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ABSTRACT

The Task Force on the Status of Women in Graduate Education at the University of Michigan produced this final report concerning: issues and problems regarding women in higher education, the committee to study the status of women in graduate education and later careers, special needs of nontraditional graduate students, access to graduate school, transition from masters to doctoral studies, and transition from doctoral study to professional careers. Recommendations suggest: (1) more flexible admissions and financial aids policies, and specific programs to benefit parttime and returning students; (2) further research into the lower enrollment rates of women and the active recruitment of women in the sciences; (3) further investigation of the causes of high female attrition after the master's degree, and a positive effort to increase the number of female faculty members; (4) a review of the educational effectiveness of current terminal master's programs; (5) graduate faculty develop systematic approaches to the placement of doctoral students and that departmental placement efforts be regularly reviewed; (6) a senior staff person in the Graduate School be employed whose responsibility it is to enhance and oversee the educational experiences of graduate students. (Author/MJM)

the higher, the fewer

REPORT AND RECOMMENDATIONS
OF THE COMMITTEE TO STUDY THE STATUS OF WOMEN
IN GRADUATE EDUCATION
AND OTHER CAREERS

SUBMITTED TO
THE EXECUTIVE BOARD OF THE GRADUATE SCHOOL
THE UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN

THE UNIVERSITY OF MICHIGAN
HORACE H. RACKHAM
SCHOOL OF GRADUATE STUDIES
ANN ARBOR, MICHIGAN 48104

OFFICE OF THE DEAN

To the Graduate Community of the University:

The report of the Committee on the Status of Women in Graduate Education and Later Careers was submitted to the Executive Board of the Graduate School in March. The Board received the report and approved each of the recommendations for action.

The report has therefore received the endorsement of the governing board of the graduate faculty. The Graduate School is now taking steps to implement the proposals which are within its own province.

When the Committee was established, I asked it to frame recommendations to the graduate departments and programs and to individual faculty and students as well as the Graduate School. May I now urge each department and program and all faculty and students to consider the Committee's findings and recommendations and to take appropriate action.

This report is the product of more than a year of careful work. The Committee has informed itself about developments in the status of women throughout higher education. It has conducted two surveys, one on the experience of students at the threshold from master's to doctoral training, the other on the experiences of doctoral students in finding a first appointment. It has met informally with many groups on campus. The extent of the Committee's efforts is reflected in the quality of its report.

The Committee was centrally concerned with the status of women in graduate education. But many of the issues it raised are of equal importance for men and women.

The Committee has performed a service for Michigan as a graduate institution. I hope that all members of the University community will give the findings and recommendations of the report the attention they deserve.

Sincerely,

Donald E. Stokes
Dean

DES/rs

Executive Board Document
73-74/46

THE HIGHER THE FEWER

Report and Recommendations:
Committee to Study the Status of Women in Graduate Education and Later Careers

to:
The Executive Board of the Graduate School
The University of Michigan, Ann Arbor, Michigan
March, 1974

The title for this report is drawn from an unpublished paper by Dianne Peters of the University of Texas of the Permian Basin.

FOREWORD

The Committee on the Status of Women in Graduate Education and Later Careers was created in recognition of the established national need for the special treatment of issues affecting women in graduate education.

The Committee has benefitted from the parallel work of the Carnegie Commission and the Panel on Alternate Approaches to Graduate Education. We have attempted to integrate data obtained from within the University with findings reported by national committees concerned with the same problems. We feel that this approach was required because of the national stature of the University with respect to graduate education.

In its "charge" the Committee was asked "to touch upon all aspects of the graduate experience of women." We struggled to balance the breadth of our charge with the felt need to collect specific data on which to base our recommendations. Our solution was to focus on critical decision points in the life cycle of the female graduate student. The outline of our report reflects this approach.

The recommendations in our report concern both the traditional and the non-traditional graduate student. While these two groups of students often project different needs, many of the same adjustments in procedure and policy can serve both. A number of our recommendations will affect male graduate students as well as female students, with whose concerns we were specifically charged. We believe this overlap to be appropriate in view of changing social patterns and anticipated developments in the nature of graduate education.

Following the mandate to the Committee our recommendations are addressed to various sectors of the graduate community. A summary of the Committee's recommendations appears at the end of the report.

May we express our appreciation for the encouragement and active support which our Committee has received from the Dean and his staff. The Committee also wishes to recognize the commitment and tireless work of Dr. Martha Hinman who provided invaluable staff support to the Committee. Special recognition should be given to the leadership of Professor Harriet Mills, who chaired the Committee during the first year and a half of its work, and to former members of the Committee: Mr. Geoffrey Caine, Ms. Jean Campbell, Prof. Margaret Davis, Dr. Dorothy Herberg, and Prof. Marvin Peterson. Finally, our gratitude to Ms. Roberta Saling for typing the final manuscript.

We hope that this report will assist Dean Stokes, the Executive Board, and the graduate departments and programs in seeking to eliminate the barriers to women's full and equal access to graduate education.

MEMBERS OF THE COMMITTEE

Prof. Maxine Loomis, Chairperson
Psychiatric Nursing

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Center for the Study of
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SUMMARY OF COMMITTEE FINDINGS AND RECOMMENDATIONS

Attrition of women in greater proportion than men at each rung of the academic ladder is a symptom of discriminatory policies and behavior within academe. The causes of this attrition include: overt discriminatory acts, an absence of faculty role models, limited flexibility in administrative policies, a lack of support facilities for non-traditional students, and social pressures from outside the University.

The academic aspirations of the non-traditional student are never totally secure. Administrative provision has not been made for their educational requirements. They have been ineligible to receive financial aid. Departmental literature and curricular requirements are directed at the full-time conventional student. There is no independent enrollment category for students who desire graduate courses without entry to a degree program.

The Committee recommends more flexible admissions and financial aids policies, and specific programs to benefit part-time and returning students.

In admissions, women enjoy an advantage in offers of admissions, but enrollments reduce the advantage considerably. The lower participation of women in scientific programs is traced to lower application rates. A tendency for UM women undergraduate science majors not to seek graduate study at this University to the same extent as their male counterparts was identified.

The Committee recommends further research into the lower enrollment rates of women and the active recruitment of women in the sciences.

The transition from masters to doctoral study is a major point of attrition for women students in the humanities and social sciences. The tendency is less marked in the life and physical sciences.

The Committee recommends further investigation of the causes of high female attrition after the Masters Degree, and a positive effort to increase the number of female faculty members. The Committee also recommends a review of the educational effectiveness of current terminal masters programs.

Women are distinctly disadvantaged in placement at the doctoral level, despite recent publicity about quotas and HEW pressure. Life cycle constraints such as the lack of mobility, child rearing responsibilities, and a higher incidence of two-Ph.D. families among women than among men, appear to affect placement, although single women also experience difficulty.

The Committee recommends that the graduate faculty develop systematic approaches to the placement of doctoral students and that departmental placement efforts be regularly reviewed.

The regular collection and monitoring of data on the educational progress of student categories, if it is well publicized and available to all members of the graduate community, is one means of effecting change.

The Committee recommends that a senior staff person in the Graduate School be employed whose responsibility it is to enhance and oversee the educational experiences of graduate students. The Committee on the Status of Women in Graduate Education should be reconstituted as an advisory body.

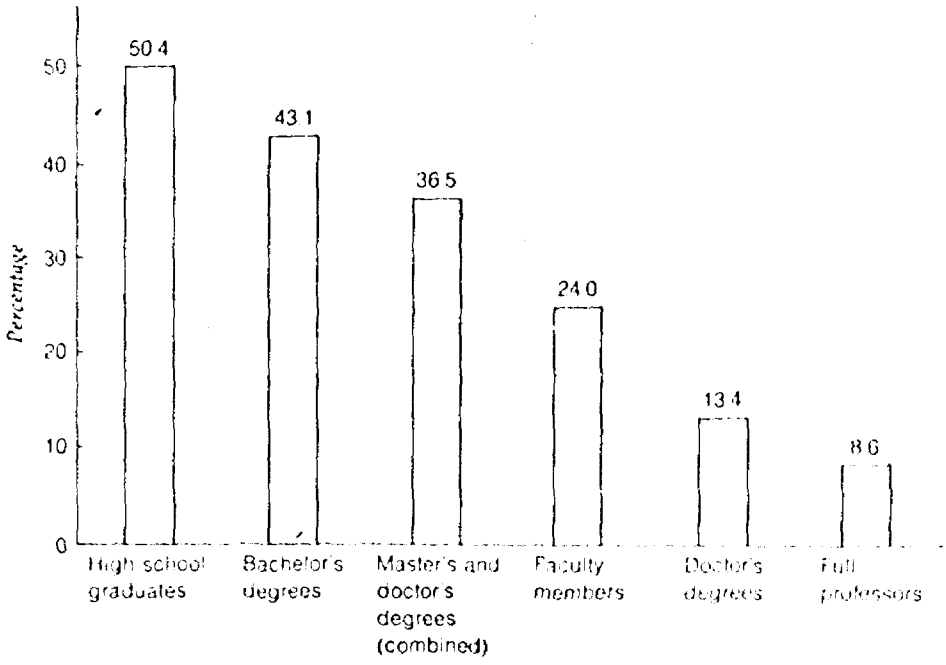
PART I: INTRODUCTION

A. Issues for Women in Higher Education

Attrition in Academe

The higher the rung on the academic ladder, the fewer women are to be found. In its recent report, Opportunites for Women in Higher Education, the Carnegie Commission amply documented the truth of this statement. Figure 1 depicts the percentage of women at successive levels of academe in the United States in 1970.

Figure 1: Women as a percentage of persons at selected levels of advancement within the educational system, 1970



Source: Carnegie Commission, 1973, page 2.

The University of Michigan reflects the national picture. A table of the degree recipients from all the schools and colleges of the University reveals a large drop in the proportion of women between bachelors and doctoral level.

Table I: Percent Men and Women Among Degree Recipients: University of Michigan
(Figures represent fiscal year, July 1 to June 30)

	Degree	Male	Female	Total
1972-1973	Bachelors	2428 - 56%	2177 - 44%	4905
	Masters	1988 - 58%	1432 - 42%	3420
	Ph.D. & Professional	1355 - 86%	222 - 14%	1577
1971-1972	Bachelors	2618 - 57%	1996 - 43%	4614
	Masters	1995 - 48%	1460 - 42%	3455
	Ph.D. & Professional	1340 - 88%	175 - 12%	1521
1970-1971	Bachelors	2499 - 55%	2008 - 45%	4507
	Masters	1850 - 54%	1609 - 46%	3459
	Ph.D. & Professional	1262 - 88%	165 - 12%	1427

Recent studies have explored the reasons why women drop off along the road to the Ph.D. in greater percentages than men. (For recent research on the status of women in graduate education see Appendix III, p.49.) One factor frequently mentioned is the structural difference in control over admissions decisions: undergraduate admissions are handled by a central office, while graduate admissions are handled in individual departments. This diffusion of responsibility at the graduate level makes it difficult to monitor and control the possible infusion of discriminatory attitudes into admissions decisions. Another factor which may influence the drop off rate is differential granting of fellowship aid. Distribution of fellowships is also a matter for departmental decision. Evidence for sex differences in the allocation of fellowships is unclear, but a number of studies have shown that lower proportions of females receive teaching assistantships. (Carnegie Commission, 1973, p. 95.)

Discriminatory attitudes among faculty members appear to figure significantly in the higher female attrition from graduate school. (Heiss, 1970; Roby, in Rossi and Calderwood, 1973; Mac Donald, 1966.) Such attitudes, which were expressed openly in the past, are now manifested more subtly. The informal communication networks between faculty and students and among students is another difficulty. These contacts, important for professional socialization, often exclude women by making them feel uncomfortable. (Mix, 1971; White, 1970.) The typical faculty member is seen by many female graduate students as "not taking women graduate students seriously" (Holmstrom and Holmstrom, 1973).

Faculty members, on the other hand, sometimes feel that women do not take graduate education seriously. Departments frequently express reluctance to invest scarce resources in women who will drop out, get married, have babies, and lose interest. Such expectations about women students are not entirely inaccurate, but the extent to which they represent post-fact observations as contrasted to self-fulfilling prophecies is unclear.

Women as Faculty Members

The small proportion of female faculty, particularly in tenured ranks, means that there are few people to whom women graduate students feel they can turn for guidance and encouragement. Thus "the higher, the fewer" phenomenon has an element of self-perpetuation, as women students become discouraged by the absence of women faculty. Nationally, women represented only 19% of faculty members in the academic year 1971-72.

Table II: Women as Percentage of Faculty Members in Four-year Colleges and Universities

Faculty Rank	1959-60	1965-66	1971-72
All Ranks	19.1	18.4	19.0
Professor	9.9	8.7	8.6
Associate Professor	17.5	15.1	14.6
Assistant Professor	21.7	19.4	20.7
Instructor	29.3	32.5	39.4

Source: National Education Association (1972, p.13)

Female faculty are concentrated in the lower academic ranks and in less prestigious institutions.[1] The disproportionate percent of women at less prestigious institutions is made evident through a comparison of the national statistics with those of The University of Michigan.

Table III: Women as a Percentage of Faculty Members at The University of Michigan

Faculty Rank	Fall, 1970*	Feb., 1973**
All Ranks	13.5	15.2
Professor	5.0	5.0
Associate Professor	10.0	11.7
Assistant Professor	12.0	19.8
Instructor	38.0	41.6
Lecturer	27.0	51.7

*Source: Personnel Statistical Systems, Office of Academic Affairs, Oct. 6, 1970

**Source: Affirmative Action Program, The University of Michigan, July, 1973, p. 19

[1] Carnegie Commission, 1973, p. 113. Additionally, women are also paid less and they teach more than comparable male faculty members.

If the low proportion of female role models in faculty ranks deters women graduate students from pursuing their educations, then women students at The University of Michigan (presumably a select group) face even a greater challenge.

Changing the Pattern

A number of the forces influencing high attrition among women in the pursuit of education undoubtedly stem from social conditioning at an early age. While these are important, a university cannot change society. It has direct control only over the policies and procedures which it establishes and over the values which emanate from them. The increasing numbers of women seeking higher degrees suggest that women themselves are beginning to redefine their roles and raise their goals. A program to reverse the observed patterns of attrition should focus on reinforcing the professional aspirations which are being expressed already, and on reducing the institutional barriers which discourage women.

