that the null hypothesis of a zero slope in the population can be rejected. With dummy variable slopes this indicates that no significant difference between the measured groups (female, partnered, with children, associate/full professor rank) and the excluded groups (male, non-partnered, without children, assistant professor rank, respectively), exists in the population.

TABLE 45

SUMMARY - REJECTION OF NULL HYPOTHESIS ALLOWED

Dependent Variable / Independent Variable	Pteach	Prsp	Rscp1	Rscp2
GC			Yes	
NChild				
Rank	Yes	Yes	Yes	
Born	Yes	Yes		Yes
Marry				
Sex		Yes	Yes	Yes
ROC		Yes	Yes	
Int1	Yes			
Int2				
Int3				

The results displayed above indicate that some of the independent variables have little significance in relation to the dependent variables which measure current or preferred allocations of teaching and research time. Whether a faculty member is partnered (MARRY) or has children (NCHILD) do not appear to be significant related to the amount of time currently spent in teaching and research or one's preferences in the future. INT2 (MARRY and NCHILD) and INT3 (RANK, NCHILD and SEX) also generate no significant results. The gender composition of one's college(GC) appears to have significance only in relationship to faculty preference regarding the amount of time spent in teaching (RSCP1). While partnership (MARRY) by itself affects no dependent variable, INT1 (SEX and MARRY) appears to be significant for the percentage of time spent in teaching (PTEACH).

The research orientation of one's college(ROC), seen as the percentage of time spent in research by the majority sex of faculty in that college, may have some significance for the percentage of time spent in research (PRSP), but also for a faculty member's preference in terms of time spent in teaching (RSCP1).

The independent variables affecting the most dependent variables were a faculty member's academic rank (RANK), gender (SEX) and age (BORN). There was significant relationship between RANK and three of the four dependent variables, namely PTEACH, PRSP, and RSCP1. Age (BORN) significantly affected results for PTEACH, PRSP and RSCP2. SEX significantly affected results for PRSP, RSCP1 and RSCP2.

From another viewpoint it appears that of the independent variables tested, the ones having the most significant effect on the percentage of time spent in teaching (PTEACH) were RANK, BORN, SEX and INT1 (SEX and MARRY). The other independent variables GC, NCHILD, MARRY, ROC, INT2 and INT3 did not significantly affect the PTEACH results.

The percentage of time spent in research (PRSP) was most affected by RANK, BORN, SEX and ROC. The variables GC, NCHILD, MARRY, INT1, INT2, and INT3 did not significantly affect the results.

The desire to change the amount of time spent in teaching (RSCP1) was most significantly affected by GC, RANK, SEX and ROC. It was not influenced significantly by NCHILD, BORN, MARRY, INT1, INT2 or INT3.

The desire to shift the amount of time spent in research (RSCP2) was affected only by BORN and SEX. It was not significantly influenced by GC, NCHILD, RANK, MARRY, ROC, INT1, INT2 or INT3.

In summary, it appears that the regression analyses indicate that while several of the independent variables have limited effects on teaching and research, a faculty member's rank, sex and age have significant effects in these decisions. These findings parallel results from the two way anova analysis which were previously discussed. In that analysis, even when age was held constant, a faculty member's rank and sex still generated some differences in allocation of both current and preferred work effort.

Based on the statistical results generated above through the ANOVAS and regressions that have been run on this sample of Michigan State University's faculty, some tentative conclusions can be reached about the population. Chapter five will discuss these conclusions and posssible reasons for them.

CHAPTER 5

DISCUSSION OF THE RESULTS

The purpose of generating the data summarized in chapter four was to investigate three key questions posed at the beginning of chapter one. These questions were:

1. Are male and female faculty in the research university different from each other in key areas which affect university activity and culture?

2. If differences between male and female faculty are significant, can these differences be attributed primarily and/or directly to gender?

3. If differences between male and female faculty cannot be attributed to gender, what other factors contribute to differences among these men and women?

After answers to these questions are reviewed the implications of these findings will be discussed.

ARE THEY DIFFERENT?

First, the data do reveal some areas in which the null hypothesis, that female and male faculty do not differ in the population, can be rejected with a 95% degree of confidence.

Specifically the one-way ANOVA indicated that in the area of professional satisfaction some differences appear to exist between the two faculty groups. Female faculty reported themselves less satisfied than males when asked about the work itself, institutional support for their work, job security, opportunities for advancement, and opportunities for growth and development. Significant differences for male and female faculty were not found to be related to satisfaction with the university climate for academic work, salary and benefits, or the perceived quality of Michigan State University students.

Although there were several areas in which females were less satisfied than males, the importance male and female faculty placed on the various sources of professional satisfaction did not vary significantly. The only exception to this general observation is in the area of professional opportunity. Satisfaction with professional opportunity appears to be more important to women in the population than to men. Aside from the importance of opportunity, the overall balance of satisfactions that female faculty are seeking does not appear much different than those of male faculty. Females seem to value sources of satisfaction similarly to males.

From these results it is clear that female faculty are less content than men regarding their current status. They desire more change and more opportunity than do their male counterparts. There are two possible explanations for this state. Perhaps female faculty currently have less satisfaction and opportunity than male faculty at Michigan State

University. Thus, their desire for change is an effort to achieve parity with the current status of male faculty in the university. It is also possible that female faculty hold a status equal to that of their male colleagues. However, they have set higher standards for themselves than the current predominately male norm. Thus, they are not as satisfied with the status quo. While either explanation is possible, the data on the allocation of work time and the greater percentage of women in lower ranks tend to reinforce the likelihood of the first explanation.

In some key activities the allocation of work time differs between male and female faculty. In the one-way ANOVA, the percentages of time spent in both teaching and research are important areas of difference. Other faculty activities such as advising, professional development, service/extension, and governance do not yield obvious differences. Women faculty in the population teach significantly more and do significantly less research.

Yet the female faculty in this university do not appear completely content with the allocation of their time. When asked about their preferences, they prefer more restructuring of their positions than their male counterparts. Their desire for shifts to less teaching and advising and more time for research and professional development are significantly greater than those of male faculty. This greater desire to restructure is likely reflected in the lower level of satisfactions about their current situations as reported by female faculty.

These desires to restructure their time do not imply that female faculty see the ideal relationship between academic tasks and rewards differently than do their male colleagues. The statistics do not reveal such significant differences. Both groups appear similar in their opinions about the importance of various academic activities for determining tenure, rank, and merit increases in the research university context. Male and female faculty both attach themselves to the research university ethos that expects and rewards attention to research.

Finally, it appears that female faculty's current restlessness about the gulf between their current situations and their aspirations is complicated by their perceptions about geographic mobility. They believe themselves less likely to stay at Michigan State University and more likely to look for a position at another institution than do males, although the women feel significantly more constrained in their freedom to move. It is possible that female faculty feel caught between hope and despair. They may hope that moving to another institution can help bridge the gulf from current reality to their aspirations. Yet the perception that their freedom to move is more constrained may lead to despair about their ability to change the situation.