Unfortunately, the facilities and administrative arrangements which would permit this encouragement do not often exist. Opportunities for part-time study are rare; departments tend not to look favorably on part-time students; child-care facilities for potential students with families are almost non-existent; returning students often find that their applications are judged on work done many years before, while more recent accomplishments are discounted; provisions for refresher courses in study skills and mathematics are rare and often exist only as ad hoc programs.

B. Committee to Study the Status of Women in Graduate Education and Later Careers

Appointment of the Committee

Attrition among women in graduate study exists at The University of Michigan as it does nationally. In 1972, Donald E. Stokes, Dean of the Graduate School, asked the Executive Board to appoint a faculty-student committee to investigate the problem. The purpose of the Committee was to provide the information necessary to establish "priorities for the Graduate School, the graduate departments and programs, certain other units of the University, and present or potential women graduate students in seeking to eliminate the barriers to full access." The Committee was charged with investigating "all aspects of the graduate experience of women, including admissions and financial support; entrance to doctoral work; counselling and peer influences; access to ancillary University facilities and services; placement in academic and non-academic posts; the experiences of part-time students and part-time professionals and wherever relevant, the content of graduate study." (See Appendix IV, p. 50, for the complete charge to the Committee.)

Activities of the Committee

Such a massive field of inquiry required the delineation of subjects for study. Four groups of women were identified as having high priority

needs in graduate education:

1. University of Michigan undergraduates and other potential graduate students
2. entering graduate students
3. graduating Masters Degree students
4. graduating women Ph.D. and professional degree recipients.

Each of these groups is at a threshold of graduate study. A decision to advance or drop out must be made. The Committee selected these thresholds as focal points for its investigations.

The Committee's deliberations have been hampered by the paucity of information regarding the status of women in graduate education at The University of Michigan. This lack of sex-related information is no longer acceptable if the University is to meet its affirmative action commitments to women. The decentralization of record-keeping in the graduate departments and schools and the embryonic nature of the Rackham data system forced the Committee to spend considerable time investigating the feasibility of various research designs concerning the position of women at critical thresholds. Several proposed studies were abandoned because there was no ready source of data. As a consequence of this experience, the Committee has specified the types of information concerning student progress which should be entered routinely into the Rackham data system and monitored for trends. Recommendations regarding data will appear under appropriate sub-headings in the report.

The studies which the Committee was able to complete include: an analysis of enrollment trends; a survey of masters graduates; a survey of the placement experiences of doctoral candidates; reviews of the policies regarding part-time and other non-traditional students; and a study of admissions data.

The Committee's findings and recommendations, detailed in this report, are divided into four sub-sections. The first section deals with non-traditional students. The three remaining sections discuss critical decision points in the life cycle of graduate students: access and admissions; transition from masters to doctoral study; transition from doctoral study to careers.

PART II: COMMITTEE FINDINGS AND RECOMMENDATIONS

A. Special Needs of Non-Traditional Graduate Students

Life Cycles and Patterns of Education

The principle that graduate training should be equally accessible to all students possessing the ability and motivation for academic work was affirmed by the Carnegie Commission report and by the reports of the National Commission on the Financing of Higher Education and the National Panel on Alternate Approaches to Graduate Education.

Yet the student whose life pattern precludes her or his falling within the traditional definition of graduate student continues to face discouraging institutional barriers. Written rules and academic attitudes often reflect the view that graduate study is for students who move directly from undergraduate study into full-time graduate education.

Among the non-traditional graduate students are:

--The mature person who wishes to change careers or to begin training after raising a family, but who may need academic refreshing before qualifying for regular admission to a graduate department;
--The parent responsible for home and small children who cannot attend an educational program full-time;
--The professional (such as the employed engineer, public administrator, or pharmacist) who wishes to upgrade her or his knowledge and skills without earning another degree;
--The single parent who wishes to prepare for a professional career through advanced training but who must continue to earn through part-time employment.

For many years, the non-traditional student has not benefited from the support services, financial aid opportunities, and general respect that have been afforded to traditional students.

Need for Broader Options

Women have tended to fall into the category of non-traditional student more frequently than men. However, women are by no means alone in the need for broader options in the design of educational programs at the graduate level. Changing social pressures suggest that with time, more and more men will fall into this category. As the availability of financial aid to support graduate study declines, more students will be forced to work between undergraduate and graduate study, and more will have to support themselves during graduate years through part-time employment. Moreover, with the decreasing number of young people in the age range of the traditional graduate student, enrollments can be expected to fall unless adjustments are made to permit greater numbers of non-traditional students to study at the graduate level.

The Committee therefore agrees with the Panel on Alternative Approaches to Graduate Education in its observation that:

> "Graduate institutions must begin to break free from the stereotypes that have, until now, governed thinking about the part-time student. In the past, this student has been assigned inferior status, little or no financial aid has been available, and little effort or none has been expended in tailoring curricular patterns to his or her needs. If attempts to bring graduate study into closer demographic relationship with the population as a whole are to succeed in any but statistical terms, graduate administrators and faculties must arrive at a new perception of the worth and dignity of "recurrent" or "intermittent" learners, and of those whose entrance upon formal graduate study does not follow directly upon receipt of the baccalaureate."[1]

The Committee realizes that it would be impossible to sweep aside all hurdles that non-traditional students encounter. The problem requires more than a change of attitude within the administration of the Graduate School. Certain immediate changes can be made, however, which would move towards the goal of more flexible access to graduate education for all students.

Barriers to Non-traditional Study

The Committee has identified several problem areas which particularly impede non-traditional students. Some of these involve threshold points in the student life cycle and will be discussed in the relevant sections of this report. Others are more diffuse, affecting the entire period of graduate study. For these areas, new regulations and procedures are needed which will permit non-traditional students to enter more easily into the mainstream of graduate education, relieving them of the stigma of *ad hoc* participation.

In particular, the Committee found that:

- --financial aid eligibility regulations do not mention part-time students and explicitly exclude students who have been granted special admissions status to refresh their academic skills;
- --course scheduling and articulation are often planned for traditional students and cannot be adjusted to suit the schedules of non-traditional students;
- --few departments provide academic advising specifically geared to the needs of the non-traditional student;
- --University-supported child care facilities do not exist;
- --continuing graduate enrollment status is not available to students who wish to take graduate level courses, but do not desire admission to specific departments or degree programs. Such students may be

[1] "Scholarship for Society," Report of the Panel on Alternative Approaches to Graduate Education, sponsored by Graduate Record Examinations Board and Council of Graduate Schools, 1973, p. 37.

denied the opportunity to enroll in courses which have space because departmental regulations discourage part-time students or because departments do not accept them into NCFD status for fear of an overload in the number of students in the department.

Information and Data on Non-traditional Study

A number of myths have collected around the issue of non-traditional study. The Committee believes that many of these are false. Unfortunately, there is insufficient information about the study and later career achievements of non-traditional students to prove or disprove the myths. The Graduate School can assist in resolving these matters by systemmatically collecting, evaluating, and making public data on the enrollment patterns, academic achievements, attrition rates, and degree completions of the non-traditional students that are enrolled in graduate programs at The University of Michigan.

THE COMMITTEE RECOMMENDS:

1. *that the Executive Board establish a "Rackham Special Student" category of graduate admissions for which there is no limit on the number of terms of enrollment permitted, and in which students make "contracts" with the Graduate School for the study programs that best suit their needs; that staff resources be provided to administer the program and to advise those who are admitted as Rackham Special Students.*

2. *that part-time students be eligible for and receive financial aid under all Rackham administered fellowships; that this fact be widely publicized among all who are concerned.*

3. *that the guidelines governing the external employment of students receiving scholarship aid be reviewed by the Executive Board to remove stipulations which unduly discriminate against non-traditional students.*

4. *that the Scholarship Proposal for Part-time and Returning Students, which is presented in Appendix V, p. 54 , be formally approved by the Executive Board; that that program be funded by the Graduate School if external support cannot be found.*

5. *that the senior administrative staff of the Graduate School be requested to encourage the national educational organizations with which the Graduate School is formally affiliated to lobby for increased flexibility in the eligibility criteria of national scholarship funds.*

6. *that the Graduate School's staff include "part-time" and "returning student" as variables in the information that is gathered; that the enrollment patterns, academic achievement, attrition rates, and degree completions of these students be collected and made public as part of the regular information profiles which are sent to graduate departments.*

7. *that the University Committee on fee structure be memorialized to change the current structure (which established higher rates for courses taken under part-time enrollments than for those taken as full-time enrollments), to equalize the cost per credit hour for all students, regardless of the course load taken.*

8. *that each department be requested to develop a mechanism for dealing systematically with the counseling needs of non-traditional students; provision should be made for advising and assisting these students in the admissions process and in planning academic programs, and for keeping the Department's Executive Committee informed about the special needs and problems of these students.*

B. Access to Graduate School

Admissions to Graduate School

Entry to graduate school is the first major decision point in the pursuit of further education and the first point at which discrimination is possible. The Committee obtained data regarding the rates at which men and women apply, are admitted to, and subsequently enroll in the four divisions of the Graduate School.

Table IV: Percent Women in Applications, Admissions, and Enrollments Fall 1972, 1973

Division	I Life Sciences	II Physical Sciences	III Social Sciences	III Plus Education	IV Humanities	Total
1972						
Applicants	26%	9%	*	38%	51%	34%
Admissions	32%	9%	*	44%	58%	37%
Enrollments	29%	7%	*	39%	58%	35%
1973						
Applicants	29%	10%	34%	41%	56%	36%
Admissions	34%	11%	33%	45%	58%	38%
Enrollments	*	*	*	*	*	*

*Data Unavailable

Although it was impossible to compare the quality of male and female applicants, discrimination in offers of admission to women applicants does not appear to be a problem. If anything, women are in a preferred position concerning admissions.

Admission Rates for Men and Women

A comparison of the rate of admission for men applicants and for women applicants shows that women are admitted at a higher rate in all divisions of the Graduate School except the social sciences.

Table V. Percentage of Applicants Offered Admission
Fall 1972, 1973

Division	I	II	III	III + Educ.	IV	Total
1972						
Men	40%	69%	36%	38%	52%	51%
Women	62%	76%	35%	49%	66%	59%
1973						
Men	38%	59%	31%	36%	47%	46%
Women	53%	64%	30%	43%	55%	50%

For Fall Term, 1972, the average difference in rate of admission for the two sexes favored women by eight percentage points. The difference was largest in the life sciences, with women's acceptance rate 22 percentage points above that of men, and smallest in the social sciences, with the women's rate just below that of men.

For Fall, 1973, the difference between male and female rates of acceptance was smaller. The life sciences were at the top with a difference of 15 points, and the social sciences at the bottom. For Rackham as a whole, the difference in rate of acceptance was four percentage points, It is not possible to say whether the smaller difference in rate of admission for 1973 represents a trend or is just fluctuation in the data. Table IV shows that women comprised a larger proportion of applicants for admission in 1973 than in 1972, and the two phenomena may be related.

The higher admission rates for women at The University of Michigan coincides with admissions trends at eight comparable graduate institutions which were surveyed by the Committee in April, 1973. (See Appendix I, p. 39, for the Tables presenting the survey results.) A higher rate of acceptance for women is the norm. Only rarely is women's rate of acceptance below that of men, and it almost never falls more than one or two percentage points below.

The rate at which admitted women enroll in the Graduate School is somewhat lower than that of men, and this lower rate reduces the advantage which women enjoy in admissions. The reason for the lower rate of enrollment was inaccessible to the Committee, although differential treatment in the offering of financial aid was suggested as one possible causative factor. The Committee could not pursue this possibility due to a lack of data.

Women in the Sciences

An analysis of the enrollment data in Appendix II, p. 45, shows that women are unevenly distributed in the four divisions of the Graduate School. Although they account for nearly 50% of the students in the humanities, women represent 30% of the students in the life sciences and only 8% in the physical sciences. Since women are admitted to a extent that

they apply, the lower enrollment of women in the sciences appears to derive not from discriminatory behavior at admissions, but directly from the smaller number of women who apply for admission to graduate school.

Many of the obstacles to graduate study in the sciences for women are raised by cultural norms over which the University has little control. Institutional barriers which may exist beyond these, however, should be examined. Scientific training is a preliminary step to many challenging and financially rewarding careers. If women are to gain access to these careers, they must pass through graduate school in greater numbers than they currently do. The Graduate School should not regard the current percentages of women applicants and enrolees in Divisions I and II as immutable facts. The principle of equal access suggests that the University should lead the way in countering social bias by means of specific affirmative measures to increase the number of women seeking advanced education in the sciences.

Recruitment of Women in the Sciences

In an attempt to guage the potential pool for recruitment, the Committee conducted a survey of the junior and senior women majoring in science at 28 undergraduate institutions in and near Michigan, at The University of Michigan, and at Michigan State University. Twenty-two of the 28 institutions replied, as did MSU and UM. In these 24 institutions, there were 2543 women majoring in Division I disciplines and 881 majoring in Division II disciplines, for a total of 3424. For Fall Term, 1972, the total number of women applicants for graduate study in the sciences at the University was 546. In Michigan and contiguous states alone the pool of applicants exceeded 1700. There is definite potential for recruitment efforts designed to increase the number of women applicants in the scientific disciplines.

The University's recruitment efforts could begin at home. In the course of its investigations, the Committee discovered a discrepancy in the application rates of male and female undergraduate science majors from The University of Michigan. Table VI presents this data for Divisions I and II.

Table VI: UM Undergraduate Applicants to Rackham in the Sciences Fall 1972

Division I	Men	Women
UM Bachelors level science graduates, Spring 1972	330	380
UM Bachelors degree recipients applying to Rackham for Fall, 1972	111	39
Ratio graduates/applicants	2.9	9.7
Division II		
UM Bachelors level science graduates, Spring 1972	870	77
UM Bachelors degree recipients applying to Rackham for Fall, 1972	209	8
Ratio graduates/applicants	4.2	9.6

A large number of nursing students (189) are included among the graduates in Division I. Despite the fact that several graduate programs in Division I articulate directly with undergraduate training in nursing (e.g., Environmental Health, Medical Care Organization, Psychiatric Nursing) nurses typically do not go on to graduate study. Removing the nursing students from the group of bachelors degree recipients raises the ratio of female graduates to applicants to 4.9, which is still noticeably below the male ratio of 2.9. The fact that the ratio for women applying to Rackham in Division II is also low reinforces the impression that undergraduate women science majors at The University of Michigan feel less inclined to continue their studies at this institution than undergraduate men science majors.

Access to Graduate Study for Non-traditional Students

When departments limit admission of part-time and older students, they deny access disproportionately to women, for women's life cycles mesh less comfortably with uninterupted, full-time progress from undergraduate to graduate study. However, both women and men would benefit by programs to increase the non-traditional student's access to graduate education. With respect to admissions, the Committee found that the University projects an unwelcoming attitude towards non-traditional students in the literature distributed by some departments and programs. Brochures imply that professional commitment must of necessity be full-time and that part-time education leads to part-time (hence inferior) professional careers.

Admissions criteria may exclude capable non-traditional students. Part-time students are sometimes rejected on principle, without consideration of their academic merits. Criteria that are designed for traditional students emphasize undergraduate grade point averages and professorial recommendations, overlooking the greater maturity and intervening experience that has been acquired by returning students.

Returning students may encounter difficulty in acclimatizing themselves to study after being away from the academic environment for some years. The Center for the Continuing Education of Women, in recognition of this problem, has already established mini-courses which are designed to refresh math skills in preparation for the Graduate Record Examination. An enlarged program of refresher courses for returning students would increase the ability of returning students to undertake graduate study and would also project a more welcoming attitude.

Information and Data on Admissions

A number of critical variables converge to affect student decisions at this threshold in the graduate career. These include the quantity and quality of recruiting efforts, counselling, admissions policy, and offers of financial aid. An assessment of departmental achievement in meeting affirmative action obligations would ideally include information about all of these variables, but some are difficult to quantify as hard data. However, a sense of a department's success in these areas can be gained

through the collection and evaluation of certain data about student enrollment patterns.

With regard to admissions, these data should include age and sex variables, application/admission/enrollment statistics, and offers of financial aid.

THE COMMITTEE RECOMMENDS:

1. *that the Graduate School's staff seek to increase the proportion of women applicants for graduate study in the natural and physical sciences and in related fields by providing funds for recruitment, and by other appropriate means, such as*

   a) *assisting the Undergraduate Counselling Office of the literary college in its attempts to establish better liaison between undergraduate women and the science departments;*
   b) *publicizing data which would encourage more positive attitudes on the part of faculty members towards potential women graduate students;*
   c) *assisting the Michigan Women in Science in their work with undergraduate women science majors where possible.*

2. *that anticipated course load not be regarded by departments as a major criterion for admission into a graduate program.*

3. *that departments, when assessing a potential student's capacity to pursue graduate work, examine all relevant information, including evidence concerning motivation and recent on-the-job achievements, and that cutoff points based on any indices of ability, such as the Miller Analogies Test or the Graduate Record Examinations, be regarded as flexible in the case of non-traditional students.*

4. *that the Graduate School support, where possible, special courses, such as the CEW-sponsored Math Skills Mini-course, which prepare students for the Graduate Record Examination, and other programs which aim to refresh the academic and study skills of non-traditional students.*

5. *that the Graduate School's staff request all programs and departments to submit an annual report of their student recruitment efforts.*

6. *that the Graduate School's staff establish a procedure for departments to report regularly on their offers of financial aid and other support to all incoming graduate students and regularly evaluate the data for evidence of discriminatory patterns.*

7. *that the Graduate School staff collect and publish annually summary data regarding the applications, admissions, enrollment, and offers of financial aid for men and women in each division and department.*

8. *that the Graduate School's staff investigate the phenomenon of lower enrollment rates among admitted women students than among admitted*

men students, and take appropriate action if it is discovered that the phenomenon is caused by discriminatory actions by units under the purview of the Graduate School.

C. Transition from Masters to Doctoral Studies

Trends in Enrollment and Degree Completion

The enrollment and degree awards at the University reveals several patterns that are worthy of attention. Appendix II, p. 45, presents the Fall enrollment levels and the number of degree awards granted each calendar year by Rackham since 1970, divided according to degree level and division.

The most striking pattern to emerge is the contrast in women's enrollment behavior in Divisions I and II as contrasted to Divisions III and IV. In the biological and physical sciences (I and II), where female representation is low generally, the fall off of women between the masters and doctoral level is not extreme.

Table VII: Enrollment in Divisions I and II, Fall 1973

	Masters	Doctoral
Division I		
Women	36%	26%
Men	64%	74%
Division II		
Women	9%	7.5%
Men	91%	92.5%

In the social sciences and humanities (III and IV) the percentage of women at the masters level is almost twice that of the doctoral level. In both these divisions, the male and female enrollment patterns are mirror images of each other.

Table VIII: Enrollment in Divisions III and IV, Fall 1973

	Masters	Doctoral
Division I		
Women	63%	32%
Men	37%	68%
Division II		
Women	61%	37%
Men	39%	63%

These patterns suggest an irony. The fields which are commonly viewed as open to women nonetheless reserve doctoral study as a largely masculine domain; the falloff of women at the masters level is precipitous. The scientific fields, which are seen as masculine, do not exhibit such as extreme falloff; women who cross the barrier into graduate work are likely to continue on to doctoral study.

Thirty-seven percent of the Fall 1973 enrollment in Rackham programs were women. At the masters level, women accounted for 47%; at the doctoral level, only 27%. Entry to doctoral study after the masters degree thus represents another major threshold which women disproportionately fail to cross.

The past four years have seen a rise in the proportion of women enrolled and receiving degrees at the doctoral level. This growth occurred mainly in the biological and social sciences. The proportion of doctoral level women in physical sciences and humanities has remained constant over the past four years. There is a time lag between the rise in enrollment rates and the rise in Ph.D. awards. In 1970, 23% of the Ph.D. students were women, but only 16% of the degree recipients were female. By 1973, the female portion of the degree recipients had risen to 21%, while enrollments had increased to 27%.

Distribution of Enrollment

The tables in Appendix II, p. 45, show women to be unevenly distributed across the four academic divisions. Women are clearly attracted to some fields more than others, and the enrollment distribution of this University is not significantly different from that of comparable universities. The range of distribution percentages, which emerged from the survey of eight comparable graduate schools, is depicted in Table IX. (See Appendix I, p. 39 for complete information.

Table IX: Range of Female Enrollment Percentages by Academic Subdivision in Nine Graduate Schools, Fall 1972

	Range of Percents	UM's Precent
Biological and Health Sciences	25%-41%	29%
Physical Sciences	7.4%-18%	14%
Engineering	0%-3%	3%
Social Sciences	21%-48%	32%
Humanities	35%-51%	51%
Education	45%-57%	57%

This University is at the top of the range in three divisions. It should be mentioned, however, that the public institutions in the survey, which are generally more committed to masters level study than the private institutions, also tend to have higher percentages of female enrollment. Two of the three areas in which UM's female enrollments are highest are in Divisions III and IV, the two divisions with high female attrition rates after the masters degree

Survey of Masters Degree Recipients

In an effort to determine the reasons for female attrition at the masters to doctoral threshold, the Committee conducted a mail survey of all students receiving the Masters Degree (both those who were terminating their work and those who were going on) in the Winter, Spring/Summer, and Fall Terms of 1973. (See Appendix VI, p. 57, for a sample questionnaire.)

The survey results contain a wealth of information about the students surveyed and their attitude towards their graduate education. The Committee was able only to begin the analysis of these data. A preliminary analysis of the Winter 1973 data is presented below.

Of the 819 persons receiving their Masters Degree in the Winter Term, 472, or 58%, responded to the survey. Fifty-three percent of the male degree recipients, and 65% of the female responded. The sex distribution of our respondents was thus slightly different from the distribution of the degree recipients. The higher response rate from women meant that our respondent group, with 57% males and 43% females, had a higher proportion of women than the degree recipient group, with 62% males and 38% females.

The male respondents are on the average slightly younger than the female, with a difference of 1.7 years in the mean age. The women were somewhat less likely to be married than the men. A larger percent of the women respondents had children than of the men respondents, and the women parents averaged more children than the men parents.

Financial Support of Graduate Students

Graduates were asked for information about their sources of financial support during their training. Respondents had some difficulty in answering these questions in the detail which was requested. However, it is clear that the methods by which men and women pay for their education differs substantially, with men depending more upon themselves and institutional support, and women relying upon their spouses and parents. A smaller proportion of women than men report receiving fellowships from the University.

There exists some difficulty in interpreting these data, because many of the differences in the sexes could be the result of the differences between the divisions in which men and women are disproprotionately enrolled. There were not enough respondents to permit detailed analysis by division, and, perhaps even more important, by department. We suggest that, as a part of future analysis, the responses to all three terms of the survey (e.g., Winter, Spring/Summer, and Fall) be aggregated to make such analysis more feasible.

The amount of money spent by women on their education seems to be substantially less than that spent by men. About half of the respondents provided information on actual dollars spent. Of these, the mean expenditure for men was approximately $8,000, whereas that for women was approximately $5,000, although men's programs were only slightly longer than women's.

The fact that women rely rather heavily on personal relationships in financing their education could be one source of their failure to persist into the higher levels of graduate education. CEW has reported that women are reluctant to pursue their education when they feel it would be a drain on family resources.

Continuing to Further Graduate Training

Male respondents are more likely than female to be continuing in school in the year after they receive their Masters degree, to be going on full time rather than part-time, and to be attending The University of Michigan rather than another school. Men will also be receiving financial aid to continue their education at a higher rate than women: 42 % of the men and 31% of the women will be receiving financial aid for education beyond the Masters Degree. Although it is not certain that the availability of more financial aid for women would encourage them to continue in school, that interpretation is not contradicted by the results of the survey.

The respondents were asked a series of questions about those factors which have encouraged or discouraged them from graduate studies up to this point in their careers and beyond this point. The women were more likely to mention discouraging factors than men. In general, men and women seem to mention the same factors as important to them. However, meaningful association with faculty in their program was one of the major factors in encouraging men to continue into doctoral programs, but was not a major factor for women. A major factor encouraging women to complete their current Masters program, and not a major factor for men, was the availability of opportunities for part-time study. (See Part II, Section A, Special Needs of Non-Traditional Graduate Students.)

Several factors were important in discouraging women, but not men: women mentioned they were discouraged from completing their current Masters program by fellow students, by lack of meaningful associations with students in their programs, and by lack of financial aid. They similarly reported discouragement in continuing in doctoral programs from their parents and by lack of meaningful associations with students. It is not surprising that women are more likely than men to report discouragement by their parents from continuing their education, in view of the fact that financial support from parents looms larger for women than for men and in view of cultural attitudes toward education of women. The differential importance of association with students for women and men indicates the positive value of the Graduate School's recent efforts to encourage the use of the Rackham Building as a social center for students. Other efforts in this direction may be worthy of exploration. We also asked respondents whether they were encouraged or discouraged from continuing by the availability or lack of availability of child care. Of the 115 parents who responded to this question (62 men and 53 women), 18% (six men and 15 women) mentioned the unavailability of child care facilities as a discouraging factor in their decision to continue their education.

Reasons for Leaving Graduate School

Perhaps most valuable in helping to understand both the differential situation of men and women, and the attitudes of students more generally, were the responses to the open-ended question asking students why they did not plan to continue their education beyond the Masters degree. These responses were coded, and the results are presented below.

Of 230 responses to the open-ended question concerning why students were not planning to continue their education beyond the Masters degree, 117 (51%) of these were from men, and 113 (49%) were from women. The answers were gathered under ten general categories, with the following distributions for men and women. (See Appendix VI, p. 60, for coding model)

Table X: Reasons for Dropping Out after Masters Degree

General Answer	Men		Women	
	%	N	%	N
Higher degree not required for career goals	36.7	43	43.3	49
Dissatisfaction with the University	11.2	13	8.9	10
Desire to leave academe	20.5	24	26.6	30
Ph.D. job prospects poor	7.7	9	2.7	3
Military or government service required	9.5	11	-	-
Family considerations	2.6	3	9.8	11
Matriculation difficulties	3.5	4	3.5	4
Not interested in Ph.D.	4.3	5	3.5	4
Lack personal qualities (skills, intelligence, etc.) for Ph.D.	.9	1	-	-
Other	3.4	4	1.8	2
	100.3	117	100.1	113

Each general category was subdivided into sub-sets of responses, among which the general category was included as one possible answer. The distribution of replies for certain of the most frequently mentioned points for men were:

Higher degree not required for career goals (26 mentions)
Need/want to get practical or real world experience (11 mentions)
Ph.D. job prospects poor (9 mentions)
Military service required--sent to school by the service (6 mentions)
Not interested in Ph.D (5 mentions)

For women the distribution of more specific replies was:

Higher degree not required for career goals (33 mentions)
Need/want to get practical or real world experience (12 mentions)
Tired of school (9 mentions)
I can pursue education on my own without a degree program (6 mentions)
Cost of UM education is prohibitive (6 mentions)
Need/want to earn money (5 mentions)

The findings of the Masters Degree Survey support the findings and recommendations contained in Section A, the Special Needs of Non-Traditional Graduate Students. Since women are more likely to pursue a non-traditional course of graduate education and receive a smaller proportion of fellowship support than their male counterparts, it seems reasonable that they would require more innovative sources of personal support for pursuing their graduate studies.

Women are dissuaded from continuing their education more than men by the lack of child-care facilities available to them. The University has not responded to this realistic need of its women students and staff.

One final area of concern regarding female graduate students lies in the degree of interest and effort invested by some departments in doctoral students. Since most women who are engaged in graduate study are enrolled at the Masters Degree level, the emphasis on doctoral students represents a defacto sex discrimination. The total graduate education effort of the University would be enhanced by an increased concern for all students, regardless of the level of their graduate studies.

Information and Data Regarding Student Progress

The Committee's attempt to gather information about this important transition point is only a beginning. The wealth of data contained in the survey responses deserves further analysis, not only for increasing our understanding of the differential experience of men and women, but, more generally, for learning about the experience of graduate students regardless of sex.