Overall, it appears that the male and female faculty at Michigan State University are quite similar in their ideals. The importance of key professional satisfactions and the link between academic tasks and rewards does not appear to differ for these two groups. Yet the women are less convinced that their current situations reflect their ideals. They

perceive their actual satisfactions and actual use of time to be further from the ideal than do the males. Thus they seek a greater amount of change and more opportunity to accomplish it.

WHY DO MALE AND FEMALE FACULTY DIFFER?

Given that male and female faculty do differ from each other in terms of their current situations, the key question is why do they differ? This study investigated several possible reasons for these differences. They could result directly from differences in gender. However, they could also result from differences in age, academic rank, family situation (an active adult partnership and/or children), or the climate of the university college with which each faculty member is affiliated. Each of these possible explanations was investigated.

Age appears to be a significant, though not exclusive, factor in the explanation. In the regression analyses run on the current and preferred allocation of time to teaching and research, the slope of the variable representing age (BORN) was significant in three of the four equations.

Academic rank is also a significant factor in the explanation. Like age the slope of RANK was significant in three of the four regression equations. In the ANOVA as well, RANK, by itself or interacting with other independent variables, was substantively

related to results in several areas. While some of the differences in professional satisfaction related to job security (SAT2) and compensation (SAT13 and SAT14) are logically related to RANK, it was also clear that RANK significantly affected work time allocation. The percentage of time currently spent or preferred for teaching, research, advising, professional development, service/extension, and administration/governance were all affected in some significant way by RANK.

Particularly when RANK was analyzed interacting with some other independent variable, one pattern was quite noticeable. Very frequently the range of responses was greatest among those in the assistant professor rank regardless of sex, marital status, and the presence of children. Although the responses did not always fit expected patterns, the analyses clearly showed that in most such situations faculty of associate and full professor rank were more similar to each other than were those of lower rank to colleagues also in their rank.

In both the multiple ANOVA and the regressions, when the effects of age were controlled and RANK effects were differentiated, gender (SEX) still emerged as a significant variable. In the ANOVA, controls for age and rank eliminated differences in satisfactions with job security and all measures of geographic mobility except perceived freedom to move. Yet the effects of sex on differences in the satisfaction with work, university support for work, and opportunities for rank advancement, growth and

development remained. Gender had a main effect on these differences even when other sources of possible explanation were factored into the analysis.

Controlling age and rank did eliminate gender's direct effect on the percentage of time currently spent in teaching. The regression analysis indicated gender did not have a significant effect on time spent in teaching although the interaction between gender and marital status did. The ANOVA also indicated that gender does not have a main effect. Instead there were significant interaction effects of gender and marital status and also of gender with rank and the presense of children. Thus, results in terms of gender's effect on teaching are complex, complicated by age, marital status, rank, and children. Gender has some effect on the amount of time spent in teaching but only as coupled with other variables. Together these form a configuration which cannot be explained by individual factors. Perhaps Aisenberg's (1988) assertion that the "marriage quest" has a major effect on academic women's teaching activities should not be dismissed too easily.

Gender did have a direct effect on the percentage of time spent in research in the ANOVA, and in the regression analysis. The results indicated that female faculty currently spend significantly less time on research. Yet gender also had a main effect on the desire to change that balance, with women having a stronger desire to spend more time on professional development and research and less time in teaching and advising.

Thus, while it is possible that the percentage of time spent in teaching is substantially affected by other variables interacting with gender, the percentage of time spent in research is directly influenced by gender.

Do family situations have significant effects? It is clear that adult partnerships influence a faculty member's sense of professional satisfaction with their work, sense of job security and opportunity, satisfaction with compensation and satisfactions outside the university. However, aside from those measures, the only other effect is on the desire to restructure the amount of time spent in teaching and the likelihood of staying at Michigan State University. Thus, adult partnerships appears to have a limited, though significant, effect on professional satisfaction but little effect on the allocation of work time or even perceptions of geographic mobility.

Children in the family appear to contribute to only a few minor shifts. The importance of a few sources of work satisfaction change for those with children. The presence of children also alters to some degree the value faculty place on teaching. However, the presence or absence of children does not appear to affect levels of professional satisfaction, faculty members' preferred allocations of work time, their sense of appropriate rewards or geographic considerations. Thus, the presence of children appears to have very limited effects on faculty satisfactions, perceptions, and choices.

Adult partnerships and the presence of children interacting with gender also resulted in only a few significant differences. The interaction effect of gender and partnership only on variables measuring the percentage of time spent in teaching and belief in teaching's value for rewards confirm the limited degree to which gender and family status are intertwined in professional efforts.

Aside from personal attributes or situations, what role might a faculty member's college have in activities that relate to the core teaching and research missions of the university? It appears that the gender composition(GC) and research orientation of the college(ROC) or what they may represent, have some influence on the percentage of time spent in research and the desire to restructure time devoted to teaching. Thus, it appears that one's college does influence a faculty member's allocation of time to some degree. Yet the pattern of influence is not consistent. Not all regression slopes related to these two factors were significant. The influence of one's college appears to be limited and to primarily affect research time.

In summary, it appears that of the variables examined, gender, rank and age have the more significant effects. They generated the largest and most consistent number of significant differences in the regression analyses when compared with variables examining family situations and the culture of one's college. In addition when age was held constant, the differences found in the one-way ANOVA shifted somewhat in the multiple ANOVA. Still, controlling for age did not cancel most of the main effects

associated with gender and also with academic rank. Thus, it appears that age, rank and gender work hand in hand as faculty wrestle with their current situations and aspirations for the future.

IMPLICATIONS OF THIS STUDY FOR MICHIGAN STATE UNIVERSITY

Despite some limitations on the data and method of analysis, the results are consistent enough to warrant some consideration of policy changes. It appears that a greater influx of female faculty into Michigan State University will not alter to ideals of the faculty dramatically. Overall, female and male faculty seem to balance the importance of teaching, research, and other faculty activities similarly. They also seem to be searching for the same balance of professional satisfactions. Thus, it appears that the gender balance of the faculty will not have major ramifications for the broad mission or faculty reward systems of the university. Concerns that more female faculty will dramatically alter the basic goals of the institution seem unfounded. It appears that female faculty like males are gradually absorbed into the research university ethos.

Furthermore, there is no indication that the faculty has significant concerns about institutionalized discrimination in compensation or job security. When age and rank are factored in, significant differences between female and male faculty cannot be documented. Thus, while it is important to remain vigilant in maintaining gender equity in terms of these basic factors of employment, there does not appear to be a need to systematically overhaul the systems of the university at this point.

The more appropriate avenues of response for Michigan State University would appear to be in the areas of faculty work assignments and faculty development, particularly among less experienced faculty in the lower academic ranks.