In addition to the survey results and the need for more information about the causes of attrition at the masters level, regular gathering and monitoring of data on enrollment should take place so that problem areas may be discovered and rectified.

THE COMMITTEE RECOMMENDS:

1. *that the Graduate School's staff regularly evaluate the data for individual departments and programs regarding the progress of male and female graduate students from admissions through completion of degree requirements, so that appropriate action may be taken when patterns of discrimination are identified.*

2. *that the Graduate School's staff periodically collect and evaluate data regarding the distribution of financial aid to men and women and take appropriate action when necessary.*

3. *that the Graduate School's staff obtain information regarding the causes of attrition for both women and men who discontinue their graduate training before completion of degree requirements, and use this information in assisting departments to reduce inadvertant student attrition.*

4. *that the Graduate School's staff further investigate the causative factors influencing the large drop-off rate among women students after the Masters Degree through a more extensive analysis of the Masters Degree Recipient Survey.*

5. *that the Graduate School implement actions which would encourage women who wish to continue to the Ph.D. degree (e.g., financial aid, day care) the better to ensure compliance with the affirmative action commitment of the University.*

6. *that the Dean of the Graduate School explicitly encourage departments to appoint women to faculty positions at the University, and that staff members assist departments in locating qualified candidates.*

7. *that departments actively seek out women professionals in their respective disciplines when inviting guest speakers to present papers at departmental colloquia.*

8. *that departments review the courses, programs and policies that are directed at non-Ph.D. bound students, with an eye to ensuring that the educational experiences of such students are intellectually rewarding and adequate to their needs.*

D. Transition from Doctoral to Professional Careers

Placement Plans of New Doctoral Students

The placement of new Ph.D. recipients promises to become increasingly important in graduate education as the demand for new Ph.D.s in academic institutions falls and federal funds are diverted from basic research. In a tight job market, it is reasonable to anticipate that the traditionally disadvantaged groups, women and minorities, will suffer most.

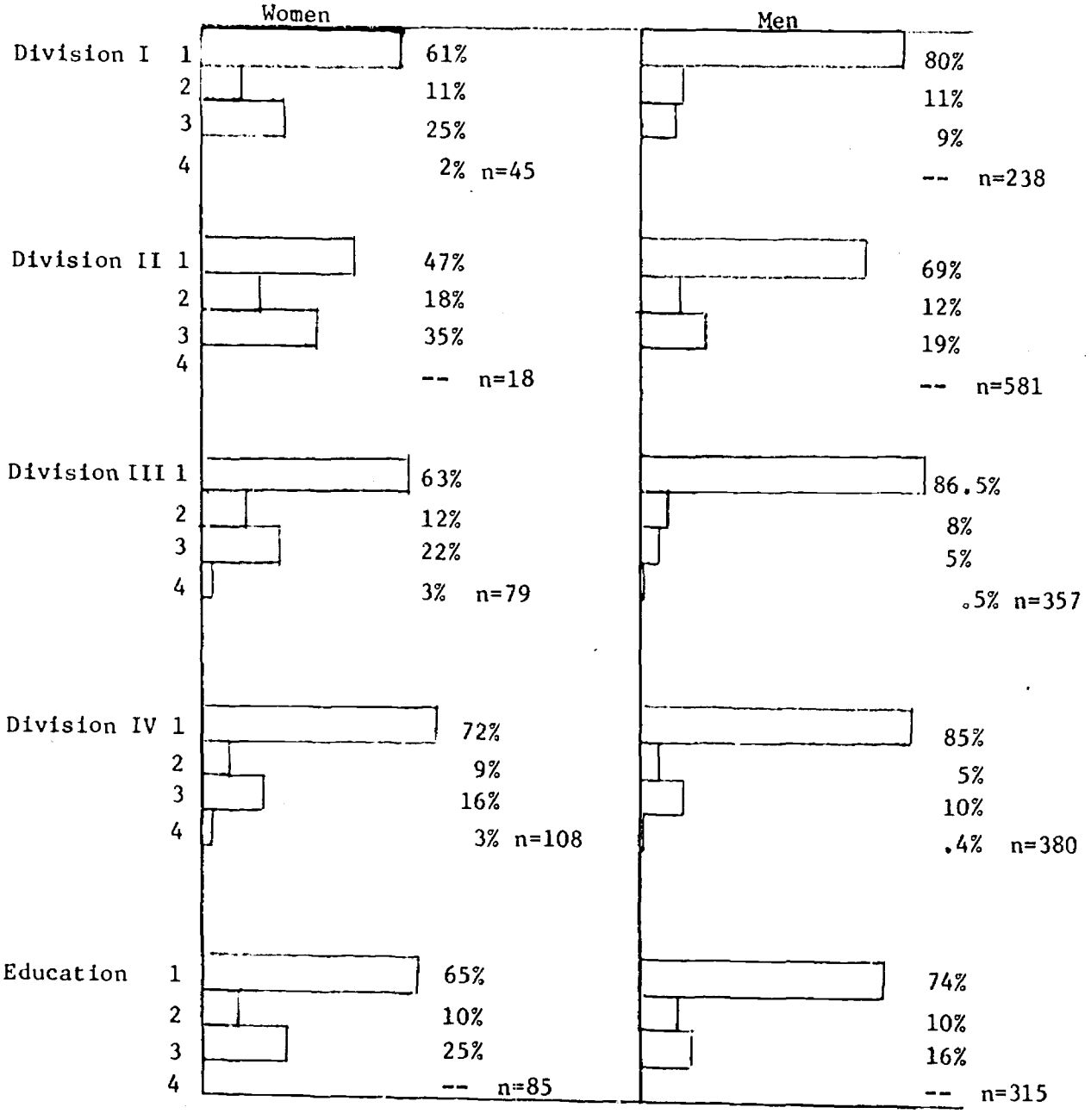
A survey on the status of women in political science, carried out and reported by J. and P. Converse, of The University of Michigan, showed that women Ph.D. students were both more anxious than their male counterparts about their initial job placement and less satisfied with the placement. The placement period was shown to be more distressing for women than other transitional points in their educational development.

The anxiety and distress which women feel at this juncture in their careers is realistic. Statistics on the placement of men and women completing Ph.D.s at The University of Michigan between 1970 and 1972 show that a higher percentage of men have firm job commitments at the time of graduation than of women. The statistics are collected by the National Research Council through a questionnaire administered to Ph.D.s at the time when all requirements for the degree are completed.

The question regarding firmness of post graduation plans offers four possible responses: 1) have signed a contract or made a definite commitment; 2) am still negotiating with a specific organization or more than one; 3) am seeking appointment but have no specific prospects; 4) other. Figure II depicts the percent of men and women Ph.D. recipients between 1970 and 1972 giving these responses; the figures are reported by academic divisions.

Although the conventional wisdom assumes improvements in the placement status of women since 1968, the placement statistics for University of Michigan women Ph.D.s suggest that women are still distinctly disadvantaged. Table XI presents the number of men and women responding to the Firmness of Postgraduation Plans question on the National Research Council Questionnaire in 1968 and in 1972. Overall, the number of women has increased.

Figure II Placement Status of UM Ph.D. Recipients at Time of Graduation, 1970-72



1) Have signed a contract or made a definite commitment
2) Am negotiating with a specific organization or more than one
3) Am seeking appointment but have no specific prospects
4) Other

Table XI: Placement Status of UM Ph.D. Recipients at Time of Graduation: Comparison of 1968 and 1972

	WOMEN		MEN	
	1968	1972	1968	1972
Division I - Biological & Medical				
	%	%	%	%
Have Contract/Firm Commitment	57.9	64.7	86.2	75.3
Am Still Negotiating	10.5	5.9	10.8	13.0
No Specific Prospects	26.3	23.5	3.1	11.7
Other	5.3	5.9	--	--
Total Number	20	18	66	77
Division II - Physical Sciences				
	%	%	%	%
Have Contract/Firm Commitment	50.0	62.5	76.3	70.6
Am Still Negotiating	--	12.5	13.4	11.2
No Specific Prospects	25.0	25.0	10.2	18.3
Other	25.0	--	--	--
Total Number	4	8	188	200
Division III - Social Sciences				
	%	%	%	%
Have Contract/Firm Commitment	85.7	57.1	87.5	88.3
Am Still Negotiating	--	--	8.8	5.1
No Specific Prospects	14.3	42.9	3.8	5.1
Other	--	--	--	1.5
Total Number	7	31	83	141
Division IV - Humanities and Arts				
	%	%	%	%
Have Contract/Firm Commitment	82.0	74.3	94.2	83.6
Am Still Negotiating	--	2.9	2.3	4.1
No Specific Prospects	9.0	20.0	3.4	11.5
Other	9.0	2.9	--	.8
Total Number	22	36	90	127
Education				
	%	%	%	%
Have Contract/Firm Commitment	90.0	67.6	95.1	76.3
Am Still Negotiating	9.1	8.1	--	9.3
No Specific Prospects	--	24.3	4.9	14.4
Other	--	--	--	--
Total Number	11	37	41	101

In Divisions I and II, the percentage of women with firm commitments has also increased, while the percent men with firm commitments has fallen. Despite these changes, women in these two divisions are less likely to have firm commitments than men.

In Divisions III, IV, and in education, the percent women with firm commitments is still noticeably below that of men and has fallen. The discrepancy is largest in the social sciences.

Where UM Ph.D.s are Placed: 1971-1972

Pursuing the question of placement beyond graduation, the Committee reviewed data collected by Dean George Hay on the placements of University of Michigan Ph.D. recipients for the calendar years 1971 and 1972. These data are regularly collected in March of the following year, so that degree recipients have had a minimum of three months and/or a maximum of 11 months to find jobs. These data show that among 1972 graduates, three times as many women as men were considered to be "unsatisfactorily placed," (i.e., designated as unemployed, underemployed, employed outside their own field, or of uncertain employment status by their departments).

Table XII. Percentage of Ph.D. Recipients Unsatisfactorily Placed

	MEN			WOMEN			TOTAL	
	1971	1972	N	1971	1972	N	1971	1972
All Divisions	6.1	8.6	621	16.5	28.9	125	12.7	12.1
Division I	8.0	1.1	77	7.1	26.7	18		4.9
Division II	5.7	6.4	200	12.5	77.8	8		9.7
Division III	4.7	5.6	141	12.5	8.0	31		6.0
Division IV	7.1	16.2	99	21.2	23.8	31		18.4
Education	5.9	16.9	104	21.4	40.6	37		23.1

Women appear to be at the greatest disadvantage in Divisions I and II (Biological and Physical Sciences) where there are the fewest women; they are somewhat less disadvantaged in the social sciences (Division III). They are clearly disadvantaged in Education. In 1972 between graduation and actual placement women in the social sciences appear to have recovered from their disadvantaged position. Only 57% had firm commitments at graduation, but 92% ultimately found satisfactory employment. In other fields women were not so fortunate.

It is significant that in the declining job market of 1972, for all divisions except social sciences, unsatisfactory placements for women have increased at a much sharper rate than for men. Despite a supposed emphasis on affirmative action, when the pressure is on, it is the women who suffer most.

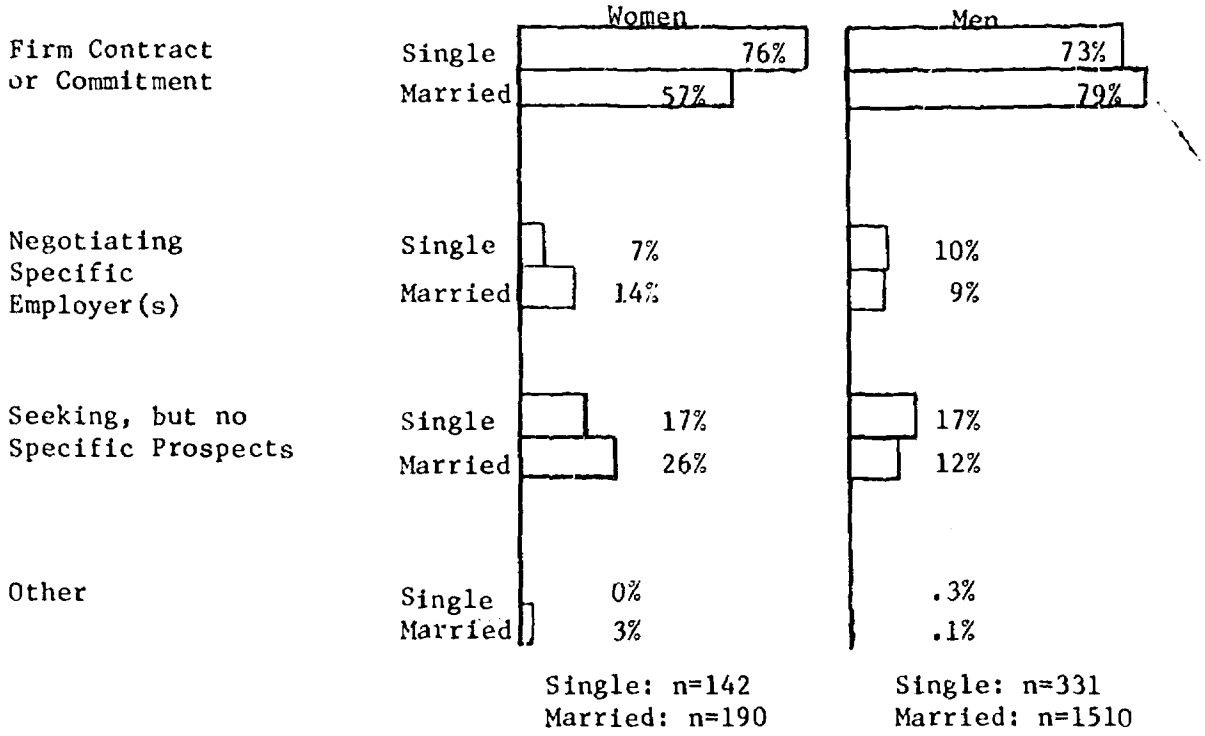
The same pattern of disadvantage to women is evident when one examines placements of the "satisfactorily" placed. In Division I, one quarter of the men but only one eighth of the women are in post-doctoral research

positions; these are generally viewed as career steps for scholars planning on academic careers in these fields. Of the graduates in Division I who are in teaching institutions, about 50% of the men are at schools comparable or almost comparable in stature to The University of Michigan, while only 16% of the women are so fortunately placed. In Divisions III and IV, this particular distinction does not emerge. Division II was not analyzed because the numbers involved are too small to be dependable.