The broader range of responses from assistant professors quite possibly indicates that those in the lower academic ranks are not yet completely inculcated into the ethos of the research university. Since lower academic rank correlates strongly with younger age and with less years of professional experience, it appears that as faculty members age and gain more experience in a particular environment, the organizational values and culture of the university are absorbed and more fully embraced. Young faculty who believe they do not fit well with the ethos of the research university may seek alternative employment. Through a combination of university evaluation and self-selection only those who fit the dominant ethos remain. Those who don't fit conclude that they should establish their careers in other types of colleges and universities or outside the sector of higher education.

While it is advantageous for any institution to shape a coherent and consistent culture, the danger is for those whose identification with the research university may be in a slightly different form than those who control the ethos. Inexperienced assistant professors who are involved in legitimate forms of research which do not fit the predominant model for research in their discipline may conclude too quickly that they do not belong. This is a particular danger in research universities which maintain a narrow

definition of sound scholarship favoring quantitative research above all else. While such research should be encouraged, it is not the only type of scholarship appropriate to a research university. The same concern exists when an institution evaluates scholarship only by counting the number of books published or articles in juried journals. Such rigid evaluation mechanisms often send inappropriate signals to young scholars as they are determining their career plans and working to establish professional confidence.

Particularly for females entering research institutions as assistant professors, the culture may not be a supportive one. If the definition of research is narrow and the evaluation mechanisms are rigid, such an environment could cause great doubt for the many bright women whose career paths have not been linear. Aisenberg(1988), Dwyer(1991) and others have documented the circuitous paths many women take into academic careers. They recognize the hidden passages many women find to combine career and family. Bernard (1964), Rossi (1973) and Dwyer (1991) also note the challenge of finding a path given perceived geographic constraints. All of these factors complicate the career planning of academic women. When they are combined with a narrow and restrictive ethos in the research university, belief in their abilities as scholars could be seriously undercut by this rigidity.

The data on young female assistant professors at Michigan State University confirms that they are struggling. They are spending substantially higher percentages of their time in teaching and service/extension work and substantially less time in professional

development than professors of higher rank or even male professors of the same rank. These aspiring professionals report less comfort with the climate of the university, desire more opportunity, want to spend less time in administration/governance activities, and are struggling to carve a niche.

The patterns noted above do not portend a positive future for many of these young women faculty. The research university ethos values a different balance of activities than many of them have undertaken to date. It is possible that unless they are supported by the university in finding appropriate time and avenues for research, and the nature of appropriate scholarship at Michigan State is publicly discussed, they may conclude unnecessarily that they do not fit at this university.

Where women faculty teach or advise more than the man, academic administrators and mentors should intervene by actively planning career development with their faculty. Roger Baldwin's work on faculty life cycles and careers(1985, 1990) would be particularly helpful for those providing guidance to faculty. Career development patterns and pitfalls should be discussed directly with women faculty, though male faculty would likely benefit from similar discussions.

Although career preparation begins already in childhood, a faculty/career orientation program may still help female faculty as they begin their work in the university. However, they may also need help along the way to recognize when and how they should

change the balance of their activities. Colleges and departments should consistently track the type of work activities required of both genders to insure that they are not subconsciously assigning more teaching/advising responsibilities to female faculty on a continuing basis. Furthermore, administrators and mentors should also point out research opportunities, and consider creating internal support for worthy research projects when external support is less available. Because cumulative disadvantages may cause some women to lack the disciplinary connections which result in research funding and personal confidence in their research abilities, assistance from colleagues and administrators may be crucial.

Colleges should encourage women to carve out professional development time and should support them in those efforts. Given the scarcity of such time, even small incentives and opportunities provided by colleagues and deans may be gratefully received. Strong encouragement of professional development time sends the right signals regarding the future. It allows women to believe that the university is investing in their capacities as professionals for the long run.

For female faculty in colleges where they are very few in number, it is critical that they nurture networks and mentors among both males and females inside and outside their colleges. It would be all too easy for such women to be seen as tokens among their male colleagues and to encounter all of the career advancement barriers that are associated with tokenism. It is also quite possible that such women would be perceived as "queen

bees" by women in other colleges. (Kanter, 1977). Only if female faculty actively seek out males who are supportive within their schools and females who can provide friendship and guidance outside their colleges will they prosper. Such networking and support will provide helpful insights into the college and university ethos as well as suggestions for career advancement in an environment which may seem somewhat foreign.

The university could aid such network formation by arranging connections particularly outside one's college. Helping female faculty find each other would not be difficult. Electronic bulletin boards, newsletters, and occasional inter-college events could help provide the social connecting points needed to begin such networks. While many women faculty will undertake such projects themselves, those who are less experienced and buried under heavier teaching assignments will need encouragement and assistance from the institution.

Perhaps there is little that universities can do to alleviate the perception of greater geographical constraint that its female faculty sense. However, that reality, should encouraged even more attention to the quality of the work experience itself. If women are indeed more constrained in mobility, there is every reason for the university to invest deeply in their professional futures. The contributions which come from such development could be deep and lasting. The professional satisfactions bred by such

career development planning could also foster commitments to the university which make constraints on geographic mobility much less central to professional opportunity.

CONTRIBUTIONS TO THE LITERATURE ON WOMEN IN HIGHER EDUCATION

The discussion in chapter two noted that there are few contributions to knowledge about women faculty in higher education from the discipline of organizational behavior analyzing the intersection of individuals, particularly women, with discrete organizations. Although such work has been done with business organizations (Kanter, 1977; Morrison, 1987), to date little research has been done in higher education organizations from a similar perspective. Furthermore, with the exception of Olsen's (1991) study, there appears to be little developed literature about women faculty in the research university context regarding their sources of satisfaction, use of time, and geographic mobility. The intent of this study of Michigan State University was to fill a portion of that gap. By looking at one institution and considering how faculty relate to its institutional ethos and policies, issues of gender difference among faculty in a research university can be analyzed at an organizational level.

This study documents that some differences among faculty exist because of gender. The work-related preferences of female faculty and the balance of academic activities which they regarded as important for future rewards did not vary substantially from the male faculty. Yet their current real experience did differ substantially from that of males, especially for those in the lower academic ranks. Currently women faculty do allocate

work time differently but are less satisfied with such arrangements and seek greater restructuring of their time.

This analysis, however, also found that the issue of gender-related differences is often greatly complicated by the interaction of gender with age and rank. Many differences which the casual observer might attribute to gender, should more accurately be attributed to differences in one's age and achieved academic rank. Both of these factors likely reflect differences in years of professional experience; and those years of experience do change the professional satisfactions and the uses of professional work time. Yet these factors do not cancel out the influence of gender-based differences entirely.

These two themes, not only the continuing direct influence of gender, but also the interplay of gender with age and rank, are two documented contributions to the literature which could only be made with this degree of detail and nuance at a single-site location.