Sources of Disadvantage

Some explanation for these differences in job placement between men and women derives from marital status. Married female graduates comprise a larger percentage of the women who are either still negotiating or have no specific prospects upon graduation than do married men in the same category. Figure III presents the percentage of married and single men and women graduates in each category for post-graduation plans.

Figure III: Percent Married/Single Ph.D. Recipients for 1970 Through 1972 By Sex and Firmness of Plans



In this regard it should be noted that the percentage of UM women Ph.D. recipients who are married has increased from 39% in 1965-67 (total n=144) to 55% in 1971-72 (total n=248) while the percentage of married men has remained a constant 80%. The social norms regarding husband-wife careers are gradually changing, but it may still be some time before women are afforded the degree of career mobility traditionally assumed by men. (see below, p. 25 for more information on this question.) In the meantime, the disadvantage which women experience, both in the job market and with respect to family mobility, can only be countered through a vigorous

and creative placement program in each department.

Survey of Placement Practices in Fifteen UM Departments

The disadvantage in placement which women experience and the Converse survey showing women's anxiety to be greater than men's at this juncture prompted the Committee to undertake a study of the placement process in selected departments. The study design involved two elements: 1) a telephone survey of the placement officer or chairman and a senior faculty member in target departments; 2) a mailed questionnaire to advanced candidates in these departments. It was hoped that a comparison of these two sources of information with the data collected in Dean Hay's annual survey would improve our understanding of effective and ineffective departmental placement programs and provide a basis for Committee recommendations.

1. Demographic Data on Survey Recipients

The 15 departments included in the survey were chosen by an arbitrary rule: in the life and physical sciences, any department graduating more than four women between January 1970 and December 1971 was included; in the social sciences and humanities, any department graduating more than six women was chosen. Since several departments in the School of Education fit this criterion, one department was selected arbitrarily. The departments included in the survey along with basic information on the survey, are listed in Appendix VII-1, p. 65.

All students in these departments who had entered formal candidacy before September 1, 1972, or who had completed their degrees after that date were included in the survey. Sixty-seven percent of the recipients responded: 72% of the women and 64% of the men.

Seventy-two percent of those who responded to the survey either had completed their degrees or were planning to complete by August, 1973. Another 15% would be finished by December, 1973. Table 2 shows the breakdown for the whole group, and by sexes. The women fall slightly behind the men in the percent to be completed by August, but by December, 1973 the two sexes are roughly comparable. It is possible to consider the two groups as equally far advanced toward completion when observing trends for the whole group sampled.

2. Life-cycle Constraints on Women in Placement

As was noted above, married women were more apt to be inconclusive about their postgraduation plans than single women or men. Freedom to relocate clearly influences the degree of flexibility students have in seeking employment.

In response to the questionnaire, 52% of the women and 39% of the men indicated a necessity to coordinate their job decisions with another person. For 25% of the women, but only 13% of the men, this other person was another Ph.D. Thus women are more limited in the freedom to locate, and are more likely to be in two-Ph.D. families, than men.

In the sampled group, 72% of the men were married and 42% had children; 47% of the women were married and 27% had children. Traditionally, women are more heavily involved in child rearing than men. Children can therefore be expected to cause more of a disturbance to female careers than to male careers.

Part-time work and temporary withdrawal represent potential solutions to the strain of combining children with careers. In the telephone survey of faculty members the Committee inquired about the possibility of working part-time in the field. Eight departments replied that part-time work was unknown and not feasible; the rest expressed doubt that part-time work was really productive. Thirty-two percent of the men in our student sample expressed interest in part-time work, but the majority felt constrained to add that they would work part-time only if full-time work were not available. Over 60% of the women respondents expressed interest in part-time work, and only a few of these indicated that it was second choice to full-time work.

In response to a question about the effect of a temporary withdrawal from active employment upon career development, every department said that this would place the candidate at a serious disadvantage; some departments said that a withdrawal would make it next to impossible to return to the field.

Life-cycle constraints weigh more heavily against women in the job market than against men. Women are less free to relocate and more apt to be associated with another Ph.D. A larger percentage still have child-bearing years before them. Potential solutions are either not available or are seen as detrimental to the career. The larger percent of women in "unsatisfactory" placements or without employment after completion of the degree is undoubtedly a reflection of these constraints.

3. Placement Practices of Departments

The Committee conducted telephone interviews with representatives of the departments being surveyed. These were checked against questionnaires on students' perceptions of the placement process. The conversations revealed enormous discrepancies in attitude, procedure, and sense of urgency.

About half of the departments surveyed have designated Placement Officers, who on occasion may also be the Graduate Advisor. In general these are the departments which seem to be most actively engaged in publicizing jobs, in duplicating application letters for students, and in training them in how to apply for jobs. Sometimes, however, the Placement Officers do not appear to take the job seriously or to be well-informed about the situation within their own field. In one department (which prides itself on its placement program but whose students discount it), the Placement Officer was found to be wrong on several crucial points of fact. The designation of a Placement Officer without clear and organized departmental support of his or her responsibility is therefore of little value.

The role of the faculty in helping to palce students varies enormously. In many instances the dissertation advisor plays an active and crucial role; in others the advisor and other faculty merely react to student pressures or requests. Likewise the role the department should play is variously conceived. Some put the burden of finding a job entirely on the student. Some make notices of jobs available to all. Some sent out almost unlimited letters for their students. Some organize smokers at national meetings. Some circularize potential employing departments, and some pride themselves on their passive posture relying essentially on the "old boy" network.

There is such wide variation in the sense of urgency with which departments approach the placement process that an attempt by the Graduate School to improve the procedure in less effective departments would be a welcome development.

4. Student Perceptions of Departmental Placement Procedures

Seeking to understand the dynamics of placement, the Committee compared student perceptions of departmental placement efforts with the departments' own perceptions. The questionnaire sent to students was designed to elicit some attitudinal responses. It was anticipated that women would express dissatisfaction over their greater difficulty in obtaining suitable employment. The Committee found, however, that in most departments women's attitudes were about the same as men's although the women were not faring as well.

Students were asked to rate their satisfaction with six aspects of departmental placement efforts: the job information offered by faculty; the counseling and advice; direct assistance in seeking jobs; assistance from the Office of Career Planning and Placement; student-organized programs; and fairness of treatment. The scale was 0-5, with 0=not relevant, 1=dissatisfied, 2=moderately dissatisfied, 3=neither satisfied nor dissatisfied, 4=moderately satisfied, 5=satisfied. In compiling departmental means, the Committee excluded the student programs and the Office of Career Planning and Placement; the first was found to be non-existent, and the second was outside departmental control. Two scales were developed for satisfaction ratings. The "effort" scale was a combination of the first three questions, in which students were asked to rate their satisfaction with departmental efforts on their behalf. The second "fairness" scale involved the last question, where students rated perceived fairness. These two scales are treated separately in the following analysis.

Student reactions to the placement procedures of their respective departments as measured by the effort scale are summarized below. Table XIII reflects the relative degree of satisfaction felt by students (regardless of sex) toward the placement efforts of their departments. The ranking begins with departments where students are very satisfied and moves to departments where they are most dissatisfied. Although this type of judgment is highly subjective, it has some merit in that it shows that student reactions vary by department and that different approaches by departments in the same or closely related fields can produce dramatically

different results. For example, Romance Languages ranks low; German is the highest.

Table XIII. Student Satisfaction with Departmental Placement Efforts (Rank Order of Department means proceeding from Satisfied, value=5, to Dissatisfied, value=1.)

1. German (4.00)
2. Mathematics (3.90)
3. Education & Psychology (3.92)
4. History of Art (3.76)
5. Anatomy (3.58)
6. Music (3.48)
7. Psychology (3.21)
8. Linguistics (3.17)
9. Zoology (2.83
10. Education [admin. and super.] (2.77)
11. Botany (2.65)
12. English (2.62)
13. Biological Chemistry (2.58)
14. Chemistry (2.47)
15. Romance Languages (1.86)

There is no easy way to establish a meaningful relationship between student satisfaction with job placement practices and the actual placements in the department. In History of Art student satisfaction is very high and over 70% have jobs or promises of jobs, while in Education where over 80% have jobs, satisfaction is much lower. Mathematics is even stranger: only 30% of the students report job commitments in the survey, but the general satisfaction level is higher than in History of Art.

There is general consistency between men and women in their degree of satisfaction with department placement efforts. In 9 out of 12 departments having more than one woman, the difference in mean satisfaction levels is only .4 (or less than half a point) on a 1-5 scale. In the three other departments, however, the difference is substantial. In Biological Chemistry, which ranks near the bottom of the list, men report a satisfaction rating of 2.9 and women 1.3 for a difference of 1.6. In German, with the highest general satisfaction rating, men are very satisfied with department procedures (4.4) while women report only 3, for a difference of 1.4. In Psychology the difference is .6 (3.4 vs. 2.8).

Table XIV. Difference in Mean Levels of Satisfaction Between Men and Women on Departmental Job Placement Procedures (By rank order proceeding from departments where women show less satisfaction than men to those where they show more.)

1.	Biological Chemistry	-1.6	7.	History of Art	+.1
2.	German	-1.3	8.	Music	+.2
3.	Psychology	- .6	9.	Linguistics	+.3
4.	Romance Languages	- .4	10.	Botany	+.4
5.	Education	- .4	11.	Mathematics	+.4
6.	English	- .2	12.	Zoology	+.4

With regard to perceptions of faculty fairness (as contrasted to departmental efforts on their behalf), women ranked faculty fairness higher than the men in all but two departments. Oddly these were in Romance Languages, which had the lowest student satisfaction score on the effort scale, and in

German, which had the highest. In Romance Languages the reported sense of discrimination appears to be significant.

In summarizing student attitudes toward placement procedures, it should be noted that those departments registering greatest student dissatisfaction are departments which leave the primary responsibility to the student, rely mainly on the "old boy" network for finding jobs, or have no organized system known to students.

In the departments reflecting greatest student satisfaction there seems generally to be a visible, caring, and active departmental placement officer, considerable faculty consultation with students, help in the preparation and distribution of vitae, and job files which students feel are open.

Energetic efforts by departments to place students tends to produce both jobs and satisfaction even in fields where jobs are not easy to find (e.g., History of Art), while reliance on the "old boy" system coupled with little organized effort by departments produces fewer jobs and little satisfaction. Students in many departments do not feel that all jobs are made public. They feel that there are favored students who get first crack at the best jobs. Finally, student perceptions of departmental placement procedures in many departments are so totally at variance with the department's own concept of its program as to suggest that attention to communications might improve student confidence and morale.

5. The Office of Career Planning and Placement

The degree to which the Michigan Office of Career Planning and Placement (OCPP) has been integrated into the placement process varies widely. In some fields it seems to be well regarded, in others ignored. Some departments have found that even where it does not have enormous professional expertise in specialized jobs, it can help with the routine of credentials preparation and correspondence.

There appeared to be no significant differences between the replies of men and women with regard to OCPP. The greater difficulty that women have in finding a position may explain the slightly higher use of the OCPP by women than men. It may also explain the slightly higher rating of the OCPP by women than men; those who get jobs are more apt to like the service. There is no evidence, however, the OCPP does not treat men and women equally.

6. Survey Conclusions

Departmental placement procedures vary considerably and appear related to disciplinary norms more than local ones. No conclusions could be drawn with respect to the effectiveness of one or another procedure in satisfying students or in placing them.

Student perceptions of satisfaction are highest in departments where faculty members are visibly involved in the placement of their students, and lowest in departments which rely on the "old boy" system. Discrepancies

between faculty and student descriptions of the placement procedures were greatest in departments receiving the lowest satisfaction ratings. Students in these departments also did not believe that the job files were entirely open, while students in highly rated departments did believe they were open. Gaps in trust were greatest where active efforts on behalf of the students were lowest.

The Office of Career Planning and Placement is unevenly integrated into the placement efforts of departments; no evidence of discriminatory treatment by OCPP was found.

Women experience more difficulty in placement than men. In part, their problems reflect greater life-cycle constraints. Their career mobility is more limited, and the complexities of combining children and careers lead them more often to seek part-time positions or to withdraw from active employment for a short period. Both of these solutions were considered detrimental to career aspirations by faculty members.

Legal Status of Academic Departments Engaged in the Placement of Students

In view of the fact that departments which promote the placement of their doctoral students could fall subject to various legal antidiscrimination provisions that pertain to employment, either as employment agencies or as extensions of the state or federal government, the Committee investigated the legal status of departments as placement agents. A clear determination on the matter could not be found, but several statutes might be construed as relevant if this issue were ever raised in court.

The Regents of the University have directed the University Placement Office not to discriminate on the basis of sex. Although this has not officially been extended to academic departments, the Regents clearly posess the authority to promulgate such a regulation. The Affirmative Action Plan of the University bars discrimination in placement within the University, but does not state whether the same provisions apply to placements by University academic units. The State Constitution guarantees equal protection to all; some provisions of the Michigan Code prohibit discrimination on the basis of sex, race, religion, color, blindness or national origin.

At the Federal level, the 14th Amendment, Title IX of the 1972 Higher Education Amendments, the Civil Rights Act of 1964, and Titles VII and VIII of the Public Health Service Act, all contain provisions that might reasonably apply to this circumstance. In particular, the Public Health Service Act defines nondiscrimination in admissions as including "nondiscrimination in the enjoyment of every right, privilege, and opportunity secured by admission to the program." Section 901(a) of Title IX of the Higher Education Amendments states that "No person in the United States shall, on the basis of sex.....be denied the benefits of.....any education, program or activity receiving federal financial assistance."

Several points require clarification before the relevance of any of these statutes is unambiguously established. On the state level, it would

be necessary to determine whether a department's placement activities fall within the ambit of the public accommodation provisions before these could serve as guidelines. On the Federal level, it would have to be established that the placement of doctoral students constituted a "state action" if the 14th amendment were to become relevant.