Within broader theories explaining the roles of nature, socialization, and structure on outcomes for women, this study also makes a contribution. The argument that nature inherently differentiates men and women in role and function is not strongly supported by this study. In many ways the male and female faculty of this university are very much alike. The number of areas in which they report differences in professional satisfaction or differences in professional values are limited. They have similar aspirations, even though their real experiences are dissimilar. Thus, there is little to

suggest that the male and female faculty in a research university context are radically different because of nature. While there are some differences in chosen field of study and perhaps in the definition of appropriate scholarship, overall these men and women have more similarities than differences. If nature necessarily caused deep divides between men and women such differences would be much more obvious in the results.

Socialization is very likely a key part of the explanation. As Bernard (1964) noted almost thirty years ago, there are key socialization factors which differentiate all people who aspire to academic careers. By the time faculty are employed in a research university, they have already self-selected into an environment with a certain type of value set and ethos. Their ability to attach themselves comfortably to these values and this culture were very likely shaped by many prior years of socialization in their families, schools, and communities. Thus in the cases of both male and female faculty earlier socialization is a very important factor in their career choices. Without such socialization neither sex would have aspired to faculty status at a major research university.

By the time faculty members have been invited into and elected to join a major research university, their orientations to the balance of teaching, research, and service may already be somewhat similar. In this context, Finkelstein's (1984) argument that women have an inherently stronger orientation to teaching does not hold up. The survey shows that while women may teach more they are still committed to a balance of teaching and research similar to their male colleagues.

Despite these similarities, socialization does contribute to differences in the balance of men and women faculty in several fields of study. At Michigan State University, like many other colleges and even research universities, the women faculty are still concentrated in a limited number of fields. Areas such as education, human ecology and nursing continue to have disproportionate numbers of female faculty, while other areas such engineering and business lag far behind. Sex segregation in field of study is intertwined with occupational sex segregation in the work force. While there are glimmers of change, the messages society sends to its students about appropriate fields of study and work related to one's sex are still informed by traditional gender roles. The set of academic fields chosen by most women has not yet changed substantially.

Yet in those fields chosen some major changes have occurred within the context of the research university. For academic women managing the intersection of career and personal life is not the same as it was three decades ago. In 1964 Bernard noted that married women academics saw marriage as a hindrance to their careers and children as a liability when related to career advancement. While that may have been the reality of the 1960's, the reality of the 1990's is different. In general marital status and the presence or absence of children did not have a significant effect on many professional satisfactions outside the realms of job security and compensation. These factors resulted in almost no significant differences between male and female faculty in the allocation of work time. There was a limited effect on the likelihood of staying at Michigan State University, but even then the effect was not clear and obvious. Only for those of either

sex who were not in an adult partnership but did have children were there professional struggles. However, males and females in such circumstances were more similar to each other than different.

From these results it is clear that the way American society has socialized the women who now populate the faculty of Michigan State University is quite different from the socialization of their predecessors. Women seem to have transferred more of their aspirations to the world of professional academic work. At the same time, marriage and children are no longer seen as the professional liability that they were thirty to forty years ago.

While the set of academic fields considered appropriate for women is just beginning to change, the socialization of women academics regarding the relationship of marriage and family to career has changed significantly in the last three decades. That difference has altered women's professional goals and their capacity to sustain success in both personal and professional life in the research university context.

While some changes in socialization have supported women academics in their aspirations within research universities, the organizational structures and cultures of the research universities have taken only the first steps to open themselves to women academics. At Michigan State University, like many other major research universities, it appears that some progress has been made on achieving gender equity in compensation. While some

inequities may still exist, this is no longer a source of major dissatisfaction for most female academics.

Yet the issue of salary equity is only one issue in a much larger field of concerns. Universities must address the current distribution of males and females by academic field. Without the leadership of the universities in providing a better balance of males and females in the disciplines, there is less hope that occupational sex segregation will change substantially. University hiring policies and support structures for the few women in atypical fields may need adjustment.

Universities should also look closely at their mechanisms for assigning work responsibilities. It would appear that particularly at the assistant professor level something is structurally amiss when female assistant professors differ so strongly from males in the same rank in terms of the percentage of time spent in teaching. Just because more women are populating research universities does not guarantee that their experience is similar to that of male faculty.

In addition the universities, if they are like Michigan State, must acknowledge that women faculty seek greater opportunities for growth and development and particularly seek time and opportunities to pursue research even more avidly than their male counterparts. Universities must find institutional mechanisms to encourage and support

these aspirations. Faculty evaluation strategies should also be reviewed to insure that the criteria used to evaluate appropriate scholarship are not excessively narrow.

Research universities must also come to grips with the issue of geographic mobility. Women academics still do feel more constrained in terms of geography. With some changes in personnel policy research universities could be open to a broader pool of qualified women who are working with geographic constraints. This pool could include women currently employed in other college and university settings that are less research oriented. Current placement for women may not be symbolic of their aspirations. Hiring policies about the hiring of spouses, one's own graduates, and those serving in non-tenure track positions should be reconsidered to enlarge the pool of potential female applicants. Compensation strategies based on labor market demand must be sensitive to that fact that women may be less able to use moving to another institution as a bargaining chip in salary negotiations. When compensation systems are sensitive to market demand, universities must remain vigilant about the emergence of new compensation inequities because of constraints on mobility.

On balance simply changing the structural aspects of major research universities will not resolve all the challenges for women in their faculty ranks. Changes in the socialization of young women regarding appropriate fields of study and the combinations of career and personal life are necessary prior steps which prepare women for faculty positions in such institutions. Yet the likelihood that they will be recruited in greater numbers, successful

in their professional work, and in concert with the ethos of the research university can be enhanced by such structural changes.

FUTURE RESEARCH OPPORTUNITIES

While this study adds to the base of knowledge about female faculty in major research universities, there are many other avenues of research and analysis that remain fertile ground for work. Since the survey at Michigan State University did not clearly specify academic field, no work could be done to compare levels of professional satisfactions and the allocation of work time by academic discipline. Feldman's (1974) study of gender and the academic disciplines provides an excellent foundation for continuing work. Such research could yield significant new knowledge about differences and similarities between male and female faculty. It may be that those who choose a particular academic discipline share more similarities than differences regarding their use of professional time and their relative orientations toward teaching, research, and service. Without further research few documented claims can be made about such issues.

It may also be useful to compare the results from this study of Michigan State University with other major research universities, land grant institutions, and comprehensive schools. Such comparisons could highlight findings from this study that are not more broadly shared with other universities and could make a further contribution to the literature about unique higher education cultures in relationships with their faculty. From the standpoint of organizational theory, higher education is a set of organizations about

which little is known. Within that grouping even less is known about the subset of research universities. While higher education has similarities to other corporate forms of organization, the particular history, mission in education, special organizational culture, and not-for-profit status of higher education research institutions warrants the study of their faculty as a unique subset.

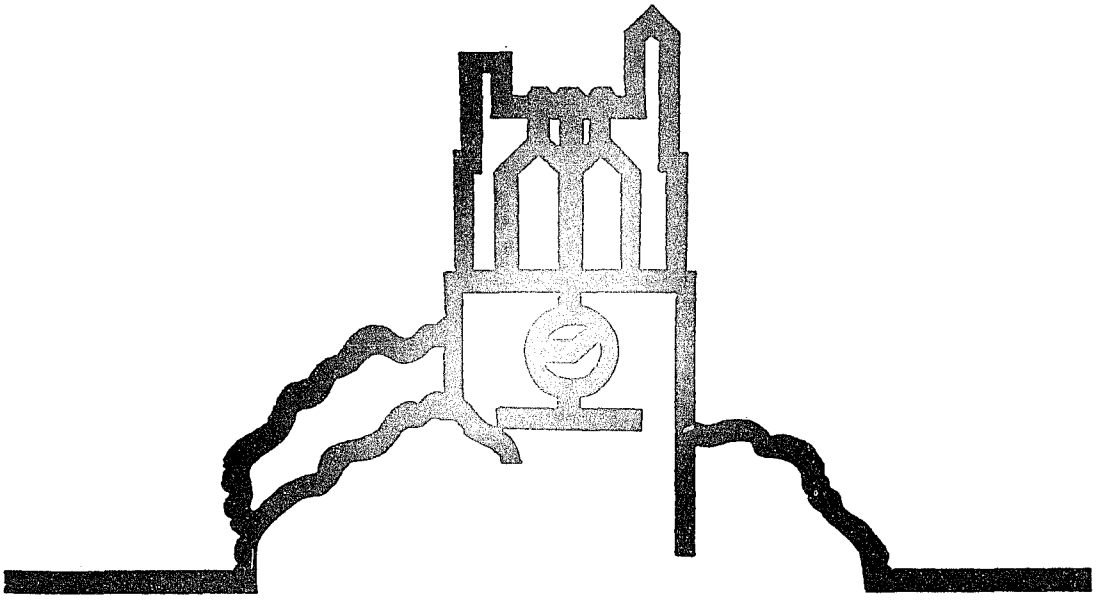
CONCLUSION

This study of Michigan State University's faculty has developed a nuanced understanding of the relative effect of gender on the experience, activities, and aspirations of its faculty. Female and male faculty professionals work together to achieve the university's mission. Understanding the dynamics of their work enables this university and other research universities to function more effectively as agents of knowledge and education in a learning society.

APPENDIX

APPENDIX A

FACULTY MOBILITY SURVEY



Thank you for taking the time to complete the Faculty Mobility Study. This study explores faculty career choices in a dramatically changing environment. The information gained from this effort will be used in understanding the career challenges facing faculty.

Your participation in this study is voluntary. You may choose not to participate at all or terminate your involvement at any time. You have the right to refuse to answer any question. However, we would appreciate it if you could answer all questions in order to minimize the amount of missing information that makes it difficult to analyze data.

The entire survey will take about 30 minutes to complete. All your responses will be kept strictly confidential. If you have any questions about this project, please contact Dr. Kathryn Moore at 355-2395, Dr. Philip Gardner at 355-2211 or Dr. Linda Forrest at 355-8502. Please return your survey by March 25, 1991 to:

Collegiate Employment Research Institute
113 Student Services Building
Michigan State University
East Lansing, MI 48824

The return of the completed survey constitutes your informed and voluntary consent to participate in this research.

PART I. Questions in this section concern your academic appointment and the general level of job satisfaction you experience in your current position.

1. What is your current academic rank at Michigan State University? (PLEASE CIRCLE ONE NUMBER)

Professor	1
Associate Professor	2
Assistant Professor	3
Instructor	4
Specialist	5
Other:_____ (Please Specify)	6

2. In what year did you achieve your current rank? 19_____

3. In what year did you begin your employment as a faculty member at Michigan State University? 19_____

4. What is your current tenure status at Michigan State University? (PLEASE CIRCLE ONE NUMBER)

Not in tenure system	1
In tenure system but not tenured	2
Tenured	3

In what year did you achieve tenure at Michigan State University? 19_____

5. In which college or unit is your primary appointment? (PLEASE CHECK ONE)

_____a. Agriculture and Natural Resources
_____b. Arts and Letters
_____c. Business
_____d. Communication Arts
_____e. Education
_____f. Engineering
_____g. Human Ecology
_____h. Human Medicine
_____i. James Madison
_____j. Natural Science
_____k. Nursing
_____l. Osteopathic Medicine
_____m. Social Science
_____n. Urban Affairs
_____o. Veterinary Medicine
_____p. Non-College Faculty
_____q. Other:_____

6. Do you currently hold a joint appointment? Yes_____ No_____ If yes, in what other department/school/ non-departmentally organized college do you hold an appointment(s)? _____

7. At how many other institutions have you held academic appointment at the level of assistant professor or above? _____Institutions

In what year did you hold your first academic appointment? _____year

8. **How satisfied or dissatisfied do *you personally* feel about each of the following aspects of your job at Michigan State University? (PLEASE CIRCLE ONE NUMBER FOR EACH ITEM)**

	Very Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Very Satisfied	Not Applicable
My work load	1	2	3	4	5	8
My job security	1	2	3	4	5	8
The authority I have to make decisions about what courses I teach	1	2	3	4	5	8
The authority I have to make decisions about content and methods in the courses I teach	1	2	3	4	5	8
The authority I have to make decisions about other (noninstructional) aspects of my job	1	2	3	4	5	8
Time available to work on scholarship and research	1	2	3	4	5	8
The mix of teaching, research, administration, and service (as applicable) that I am required to do	1	2	3	4	5	8
Opportunity for my advancement in rank at Michigan State University	1	2	3	4	5	8
Time available for working with students as an advisor, mentor, etc.	1	2	3	4	5	8
Availability of support services (including clerical support)	1	2	3	4	5	8
Availability of equipment (personal computers, etc.)	1	2	3	4	5	8
Freedom to do outside consulting	1	2	3	4	5	8
My salary	1	2	3	4	5	8
My benefits, generally	1	2	3	4	5	8
Overall reputation of Michigan State University	1	2	3	4	5	8
Institutional mission to carry out teaching, research, and public service	1	2	3	4	5	8
Quality of leadership in my department/program	1	2	3	4	5	8
Quality of chief administrative officers at Michigan State University	1	2	3	4	5	8
Quality of my colleagues in my department/program	1	2	3	4	5	8
Quality of graduate students whom I have taught here	1	2	3	4	5	8

8. Continued

	Very Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Very Satisfied	Not Applicable
Quality of undergraduate students whom I have taught here	1	2	3	4	5	8
Teaching assistance that I receive	1	2	3	4	5	8
Research assistance that I receive	1	2	3	4	5	8
Opportunities for professional growth and development offered by my academic unit	1	2	3	4	5	8
Cooperation offered by support staff at Michigan State University	1	2	3	4	5	8
Quality of faculty leadership (e.g., Academic Senate) at Michigan State University	1	2	3	4	5	8
Relationship between administration and faculty at Michigan State University	1	2	3	4	5	8
Interdepartmental cooperation at Michigan State University	1	2	3	4	5	8
Spirit of cooperation among faculty at Michigan State University	1	2	3	4	5	8
Quality of my research facilities and support	1	2	3	4	5	8
My job here, overall	1	2	3	4	5	8

9. Please estimate the percentage of your total working hours that you spent on each of the following activities during the 1990 Fall Term. (PLEASE GIVE YOUR BEST ESTIMATES IF NOT SURE: IF NONE, ENTER "0")

Note: The percentages you provide should sum to 100% of the total time you spent on professional activities.