Whether placement is regarded as one of the "opportunities" or "benefits" of admission to an educational program, or whether it pertains exclusively to the employment sphere and is not considered part of the education is of signal importance to this matter. When departments appoint placement officers, and when faculty members are known to write letters of inquiry and to telephone friends on behalf of their students, a strong argument could be made that these activities constitute a benefit of admission to the program and are legally due to all on a non-discriminatory basis.

While the Committee was unable to establish clearly the legal status of departments engaging in placement activities on behalf of their students, it feels that this issue is important enough to warrant formal clarification on the University's part.

THE COMMITTEE RECOMMENDS:

1. *that the annual Graduate School survey of the placements of Ph.D. recipients include women as a separate category in all summary analyses.*

2. *that that Graduate School's staff inform departments of the Committee's findings which show that men Ph.D. graduates enjoy an advantage over women in finding employment, that married women Ph.D.s are particularly likely to encounter difficulties in placement, and that the ratio of married to unmarried students among women Ph.D. recipients is increasing.*

3. *that that Graduate School's staff assist departments and programs in developing miaginative and systematic approaches to the placement of their doctoral students, with particular emphasis on the placement of women, both married and unmarried.*

4. *that University of Michigan departments announce publicly their commitment to the hiring of women professionals at national meetings of their disciplines, and that departments actively encourage employers of all types, with whom they come in contact, to hire women professionals.*

5. *that a review of departmental placement efforts be included in the regular procedures by which programs and departments are evaluated by the Graduate School.*

6. *that the Graduate School's staff owrk with the Affirmative Action Officer in amending the Affirmative Action Plan of the University to deal explicitly with non-discriminatory behavior in the placement of University graduates at the Masters and doctoral levels.*

E. Concluding Remarks

Throughout the report attention has focused on attrition as a symptom of unequal access for women to graduate study and the careers for which it is a gateway. University policies and procedures are by no means the sole causes of attrition, yet they are causes which the University can control directly.

There is at present no unit which has the mandate or necessary information to address the specific needs of women in graduate education. During the past one and one-half years, the Committee has served in this capacity, to the limits of its ability, by arranging an Orientation Session for women students last Fall, and by encouraging other programs and projects for the benefit of women graduate students. The Committee feels that programs of this nature are important and that formal provision should be made for their continuance.

The Committee has, in addition, identified a number of areas in which procedural improvements should be made. Most of these refer specifically to the critical thresholds in student progress: admissions, entry to doctoral study, and the transition from student to professional life.

Two themes have recurred. One is the rigidity of educational structures and norms which grant non-traditional students only a tenuous status in the graduate community. The other is the lack of accurate data regarding the behavior of students at various educational milestones.

The Committee believes that accurate information, regularly disseminated, is a powerful instrument of change. Discriminatory structures and behavior thrive in the absence of information but suffer the light of public knowledge.

Most issues addressed in this report affect the lives of both women and men graduate students. The recommendations regarding flexible access for non-traditional students, better information profiles, and regular Graduate School evaluation of attrition causes, financial support distribution, and departmental placement efforts are directed to the needs of all graduate students. The two final recommendations from the Committee logically emanate from the preceding findings and from the Committee's concern about the educational experiences of graduate students. To the degree that the Committee's recommendations are accepted, a centralized office within the Graduate School will be required for their implementation.

THE COMMITTEE RECOMMENDS:

1. *that a senior staff member be appointed in the Graduate School whose responsibility it is to provide leadership and guidance to the graduate community in realizing equality of access to admissions, financial aid, counselling, educational support, and all associated rights and benefits of graduate study for all categories of student. The staff member's title should be sufficiently senior to permit effective action, and this person should have adequate clerical and staff support to carry*

out all aspects of the recommended program. A significant portion of the staff member's efforts should be directed to the special needs and interests of women students.

2. *that the staff member be specifically charged with:*

   a) *identifying issues related to the progress of various student categories through the graduate education process*
   b) *collecting and interpreting the data relative to these issues*
   c) *implementing actions which are designed to facilitate complete and equal access to graduate education for women*
   d) *administering the Graduate School's affirmative action program for women students and faculty*
   e) *assisting departments with the recruitment of women graduate students and faculty*
   f) *administering the "Rackham Special Student" program*
   g) *counselling actual and potential female students*
   h) *administering the scholarship program for returning and part-time graduate students*
   i) *assisting departments to deal more effectively and equitably with the job placement process*
   j) *serving as liaison between the Graduate School and women's organizations on campus, in order to coordinate the efforts designed to assist women graduate students and faculty witnin the University.*

3. *that the Committee to Study the Status of Women in Graduate Education and Later Careers be reconstituted as an Advisory Committee for Women's Issues, to assist the staff member in this area of her work.*

SUMMARY OF COMMITTEE RECOMMENDATIONS

A. Special Needs of Non-traditional Graduate Students

THE COMMITTEE RECOMMENDS:

1. that the Executive Board establish a "Rackham Special Student" category of graduate admissions for which there is no time limit on the number of terms of enrollment permitted, and in which students admitted make "contracts" with the Graduate School for the study programs that best suit their needs; that staff resources be provided to administer the program and to advise those who are admitted as Rackham Special Students.

2. that part-time students be eligible for and receive financial aid under all Rackham administered fellowships; that this fact be widely publicized among all who are concerned.

3. that the guidelines governing the external employment of students receiving scholarship aid be reviewed by the Executive Board to remove stipulations which unduly discriminate against non-traditional students.

4. that the Scholarship Proposal for Part-time and Returning Students, which is presented in Appendix V, be formally approved by the Executive Board; that that program be funded by the Graduate School if external support cannot be found.

5. that the senior administrative staff of the Graduate School be requested to encourage the national educational organizations with which the Graduate School is formally affiliated to lobby for increased flexibility in the eligibility criteria of national scholarship funds.

6. that the Graduate School's staff include "part-time" and "returning student" as variables in the information that is gathered; that the enrollment patterns, academic achievement, attrition rates, and degree completions of these students be collected and made public as part of the regular information profiles which are sent to graduate departments.

7. that the University Committee on fee structure be memorialized to change the current structure under part-time enrollments than for those taken as full-time enrollments, to equalize the cost per credit hour for all students, regardless of the course load taken.

8. that each department be requested to develop a mechanism for dealing systematically with the counseling needs of non-traditional students; provision should be made for advising and assisting these students in the admissions process and in planning academic programs, and for keeping the department's Executive Committee informed about the special needs and problems of these students.

B. Access to Graduate School

THE COMMITTEE RECOMMENDS:

1. that the Graduate School's staff seek to increase the proportion of women applicants for graduate study in the natural and physical sciences and in related fields by providing funds for recruitment, and by other appropriate means, such as

   a) assisting the Undergraduate Counselling Office of the literary college in its attempts to establish better liaison between undergraduate women and the science departments;
   b) publicizing data which would encourage more positive attitudes on the part of faculty members towards potential women graduate students;
   c) assisting the Michigan Women in Science in their work with undergraduate women science majors where possible.

2. that anticipated course load should not be regarded by departments as a major criterion for admission into a graduate program.

3. that departments, when assessing a potential student's capacity to pursue graduate work, should examine all relevant information, including evidence concerning motivation and recent on-the-job achievements, and that cutoff points based on any indices of ability, such as the Miller Analogies Test or the Graduate Record Examinations, be regarded as flexible in the case of non-traditional students.

4. that the Graduate School support, where possible, special courses, such as the CEW-sponsored Math Skills Mini-course, which prepare students for the Graduate Record Examination, and other programs which aim to refresh the academic and study skills of non-traditional students.

5. that the Graduate School's staff request of all programs and departments an annual reporting of their student recruitment efforts.

6. that the Graduate School's staff establish a procedure for departments to report regularly on their offers of financial aid and other support to all incoming graduate students, and regularly evaluate the data for evidence of discriminatory patterns.

7. that the Graduate School staff should collect and publish annually summary data regarding the applications, admissions, enrollment, and offers of financial aid for men and women in each division and department.

8. that the Graduate School's staff further investigate the phenomenon of lower enrollment rates among admitted women students than among admitted men students, and take appropriate action if it is discovered that the phenomenon is caused by discriminatory actions by units under the purvue of the Graduate School.

C. Transition from Masters to Doctoral Studies

THE COMMITTEE RECOMMENDS:

1. that the Graduate School's staff regularly evaluate the data for individual departments and programs regarding the progress of male and female graduate students from admissions through completion of degree requirements, so that appropriate action may be taken when patterns of discrimination are identified.

2. that the Graduate School's staff periodically collect and evaluate data regarding the distribution of financial aids to men and women, and take appropriate action when necessary.

3. that the Graduate School's staff obtain information regarding the causes of attrition for both women and men who discontinue their graduate training before completion of degree requirements, and use this information in assisting departments to reduce inadvertant student attrition.

4. that that Graduate School's staff further investigate the causative factors influencing the large drop-off rate among women students after the Masters Degree through a more extensive analysis of the Masters Degree Recipient Survey.

5. that the Graduate School implement actions which would encourage women who wish to continue to the Ph.D. degree (e.g., financial aid, day-care) the better to ensure compliance with the affirmative action commitment of the University.

6. that the Dean of the Graduate School explicitly encourage departments to appoint women to faculty positions at the University, and that staff members assist departments in locating qualified candidates.

7. that departments actively seek out women professionals in their respective disciplines when inviting guest speakers to present papers at departmental colloquia.

8. that departments review the courses, programs and policies that are directed at non Ph.D. bound students, with an eye to ensuring that the educational experiences of such students are intellectually rewarding and adequate to their needs.

D. Transition from Doctoral Study to Professional Careers

THE COMMITTEE RECOMMENDS:

1. that the annual Graduate School survey of the placements of Ph.D. recipients include women as a separate category in all summary analyses.

2. that that Graduate School's staff inform departments of the Committee's findings which show that men Ph.D. graduates enjoy an advantage over

women in finding employment, that married women Ph.D.s are particularly apt to encounter difficulties in placement, and that the ratio of married to unmarried students among women Ph.D. recipients is increasing.

3. that that Graduate School's staff assist departments and programs in developing imaginative and systematic approaches to the placement of their doctoral students, with particular emphasis on the placement of women, both married and unmarried.

4. that University of Michigan departments announce publicly their commitment to the hiring of women professionals at national meetings of their disciplines, and that departments actively encourage employers of all types, with whom they come in contact, to hire women professionals.

5. that a review of departmental placement efforts be included in the regular procedures by which programs and departments are evaluated by the Graduate School.

6. that the Graduate School's staff work with the Affirmative Action Officer in amending the Affirmative Action Plan of the University to deal explicitly with non-discriminatory behavior in the placement of University graduates at the Masters and doctoral levels.

E. In Conclusion

THE COMMITTEE RECOMMENDS:

1. that a senior staff member be appointed in the Graduate School whose responsibility it is to provide leadership and guidance to the graduate community in realizing equality of access to admissions, financial aid, counselling, educational support, and all associated rights and benefits of graduate study for all categories of student. The staff member's title should be sufficiently senior to permit effective action, and this person should have adequate clerical and staff support to carry out all aspects of the recommended program. A significant portion of the staff member's efforts should be directed to the special needs and interests of women students.

2. that the staff member be specifically charged with:

   a) identifying issues related to the progress of various student categories through the graduate education process
   b) collecting and interpreting the data relative to these issues
   c) implementing actions which are designed to facilitate complete and equal access to graduate education for women
   d) administering the Graduate School's affirmative action program for women students and faculty
   e) assisting departments with the recruitment of women graduate students and faculty
   f) administering the "Rackham Special Student" program
   g) counselling actual and potential female students

h) administering the scholarship program for returning and part-time graduate students
i) assisting departments to deal more effectively and equitably with the job placement process
j) serving as liaison between the Graduate School and women's organizations on campus, in order to coordinate the efforts designed to assist women graduate students and faculty within the University.

3. that the Committee to Study the Status of Women in Graduate Education and Later Careers be reconstituted as an Advisory Committee for Women's Issues, to assist the staff member in this area of her work.

APPENDIX I
THE STATUS OF WOMEN AT THE UNIVERSITY OF MICHIGAN AND COMPARABLE UNIVERSITIES

Table I-1 Total University

	U. Mich.	U. Chicago	Duke	U. Ill.	OSU	U. Penn.	Stanford	U. Texas	U. Wisc.
Number Applicants to Graduate School	9770	4473	2978	--	--	--	7514	6072	10639
Percent Women	34%	31%	32%	--	34%	--	25%	30%	30%
Number Admitted to Graduate School	4937	2600	1008	--	--	--	2608	3434	4917
Percent Women	37%	32%	35%	--	--	32%	18%	33%	37%
Percent Applicants Admitted - Women	59%	58%	37%	--	77%	--	25%	61%	57%
Percent Applicants Admitted - Men	51%	57%	32%	--	45.5%	--	38%	55%	41%
Number Enrolled in Graduate School	7421	2857	1809	8117	8663	--	4355	5248	8626
Percent Women	36%	30%	26%	31%	36%	--	19%	33.5%	31%
Number Masters Degrees Awarded	1704	566	--	--	--	--	1260	--	--
Percent Women	42%	34%	--	--	--	--	21%	--	--
Number Ph.D. Degrees Awarded	778	383	198	--	--	--	542	--	--
Percent Women	19%	22%	16%	--	--	--	12%	--	--

Table I-2 Physical Sciences

	U. Mich.	U. Chicago	Duke	U. Ill.	OSU	U. Penn.	Stanford	U. Texas	U. Wis.
Number Applicants to Graduate School	930	635	233	--	--	--	1280	1188	1379
Percent Women	14%	16%	18%	--	12.1%	--	15%	7.7%	15.6%
Number Admitted to Graduate School	645	409	154	--	--	--	412	852	739
Percent Women	14.7%	12%	18%	--	--	12%	12%	8.5%	19%
Percent Applicants Admitted - Women	74%	48%	68%	--	61.7%	--	38%	79%	66%
Percent Applicants Admitted - Men	69%	49%	60%	--	55.8%	--	56%	71%	51%
Number Enrolled in Graduate School	707	444	208	--	2102	--	776	711	1070
Percent Women	14%	10%	18%	--	7.4%	--	9%	13%	10.6%
Number Masters Degrees Awarded	141	86	--	--	--	--	156	--	--
Percent Women	12.7%	12%	--	--	--	--	15%	--	--
Number Ph.D. Degrees Awarded	106	85	--	--	--	--	114	--	--
Percent Women	8.5%	9%	--	--	--	--	3.5%	--	--

Table I-3 Engineering

	U. Mich.	U. Chicago	Duke	U. Ill.	OSU	U. Penn.	Stanford	U. Texas	U. Wisc.
Number Applicants to Graduate School	1041	--	128	--	--	--	1570	--	695
Percent Women	1.6%	--	3%	--	--	--	2.8%	--	3.7%
Number Admitted to Graduate School	662	--	69	--	--	--	1145	--	509
Percent Women	1.6%	--	4%	--	--	--	3.4%	--	2.2%
Percent Applicants Admitted - Women	65%	--	--	--	--	--	88.6%	--	68%
Percent Applicants Admitted - Men	64%	--	--	--	--	--	72.5%	--	73%
Number Enrolled in Graduate School	998	--	104	--	--	--	1524	666	650
Percent Women	3%	--	0%	--	--	--	2.8%	1.6%	2.3%
Number Masters Degrees Awarded	321	--	--	--	--	--	620	--	--
Percent Women	.9%	--	--	--	--	--	3.7%	--	--
mber Ph.D. grees Awarded	78	--	--	--	--	--	156	--	--
rcent Women	0%	--	--	--	--	--	0%	--	--

Table I-4 Biological & Health Sciences

	U. Mich.	U. Chicago	Duke	U. Ill.	OSU	U. Penn.	Stanford	U. Texas	U. Wisc.
Number Applicants to Graduate School	1359	359	698	--	--	--	529	293	2169
Percent Women	26%	27%	36%	--	--	--	28.5%	24%	33%
Number Admitted to Graduate School	620	154	159	--	--	--	214	124	770
Percent Women	32%	32%	36%	--	--	35%	28%	26%	42%
Percent Applicants Admitted - Women	56%	51%	22%	--	63%	--	39%	46%	46%
Percent Applicants Admitted - Men	42%	39%	22%	--	45%	--	41%	41%	31%
Number Enrolled in Graduate School	1057	251	399	--	1307	--	208	331	1755
Percent Women	29%	25%	25%	--	35%	--	41%	32%	27%
Number Masters Degrees Awarded	144	18	--	--	--	--	31	--	--
Percent Women	30%	44%	--	--	--	--	62%	--	--
Number Ph.D. Degrees Awarded	106	54	--	--	--	--	35	--	--
Percent Women	16%	23%	--	--	--	--	20%	--	--

Table I-5 Social Sciences

	U. Mich.	U. Chicago	Duke	U. Ill.	OSU	U. Penn.	Stanford	U. Texas	U. Wisc.
Number Applicants to Graduate School	2986	2298	1291	--	--	--	1866	2991	3439
Percent Women	32%	33%	29%	--	34%	--	28%	34%	26%
Number Admitted to Graduate School	1002	1136	247	--	--	--	283	1537	1167
Percent Women	33%	32%	26%	--	--	--	28%	39%	35%
Percent Applicants Admitted - Women	35%	48%	17%	--	46%	28%	22%	60%	46%
Percent Applicants Admitted - Men	33%	49%	20%	--	37.5%	--	20%	47%	45%
Number Enrolled in Graduate School	1475	1398	466	--	4098	--	580	949	1326
Percent Women	32%	30%	24%	--	48%	--	21%	30%	29%
Number Masters Degrees Awarded	254	253	--	--	--	--	125	--	--
Percent Women	29%	32%	--	--	--	--	27%	--	--
Number Ph.D. Degrees Awarded	179	191	--	--	--	--	98	--	--
Percent Women	21%	27%	--	--	--	--	19%	--	--

Table I-6 Arts & Humanities

	U. Mich.	U. Chicago	Duke	U. Ill.	OSU	U. Penn.	Stanford	U. Texas	U. Wisc.
Number Applicants to Graduate School	2505	1181	509	--	--	--	1571	1600	2029
Percent Women	51%	40%	42%	--	43%	--	37.5%	43%	45%
Number Admitted to Graduate School	1395	900	306	--	--	--	290	921	1154
Percent Women	58%	41%	47%	--	--	48%	43%	45%	56%
Percent Applicants Admitted - Women	63%	76%	66%	--	66%	--	21%	60%	71%
Percent Applicants Admitted - Men	48%	74%	55%	--	57.5%	--	17%	54%	45%
Number Enrolled in Graduate School	1474	764	346	--	1156	--	628	1437	1783
Percent Women	51%	44%	35%	--	47%	--	40%	46%	48%
Number Masters Degrees Awarded	348	209	--	--	--	--	124	--	--
Percent Women	73%	46%	--	--	--	--	47%	--	--
Number Ph.D. Degrees Awarded	169	63	--	--	--	--	83	--	--
Percent Women	27%	27%	--	--	--	--	34%	--	--

Table I-7 Education

	U. Mich.	U. Chicago	Duke	U. Ill.	OSU	U. Penn.	Stanford	U. Texas	U. Wisc.
Number Applicants to Graduate School	949	--	145	--	--	--	698	--	928
Percent Women	58%	--	52%	--	--	--	49%	--	46%
Number Admitted to Graduate School	613	--	95	--	--	--	264	--	578
Percent Women	60%	--	61%	--	--	--	41%	--	62%
Percent Applicants Admitted - Women	67%	--	76%	--	--	--	35%	--	64%
Percent Applicants Admitted - Men	62%	--	53%	--	--	--	41%	--	62%
Number Enrolled in Graduate School	1862	--	270	--	--	--	567	1030	1506
Percent Women	57%	--	52%	--	--	--	45%	50%	46%
Number Masters Degrees Awarded	536	--	--	--	--	--	201	--	--
Percent Women	67%	--	--	--	--	--	53%	--	--
Number Ph.D. Degrees Awarded	199	--	--	--	--	--	54	--	--
Percent Women	30%	--	--	--	--	--	15%	--	--

TABLE OF DATA REPRESENTED FOR EACH INSTITUTION

Survey Conducted: Spring, 1973

The University of Michigan

Applications:	for Fall Term, 1972
Enrollment:	for Fall Term, 1972
Degrees:	May, August, December, 1972

University of Chicago

Applications:	for Fall Term, 1972
Enrollment:	Academic Year, 1972-73
Degrees:	Academic Year, 1971-72

Duke University

Applications:	for Fall Term, 1972
Enrollment:	Fall Term, 1972
Degrees:	May, September, 1972 Ph.D. degrees

University of Illinois

Applications:	Fall Term, 1972

Ohio State University

Applications:	Fall Term, 1972 (totals calculated from divisonal figures)
Enrollment:	Fall Term, 1972

University of Pennsylvania

Applications:	Fall Term, 1972

Stanford University

Applications:	Fall Term, 1972
Enrollment:	Fall Term, 1972
Degrees:	September 1971-May 1972

University of Texas

Applications:	Academic Year, 1971-72
Enrollment:	Spring Term, 1973

University of Wisconsin

Applications:	Academic Year, 1972-73
Enrollment:	Academic Year, 1972-73

DEPARTMENTAL DISTRIBUTION WITHIN DIVISIONS

I. Biological Sciences

Includes: Agriculture, Biological Sciences, Dentistry, Medicine, Natural Resources, Nursing, Pharmacy, Public Health*, Urban and Regional Planning.

II. Physical Sciences

Includes: Astronomy, Chemistry, Computer Science, Geology, Mathematics, Physics, Statistics.

III. Engineering

Includes: All subjects associated with the College of Engineering.

IV. Social Sciences

Includes: Anthropology, Business Administration, Economics, Geography, History, Journalism, Political Science, Psychology, Sociology, Social Work.

V. Education

Includes: All subjects associated with the School of Education.

VI. Humanities and Arts

Includes: Architecture, Art, Classical Studies, Comparative Literature, English, Far Eastern Languages, German, History of Art, Library Science, Linguistics, Museum Practice, Music, Near Eastern Languages, Philosophy, Romance Studies, Slavic Studies, Speech.

An attempt has been made to present commensurate data for all the institutions surveyed by aligning departments according to the system used at The University of Michigan. The alignment succeeded only partially, since some institutions did not break down their figures into components. The presence or absence of one large unit with one sex predominating, such as nursing, engineering, or agricultural science, can alter ratios sharply. The ratios also shift constantly during a term as students drop out or shift fields.

Specifically, The University of Michigan's data do not include Masters of Business Administration, Social Work, Public Health, Law and Medicine, since these programs are administered by the relevant professional schools. These fields were omitted in our alignment where possible. The University of Chicago's M.B.A. and M.S.W. data are included in our figures; for the University of Texas, the business and social work applicants are included.

APPENDIX II
FOUR YEAR SURVEY OF ENROLLMENT AND DEGREE AWARDS
AT THE UNIVERSITY OF MICHIGAN

Table II-1 Men and Women Enrolled in Masters & Ph.D. Programs

	1970		1971		1972		1973	
	MEN-%	WOMEN-%	MEN-%	WOMEN-%	MEN-%	WOMEN-%	MEN-%	WOMEN-%
Division I								
M.A.	294-65.5	155-34.5	306-66.0	155-34.0	313-69.0	143-31.0	298-64.0	167-36.0
Ph.D.	430-81.5	98-18.5	432-78.0	123-22.0	442-74.0	159-26.0	471-74.0	167-26.0
Total	724-74.0	253-26.0	738-73.0	278-27.0	755-77.5	302-28.5	769-70.0	334-30.0
Division II								
M.A.	705-92.0	61- 8.0	812-91.0	83- 9.0	798-92.0	72- 8.0	747-91.0	76- 9.0
Ph.D.	909-94.0	63- 6.0	824-92.0	72- 8.0	757-94.0	52- 6.0	708-92.5	58- 7.5
Total	1614-93.0	125- 7.0	1636-91.0	155- 9.0	1555-93.0	124- 7.0	1455-92.0	134- 8.0
Division III								
M.A.	776-39.0	1235-61.0	702-38.0	1130-62.0	706-40.0	1055-60.0	654-37.0	1098-63.0
Ph.D.	1173-73.0	444-27.0	1128-71.0	461-29.0	1086-69.0	490-31.0	1240-68.0	578-32.0
Total	1949-54.0	1679-46.0	1830-53.5	1591-46.5	1792-54.0	1545-46.0	1894-53.0	1676-47.0
Division IV								
M.A.	272-37.5	455-62.5	299-39.0	462-61.0	286-38.0	461-62.0	291-39.0	461-61.0
Ph.D.	517-64.0	287-36.0	479-64.0	269-36.0	441-61.0	286-39.0	449-63.0	268-37.0
Total	789-52.0	742-48.0	778-52.0	731-48.0	727-49.0	747-51.0	740-50.0	729-50.0
Total Graduate School								
M.A.	2047-52.0	1906-48.0	2119-54.0	1830-46.0	2103-55.0	1731-45.0	1990-52.5	1802-47.0
Ph.D.	3029-77.0	892-23.0	2863-76.0	925-24.0	2726-73.5	987-26.5	2868-73.0	1071-27.0
Total	5076-64.5	2798-35.5	2982-64.0	2755-36.0	4829-64.0	2718-36.0	4858-63.0	2873-37.0

Table II-2 Percent Masters and Doctoral Enrollments Among Men and Women 1970-73

	1970		1971		1972		1973	
	MEN-%	WOMEN-%	MEN-%	WOMEN-%	MEN-%	WOMEN-%	MEN-%	WOMEN-%
Division I								
M.A.	41	61	41	56	41	47	39	50
Ph.D.	59	39	59	44	59	53	61	50
Total	100	100	100	100	100	100	100	100
Division II								
M.A.	44	49	50	53.5	51	58	51	57
Ph.D.	56	51	50	46.5	49	42	49	43
Total	100	100	100	100	100	100	100	100
Division III								
M.A.	40	73.5	38	71	39	68	34.5	65.5
Ph.D.	60	26.5	62	29	61	32	64.5	34.5
Total	100	100	100	100	100	100	100	100
Division IV								
M.A.	34	61	38	63	39	62	39	63
Ph.D.	66	39	61	37	61	38	61	37
Total	100	100	100	100	100	100	100	100
Total Graduate School								
M.A.	40	68	42.5	66.5	43.5	64	41	63
Ph.D.	60	32	57.5	33.5	56.5	36	59	37
Total	100	100	100	100	100	100	100	100

Table II-3 Men and Women Graduate Degree Recipients

	1970		1971		1972		1973	
	MEN-%	WOMEN-%	MEN-%	WOMEN-%	MEN-%	WOMEN-%	MEN-%	WOMEN-%
Division I								
M.A.	128-59.0	90-41.0	191-69.0	84-31.0	101-70.0	43-30.0	128-67.0	62-33.0
Ph.D.	109-87.0	16-13.0	87-85.0	15-15.0	89-84.0	17-16.0	52-79.0	11-21.0
Total	237-69.0	106-31.0	278-74.0	99-26.0	190-76.0	60-24.0	180-71.0	73-29.0
Division II								
M.A.	510-91.0	49- 9.0	535-91.0	52- 9.0	441-95.5	21- 4.5	99-90.0	11-10.0
Ph.D.	187-98.0	4- 2.0	189-95.0	10- 5.0	175-95.0	9- 5.0	121-96.0	5- 4.0
Total	697-93.0	53- 7.0	724-92.0	62- 8.0	616-95.0	30- 5.0	220-93.0	16- 7.0
Division III								
M.A.	383-39.0	611-61.0	395-45.0	477-55.0	347-44.5	433-55.5	248-42.0	341-58.0
Ph.D.	265-81.0	64-19.0	264-80.0	64-20.0	279-74.0	98-26.0	220-75.0	75-25.0
Total	648-49.0	675-51.0	659-55.0	541-45.0	587-55.0	482-45.0	468-53.0	416-47.0
Division IV								
M.A.	197-27.0	521-73.0	202-30.0	462-70.0	127-29.0	306-71.0	176-39.0	276-61.0
Ph.D.	117-73.0	44-27.0	113-73.0	41-27.0	131-70.5	55-29.5	112-70.0	48-30.0
Total	314-36.0	565-64.0	315-39.0	503-61.0	258-42.0	361-58.0	288-47.0	324-53.0
Total Graduate School								
M.A.	1218-49.0	1271-51.0	1323-55.0	1075-45.0	1016-56.0	803-44.0	651-49.0	690-51.0
Ph.D.	678-84.0	128-16.0	653-83.0	130-17.0	674-79.0	179-21.0	505-79.0	139-21.0
Total	1896-57.0	1399-43.0	1976-62.0	1205-38.0	1690-63.0	982-37.0	1156-58.0	829-42.0