Percent

Teaching (preparing courses; developing new curricula; teaching; grading papers.) _____

Research and Scholarship (planning for and conducting research; preparing for and giving performances and exhibitions in the fine arts; preparing or reviewing articles or books; preparing for and attending professional meetings or conferences; seeking outside funding, including proposal writing.) _____

Advising Students (advising undergraduate and graduate students; working with student organizations.) _____

Professional Development (taking courses; pursuing an advanced degree or participating in other practices to remain current in your discipline.) _____

Service and Extension (preparing and giving speeches that build upon your professional expertise; providing of technical assistance, policy analysis, program evaluation, medical or veterinary services, psychological counseling and therapy; consulting outside with or without remuneration.) _____

Administration and Goverance (participating in faculty goverance; participating in departmental or institutional committees and task forces; managing and coordinating programs or personnel.) _____

Other (PLEASE SPECIFY):_____

_____ _____

Please be sure that your percentages total: *100%*

10. **Indicate how satisfied you are with these facets of your life at this time.** (PLEASE CIRCLE ONE NUMBER FOR EACH ITEM)

	Very Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Very Satisfied	Not Applicable
Life in general, outside of work	1	2	3	4	5	8
Healthful lifestyle	1	2	3	4	5	8
Family life	1	2	3	4	5	8
Amount of time for leisure activities	1	2	3	4	5	8
General level of happiness	1	2	3	4	5	8
Level of physical activity	1	2	3	4	5	8
Degree of physical fitness	1	2	3	4	5	8
Geographical area where you live	1	2	3	4	5	8
Climate where you live	1	2	3	4	5	8
Ability to cope with stress	1	2	3	4	5	8
Social life	1	2	3	4	5	8
Overall health status	1	2	3	4	5	8

PART II. In this section, we ask you to consider the likelihood of leaving your current position to do something else.

1a. If you had the opportunity to restructure your current position, would you want to do more, less, or about the same amount of each of the following? (PLEASE CIRCLE ONE NUMBER FOR EACH ITEM)

	Much Less	Somewhat Less	Same Amount As I Now Do	Somewhat More	Much More
Teaching	1	2	3	4	5
Research and Scholarship	1	2	3	4	5
Advising Students	1	2	3	4	5
Professional Development	1	2	3	4	5
Service/Extension	1	2	3	4	5
Administration and Governance	1	2	3	4	5

1b. If you were to leave this job to accept another position, would you want to do more, less, or about the same amount of each of the following as you currently do? (PLEASE CIRCLE ONE NUMBER FOR EACH ITEM)

	Much Less	Somewhat Less	Same Amount As I Now Do	Somewhat More	Much More
Teaching	1	2	3	4	5
Research and Scholarship	1	2	3	4	5
Advising Students	1	2	3	4	5
Professional Development	1	2	3	4	5
Service/Extension	1	2	3	4	5
Administration and Governance	1	2	3	4	5

2. Given your situation at Michigan State University and the job market in your field, how likely are you to take these actions within the next two years:

	Very Unlikely	Somewhat Unlikely	Neutral	Somewhat Likely	Very Likely
a. Seek a new position at Michigan State University	1	2	3	4	5
b. Look for a position at another institution	1	2	3	4	5
c. Resign my current position for a similar position at another institution	1	2	3	4	5
d. Resign my position to retire	1	2	3	4	5
e. Resign my position to return to school as a student	1	2	3	4	5
f. Resign my position for other reasons including career change, child rearing, providing dependent care, etc.	1	2	3	4	5
g. Accept employment at a(n):					
* doctoral granting university or college	1	2	3	4	5
* other 4-year university or college	1	2	3	4	5
* 2-year postsecondary institution	1	2	3	4	5
* elementary or secondary school	1	2	3	4	5
* hospital or other health care organization	1	2	3	4	5
*consulting, self-owned business, freelancing	1	2	3	4	5
*private sector for-profit business or industry	1	2	3	4	5
* foundation or other nonprofit organization	1	2	3	4	5
* federal government (including military)	1	2	3	4	5
* state or local government	1	2	3	4	5

3. Faculty consider many factors when weighing an opportunity to leave an institution like Michigan State University. Listed below are factors that you may contemplate in deciding to leave the university. Indicate the relative degree of importance each factor could have in making your decision.

	Not An Important Reason At All To Leave	Somewhat Important Reason To Leave	Fairly Important Reason To Leave	Very Important Reason To Leave	Extremely Important Reason To Leave
Reputation of institution	1	2	3	4	5
Service Load	1	2	3	4	5
Availability of internal research funds	1	2	3	4	5
Congeniality of colleagues	1	2	3	4	5
Job Security/tenure	1	2	3	4	5
Rapport with departmental leadership	1	2	3	4	5
Promotion in rank	1	2	3	4	5
Career advancement opportunities	1	2	3	4	5
Reputation of associates	1	2	3	4	5
Base salary	1	2	3	4	5
Research load	1	2	3	4	5
Benefit package	1	2	3	4	5
Administrative load	1	2	3	4	5
Research opportunities	1	2	3	4	5
Teaching load	1	2	3	4	5
Teaching assignments and/or opportunities	1	2	3	4	5
Rapport with university leadership	1	2	3	4	5
Availability of internal research funds	1	2	3	4	5
Reputation of department	1	2	3	4	5
Institutional mission/philosophy	1	2	3	4	5
Influence in department	1	2	3	4	5
Competence of colleagues	1	2	3	4	5
Secretarial support	1	2	3	4	5
Receipt of merit pay	1	2	3	4	5
Influence in college	1	2	3	4	5

3. (reasons to leave continued)

	Not An Important Reason At All To Leave	Somewhat Important Reason To Leave	Fairly Important Reason To Leave	Very Important Reason To Leave	Extremely Important Reason To Leave
Library facilities	1	2	3	4	5
Laboratory/research facilities	1	2	3	4	5
Office facilities		1	2	3	4
Reduced tuition for family	1	2	3	4	5
Rapport with college leadership	1	2	3	4	5
Emphasis on publishing	1	2	3	4	5
Sabbatical, leave, travel, and study policies	1	2	3	4	5
Consulting opportunities	1	2	3	4	5
Spouse's career opportunities	1	2	3	4	5
Geographic considerations	1	2	3	4	5
Cultural, recreational, and social opportunities	1	2	3	4	5
Climate of region	1	2	3	4	5
Housing costs	1	2	3	4	5
Proximity of extended family	1	2	3	4	5
Extensive and/or close network of friends living locally	1	2	3	4	5
Loyalty to institution	1	2	3	4	5
Loyalty to department/program	1	2	3	4	5
Appreciation for my work	1	2	3	4	5
Influence in institution	1	2	3	4	5

4. Are you seriously considering or actively seeking a job change? (PLEASE CIRCLE ONE)

Yes No Maybe

5. Have you received an actual job offer(s) in writing from another institution or organization in the period between September 1, 1989 and March 1, 1991? (PLEASE CIRCLE ONE NUMBER)

Yes, I have received one offer	1
Yes, I have received more than one offer	2
No, I have not received any offers	3 **(Please go to Part III, Question 1)**

6. Who initiated the contact that resulted in this offer? (PLEASE CIRCLE ONE NUMBER)

I made the first contact	1
The other institution made the first contact	2

7. With whom did you discuss the job offer(s) you received? (PLEASE CIRCLE ALL THAT APPLY)

Colleagues(s) in your department/unit	1
Colleagues(s) outside of your department/unit	2
The chairperson/administrator of your department/unit	3
The chairperson/administrator of another department/unit	4
The dean or other senior administrator in your college	5
The provost or other senior administrators in the university	6
Others not associated with Michigan State University	7

8. How much did your department chairperson/unit administrator influence the decision on your most recent offer? (PLEASE CIRCLE ONE NUMBER)

Strongly Influenced Me To Leave	Slightly Influenced Me To Leave	Had No Impact On My Decision	Slightly Influenced Me To Stay	Strongly Influenced Me To Stay
1	2	3	4	5

9. At this time, have you accepted a job offer from another organization or institution?(PLEASE CIRCLE ONE NUMBER)

Yes, accepted an offer	1
Am still considering offer(s)	2
No, rejected offer(s)	3

PART III. These questions deal with your perceptions of salary levels and benefits received at Michigan State University as compared to other institutions you are familiar with.

1. Do you believe your current salary, when compared with the salaries of peers in your field at Michigan State University, to be: (PLEASE CIRCLE ONE NUMBER)

Much lower than the average	1
Somewhat lower than average	2
About average	3
Somewhat higher than average	4
Much higher than the average	5

2. Do you believe your current salary, when compared nationally with the salaries of peers in your field, to be: (PLEASE CIRCLE ONE NUMBER)

Much lower than the average	1
Somewhat lower than average	2
About average	3
Somewhat higher than average	4
Much higher than the average	5

3. Have you had your salary adjusted for market conditions during the middle of the year? Yes_____ No_____

4. What percentage of your salary would another institution have to offer for you to consider leaving Michigan State University? _____ Percent

5. Is it a practice in your department to solicit a job offer from another institution for the purpose of:

a. enhancing salary	Yes_____ No_____
b. receiving a promotion	Yes_____ No_____
c. enhancing support	Yes_____ No_____

6. How likely is it that you could obtain a position at another institution that is as good or better than your present position at Michigan State University? (PLEASE CIRCLE ONE NUMBER)

Very unlikely	1
Unlikely	2
Likely	3
Very likely	4

7. Considering all the factors that can influence your employment, how interested are you in leaving or remaining at Michigan State University? (PLEASE CIRCLE ONE NUMBER)

Very Interested In Leaving For Another Position	Somewhat Interested In Leaving For Another Position	About Equally Interested in Leaving And Staying	Somewhat Interested In Remaining In Present Position	Very Interested in Remaining In Present Position
1	2	3	4	5

If you are married or in a committed relationship, please complete **PART IV**; otherwise please continue with **PART V.**

PART IV. This section examines career commitment and employment opportunities and constraints faced in dual career situations.

1. What is your partner's last completed degree? (PLEASE CIRCLE ONE)

   High School MA/MS Ph.D. Professional (MD, RN, LLD, DVM) Other

2. Is your partner presently employed outside the home? Yes_____ No_____

3. Is your partner employed by Michigan State University? Yes_____ No_____

   If your partner does not work at Michigan State University, how many miles apart are your jobs? _____ miles.

4. Are you currently living with your partner? Yes_____ No _____

   If you currently live together, would you be willing to consider living apart to get the jobs you both desire? _____ yes _____no

   If you are currently living apart, how far apart do you live? _____ miles

5. What is your partner's current occupation?_____

   How many years of career experience does your partner have?_____ years

6. What is your partner's current job title? _____

   How long has your partner been in his/her current position?_____years?

7. How do you compare your stage of career development with that of your partner's career?

My Career is Substantially Ahead	My Career is Somewhat Ahead	Both Careers at Same Stages	Partner's Career is Somewhat Ahead	Partner's Career is Substantially Ahead
1	2	3	4	5

8. In the world of work there are differences in a career's status based on a number of variables, such as power, social prestige, salary, etc. How would you evaluate the status of both your career and your partner's career? (PLEASE CIRCLE ONE.)

My Career:	Very Low Status	Fairly Low Status	Medium Status
	Fairly High Status	Very High Status	
Partner's Career:	Very Low Status	Fairly Low Status	Medium Status
	Fairly High Status	Very High Status	

9. Couples generally make decisions about whose career will take priority. Which statement below best describes the career priority in your relationship? (PLEASE CIRCLE ONE)

   a. Partner's career is the sole important career in the relationship.

   b. Both careers are important but partner's career is primary.

   c. Both careers are considered equal.

   d. Both careers are important but my career is primary.

   e. My career is the sole important career in the relationship.

10. On the following scale, what priority do you give to your career and your relationship/family? (PLEASE CIRCLE ONE)

Family Relationship Top Priority		Equal Priority		Career Top Priority
1	2	3	4	5

11. Which priority do you believe your partner would give to his/her career and your relationship/ family? (PLEASE CIRCLE ONE)

Family Relationship Top Priority		Equal Priority		Career Top Priority
1	2	3	4	5

12. Considering all the factors that can influence your partner's employment, how interested is your partner in leaving or remaining in his/her present position? (PLEASE CIRCLE ONE)

Very Interested in Leaving for Another Position	Somewhat Interested in Leaving for Another Position	About Equally Interested in Leaving and Remaining	Somewhat Interested in Remaining in Present Position	Very Interested in Remaining in Present Position
1	2	3	4	5

13. To what extent do you take into account your children and their interests in making decisions about your job?

Little or no extent		Moderate extent		Great Extent	Not Applicable
1	2	3	4	5	9

14. If you and your partner are employed full-time (or in school) and one of you had to stay home (for example, to care for a sick child or wait for a repair person), who is more likely to remain at home?

Definitely Me	Usually Me	Equally Likely	Usually Partner	Definitely Partner
1	2	3	4	5

15. Do either of your careers restrict the locations where employment may be available? (PLEASE CIRCLE ONE)

Mine Partner Both Neither

16. In making a final decision about leaving or staying, how free (based on your individual desires) or constrained (based on job, family or relationship factors that you may not be able to control) do you believe your decision would be?

Totally Free	Fairly Free		Fairly Constrained	Totally Constrained
1	2	3	4	5

17 a. Estimate the number of job openings in your discipline this year that would be appropriate for you based on your level and experience?_____ number _____ don't know

b. Estimate the number of job openings your partner would find this year that would be appropriate for him or her based on level and experience? _____ number _____ don't know

18. At this time, how mobile do you consider you and your partner to be?

Neither of Us Mobile	Partner More Mobile Than I Am	I Am More Mobile Than Partner	Both Equally Mobile
1	2	3	4

19. If you and your partner were to begin a job search, what strategy would you likely use? (PLEASE CIRCLE ONE)

a. I would look first and receive a job offer(s), then my partner would look.

b. Partner would look first and receive a job offer(s), then I would look.

c. We would both look independently at the same time.

d. Apply to jobs as a couple

Could you briefly detail the reasoning behind your preferred strategy._____

_____

_____

PART V. A number of issues are of concern to the faculty at Michigan State University. Please indicate the extent to which you agree or disagree with each of the following statements.
(PLEASE CIRCLE ONE NUMBER FOR EACH STATEMENT)

	Strongly Disagree	Somewhat Disagree	Neither Agree Or Disagree	Somewhat Agree	Strongly Agree
A. General Issues:					
It is important for faculty to participate in governing their institutions.	1	2	3	4	5
Faculty promotions should be based at least in part on formal evaluations by students.	1	2	3	4	5
Teaching effectiveness should be the primary criterion for promotion and tenure of faculty.	1	2	3	4	5
Service/Extension should be an equivalent criterion with teaching and/or research for promotion and tenure of faculty.	1	2	3	4	5
Research/publications should be the primary criterion for promotion and tenure of faculty.	1	2	3	4	5
Faculty should be free to present in class any idea they consider relevant.	1	2	3	4	5
Private consulting in areas directly related to a faculty member's field or research or teaching should be restricted.	1	2	3	4	5
B. Institutional Issues:					
The administrative function is taking an increasingly heavy share of available resources.	1	2	3	4	5
The university's landgrant mission is emphasized in my academic unit's overall objectives.	1	2	3	4	5
The university's landgrant mission receives appropriate emphasis in overall university objectives.	1	2	3	4	5
Service/Extension should carry more weight in promotion and tenure decisions	1	2	3	4	5
Research should be rewarded more than teaching.	1	2	3	4	5
Research should be rewarded more than public service	1	2	3	4	5
Female faculty members are treated fairly.	1	2	3	4	5
Faculty who are members of racial or ethnic minorities are treated fairly.	1	2	3	4	5

C. How important do you think the following should be in determining faculty rewards:

	Not Very Important	Somewhat Important	Fairly Important	Very Important	Extremely Important
1. Tenure					
Teaching	1	2	3	4	5
Research/Scholarship	1	2	3	4	5
Advising	1	2	3	4	5
Service/Extension	1	2	3	4	5
Administration/Goverance	1	2	3	4	5
2. Promotion in Rank					
Teaching	1	2	3	4	5
Research/Scholarship	1	2	3	4	5
Advising	1	2	3	4	5
Service/Extension	1	2	3	4	5
Administration/Goverance	1	2	3	4	5
3. Merit Increases					
Teaching	1	2	3	4	5
Research/Scholarship	1	2	3	4	5
Advising	1	2	3	4	5
Service/Extension	1	2	3	4	5
Administration/Goverance	1	2	3	4	5

D. As you look toward 1995, do you perceive Michigan State University will be: (PLEASE CIRCLE ONE NUMBER)

Much Worse Off	Somewhat Worse Off	About The Same As Today	Somewhat Better Off	Much Better Off
1	2	3	4	5

PART VI. Demographic Information

1. In what year were you born? 19 ____
2. What is your sex? Male_____ Female_____ (PLEASE CHECK ONE)
3. Which best describes you? (PLEASE CIRCLE ONE NUMBER)

African American	1	Mexican-American/Chicano	5
American Indian	2	Foreign National	6
Asian-American or Pacific Islander	3	Caucasian/White	7
Hispanic-American	4	Other (Please Specify)_____	

4. What is your current marital status? (PLEASE CIRCLE ONE NUMBER)

Single, never married	1	Divorced	4
Married/Cohabitating	2	Widowed	5
Separated	3		

5. If you have children, How many do you have?_____ What are their ages?_____

6. Are you a university distinguished professor or do you hold an endowed chair?

No 1

Yes 2 In what year did you receive this appointment? 19____

7. Which of the following have you received (PLEASE CIRCLE ALL THAT APPLY)

A university-level excellence award at Michigan State University	1
A college-level excellence award at Michigan State University	2
A department-level excellence award at Michigan State University	3
A similar excellence award at another institution	4

8. Do you currently have an administrative assignment (program coordinator, department chair, assistant or associate chair, etc ? Yes_____ No_____

We have tried to be comprehensive in addressing employment issues in this survey. However, we may not have addressed all the factors pertinent to your decision to remain at Michigan State University. We invite you to use use the following space to elaborate on those issues that are most pressing concerning your career and the environment in which you work.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Thank you for participating in this survey. If you desire an executive summary of the survey's results, please mail a card separately from the survey to the Collegiate Employment Research Institute. We invite your comments concerning this survey.

FACULTY MOBILITY STUDY

Thank you for completing the Faculty Mobility Study. There are several issues that we were not able to cover in great detail. We are interested in learning more about the decision process involved in accepting and rejecting job offers extended from other institutions and the job market obstacles faced by dual career couples. If you have received a job offer within the last two years or if you are involved in a dual career relationship, we invite you to participate in these follow-up studies by completing the information below.

Yes, I would like to participate in the decision study on job offers:

Name:_____

Address:_____

Campus Phone:_____

Yes, I would like to participate in the dual career follow-up study:

Name: _____

Address:_____

Campus Phone: _____

Please return this form in a separate campus mail envelope. If you include it with your survey, one of the principal investigators will separate it from your survey upon its receipt. Thanks again. Please return to:

Collegiate Employment Research Institute
113 Student Services Building
Michigan State University
East Lansing, MI 48824

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