Table II-4 Percent Masters and Doctorate Degree Recipients Among Men and Women 1970-73

	1970		1971		1972		1973	
	MEN-%	WOMEN-%	MEN-%	WOMEN-%	MEN-%	WOMEN-%	MEN-%	WOMEN-%
Division I								
M.A.	54	85	69	85	53	71	71	85
Ph.D.	46	15	31	15	47	29	29	15
Total	100	100	100	100	100	100	100	100
Division II								
M.A.	73	92	74	84	71.5	70	45	69
Ph.D.	27	18	26	16	28.5	30	55	31
Total	100	100	100	100	100	100	100	100
Division III								
M.A.	59	90.5	60	88	52.5	80	53	82
Ph.D.	41	9.5	40	12	47.5	20	47	18
Total	100	100	100	100	100	100	100	100
Division IV								
M.A.	63	93	64	92	49	85	61	85
Ph.D.	37	7	36	8	51	15	39	15
Total	100	100	100	100	100	100	100	100
Total Graduate School								
M.A.	64	91	67	89	60	82	56	83
Ph.D.	36	9	33	11	40	18	44	17
Total	100	100	100	100	100	100	100	100

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Appendix IV. Charge to the Committee

THE UNIVERSITY OF MICHIGAN
HORACE H. RACKHAM
SCHOOL OF GRADUATE STUDIES
ANN ARBOR, MICHIGAN 48104

OFFICE OF THE DEAN

October, 1972

To: Participants in the study of women in graduate education

From: Donald E. Stokes, Dean

Subject: The scope of the study

In view of the fact that many women still do not enjoy full access to graduate education and the careers to which it provides the gateway, it seems worthwhile to undertake a special study of the status of women in graduate education at Michigan. I am grateful to you for agreeing to accept this task. The study will provide the information necessary in establishing priorities for the Graduate School, the graduate departments and programs, certain other units of the University, and present or potential women graduate students in seeking to eliminate barriers to full access.

It would be appropriate for your study to touch upon all aspects of the graduate experience of women, including admissions and financial support; entrance to doctoral work; counselling and peer influences; access to ancillary University facilities and services; placement in academic and non-academic posts, the experiences of part-time students and part-time professionals, and, wherever relevant, the content of graduate study. Among the particular questions to which you may wish to give attention are these:

1. What changes in the admission or recruitment policies of the Graduate School and of the graduate departments and programs may be required to increase the access of women to graduate education, particularly in fields in which they are now underrepresented? A preliminary analysis of graduate admissions for the Fall of 1972 shows that a higher proportion of women than of men applicants were admitted in all four divisions of the Graduate School--the Biological and Health Sciences, the Physical Sciences and Engineering, the Social Sciences and Education, and the Humanities and Arts. Yet in all divisions except the Humanities and Arts women comprised much less than half of those who sought admission; in the Physical Sciences and Engineering they were not more than a tenth. This pattern is rooted in factors which lie both earlier and later in the life experiences of women than the period of application and admission. But we need to know what changes in the recruitment and admissions process might increase the access of women to graduate training.

2. What changes in the policies of the Graduate School and of the graduate departments and programs may be required to equalize the access of women to financial support? We need a comprehensive account of the existing access of women to fellowship support and to service awards for teaching and research. What changes in the criteria or process of awarding support will equalize the standing of men and women who seek support?

3. What changes in the policies of the Graduate School and of the graduate departments and programs may be required to give greater access to graduate education to women who wish to resume their studies after a lapse of some years? We need better data on how easily women are able to enter or re-enter the Graduate School after an interruption in their education. Is the negative image of interrupted education sufficiently dominant in the minds of the departments and of prospective students that women who wish to resume their training are at a disadvantage in admissions and financial support? Would it be possible to prepare a dictionary of course work equivalents which would translate the life experiences of women during the years of interrupted study into credits that could be accepted by Rackham? What other innovations might help to reduce the barriers to continuing education?

4. What changes in the policies of the Graduate School and of the graduate departments and programs may be required to give greater access to graduate training to women who are able to pursue their studies only on a part-time basis? Departments are at present permitted to accept part-time students outside the quotas for admission set by the Graduate School. Yet it is unlikely that many departments are aware of this latitude, and it is unclear whether this policy is an appropriate means of responding to the needs of women who are unable to pursue graduate study on a full-time basis. What changes are required to equalize the standing of part-time students who seek financial support?

5. What changes by the Graduate School, the departments and programs, and individual students would better meet the needs of women who wish to pursue subsequent professional careers on less than full-time basis, at least for some period of their lives? The model of the full-time, continuous professional career is so dominant that we have at present only the most rudimentary understanding of how students can be prepared, and prepare themselves, for creative part-time careers in academic or non-academic settings. Yet there is much that could be done to anticipate the difficulties in the way of continued professional development by those who disengage at least for part of their lives from a full-time career. What changes should be made in the content of graduate education or in career counselling to prepare women for such careers?

6. What changes by the Graduate School, the graduate departments and programs, and individual students may be required to increase the access of women to more advanced graduate education, particularly doctoral work? Women at present constitute a larger proportion of students enrolled for master's-level work, but it is quite unclear what factors diminish the relative numbers of women in the later stages of graduate education. What new initiatives are needed to sustain the motivation of women who might continue into doctoral work or to remove barriers which at present stand in their way?

7. What changes in career counselling or placement practices may be required to increase the access of women to the careers for which they are prepared by graduate study? There is wide agreement that the entry of greater numbers of women into the academic and non-academic careers in which there are few women at present can encourage women to enter graduate study and weaken existing barriers to their admission and support. The more adequate placement of women who have completed their graduate training is therefore a problem of great importance. How can the departments seek to remove obstacles to placement? Do our existing practices lead in particular to unequal treatment of married men and women who wish to take up professional careers?

8. What changes in the University's policies on physical and mental health care, housing, and athletic facilities would give more equal access to these ancillary services? Studies at other universities suggest that unequal treatment in these areas may contribute to the individual's sense of unequal status in the University community. We need to know for example if students perceive problems in the location and quality of gymnasium facilities, the rules that govern their use, the availability of University housing, the availability of medical consultation for problems specific to women, and the availability of psychiatric consultation for career-oriented women. We also need to know what contribution the Graduate School or the graduate departments could reasonably make toward adequate child-care facilities for graduate students.

Many of the problems you will consider are not unique to women. A number of your recommendations may be helpful in removing obstacles in the way of male students or of students from racial or ethnic minorities which have unequal access to graduate education. Nevertheless, the problems confronting women are sufficiently distinct that it seems worthwhile to make these the primary focus of a special study.

The study should develop definite recommendations leading to action, but its value will be enhanced if you give close attention at a number of points to the factual basis on which such recommendations must rest. Indeed, I hope that your review can help guide the Graduate School's efforts to gather and analyze information on the nature of graduate education at Michigan. It would also be worthwhile to assemble information on the status of women in graduate education that has been gathered by other universities, by study groups within the national professional societies, and by federal agencies.

You will have the full support of the staff of the Graduate School. I have in particular asked Martha Hinman to devote part of her efforts as Research Associate in the Graduate School to the work of your group, and the information system being developed by the Graduate School should be of substantial aid in preparing a number of special analyses. Our staff is also prepared to gather additional data from samples of graduate students where this seems appropriate.

It would be helpful if you could prepare a preliminary report by the end of the Fall Term and a final report by the end of the Winter Term. The final report should present recommended courses of action based on data already gathered and suggest further factual studies whose need has become apparent. At that time it may be appropriate for your group to reconstitute itself into a continuing advisory body on the status of women in graduate education in Michigan.

Appendix V.

SCHOLARSHIP PROGRAM FOR RETURNING AND
PART-TIME GRADUATE STUDENTS

This program is designed to help two groups of people:

1. In the first group are people wishing to return to Graduate School after a lapse in formal education of some years and who must refresh academic skills or take prerequisite courses before being granted full admission to a graduate program.

2. In the second group are working people and parents of small children, whose responsibilities preclude full-time participation in graduate programs of study and allied academic employment such as teaching and research assistantships.

The objectives of the program are threefold: 1) to provide monetary assistance to students who have been heretofore largely excluded from financial aid; 2) to stimulate new, more positive, faculty and student attitudes towards potential students from the two target groups; and 3) to study the cohort in order to develop appropriate criteria for admissions and financial aid eligibility for such students.

Scholarship Objectives

This scholarship program is designed to assist students who appear to have the capability for success in graduate study but whose life patterns have excluded them from qualifying for other financial aid programs. It is designed to work both directly, by offering funds for these students, and indirectly by providing an incentive to departments to examine and alter their administrative policies.

The scholarship program is also designed to provide the staff of the Graduate School with the information it needs to develop appropriate eligibility and selection standards, that will not exclude or discourage potential students from our target populations.

The Program

The scholarship program would provide for the full-time equivalent of twenty awards each year over a period of three yars, making a total of 60 full-time equivalent awards. Scholarships would be granted under the provisions designated below, and would be administered through the Rackham School of Graduate Studies.

Awards would pay tuition fees and, depending on need, an average of $2500 per student to cover living expenses and child care costs for one year. Scholarships would be renewable under certain conditions, provided that the student's academic progress were sufficient. The scholarship is restricted to entering and pre-masters degree graduate students.

In addition, the program would pay for the part-time services of a Graduate School staff member, and for clerical and administrative expenses incurred by this staff member in fulfilling her/his duties. The staff member would be responsible for carrying out analytic studies on the students in the program; for assisting departments with recruitment and in making special provisions for the students; and for developing selection criteria and administrative regulations which could be used by the Graduate School in extending financial aid to part-time and special students.

The total cost of the program, with twenty full-time equivalent scholarships per year for three years, and a part-time administrator, would be approximately $104,307 each year (subject to revision due to increases in tuition fees), or $312,921 for the three year program. The budget appears as follows:*

Living expenses for 20 students, average of $2500 each	$ 50,000
Full-time tuition for ten	16,773
Part-time tuition for twenty	23,534 **
Half-time staff member	7,000
One-third time clerical staff person	2,000
Research and administrative expenses	2,000
	$104,921
	x3
TOTAL	$312,921

Eligibility

Any prospective student, who satisfies the following criteria, is eligible to apply for an award in this program. Students should:

1. be able to attend graduate school only on a part-time basis, or need additional credits before admission to full status in a regular graduate program.

2. have a bachelor's degree from an accredited institution.

3. demonstrate academic promise.

* Current tuition fees have been used as a basis for this projected budget.
** The higher price for part-time students reflects the fact that the fee schedule at The University of Michigan defines "full-time" as 8 credit hours or more. Therefore, 6 credits, although it represents two courses, is equal in cost to slightly more than 3/4 of the full-time fee.

4. be prepared to register for a minimum of six credit hours per semester.

Students who are returning to graduate school after a lapse in formal training and students whose family or work responsibilities preclude full-time study are encouraged to apply. Financial need will be a major criterion in the selection of award winners. The sponsoring department's demonstrated good will will a) in recruiting students and b) in meeting their special needs through advising, tutoring, and the scheduling of classes will also be considered.

The scholarship is open to masters level graduate students at The University of Michigan whose programs are administered through the Rackham School of Graduate Studies.

Application Procedures

Students should submit a Graduate School application form for financial aid to the department of their choice by February 1, 197_. The following materials should accompany the application:

1. a transcript from their undergraduate institution(s).
2. other pertinent transcripts or documents which attest to academic promise.
3. three letters of recommendation.
4. a statement of purpose describing the student's plan of study towards the desired degree.
5. a brief explanatory statement outlining the commitments which preclude full-time study or the student's main activities during the lapse in formal training.

Students needing make-up credits for formal acceptance into a graduate program should include a list of these credits.

Departments should submit a list of nominations for these awards to the Selection Committee in the Graduate School by March 1, 197_, along with a brief description of any special arrangements whichhave been made to accommodate the students'/special problems.

The Selection Committee

The Selection Committee shall consist of two members of the Executive Board of the Graduate School plus the Director of the Center for the Continuing Education of Women. The Associate Dean of the Graduate School in charge of financial aid shall sit with the Committee in an ex officio capacity.

Final Comments

It is our feeling that a large-scale change in the principles guiding the award of financial aid to students is called for, a change which will recognize that the life cycles of many dedicated and highly able students do not permit continuous full-time study from the freshman year through to a professional degree.

Appendix VI: A

THE UNIVERSITY OF MICHIGAN
HORACE H. RACKHAM
SCHOOL OF GRADUATE STUDIES
ANN ARBOR, MICHIGAN 48104

OFFICE OF THE DEAN

To all candidates for Master's degrees in the Winter Term of 1973:

Graduate students rarely have an opportunity to express themselves individually or collectively to policy-making groups. To enlarge our understanding of the experiences of Master's level students during their graduate careers, we are asking all those who will earn Master's degrees this term to answer the following questions.

The questionnaire was designed by a task force of The Graduate School's Committee on the Status of Women in Graduate Education. The information that you provide will be of great help to the Executive Board of the Graduate School and to all who are concerned with student aid and other problems of graduate students.

Let me take this chance to congratulate you on the completion of your master's work and extend best wishes for the years ahead.

Sincerely,

Donald E. Stokes, Dean

Print
Name _____ Sex: F___M___ Student Number: _____
(Last) (First) (Middle)

Never Married:_____ Married Now:_____ Divorced : Separated _____ No. of dependent children:_____

Degree Program:_____
(e.g. A.M. in English Lang. & Lit.)

1. a. Term and year of first enrollment in this degree program _____19___-19___
   b. No. of terms enrolled since beginning this program _____
   (IIIA, IIIB = ½; IIIA + IIIB = 1 term)

2. Sources of tuition, living expenses, etc. throughout this program:

	Approximate Percentage	or	Approximate Dollar Value
Fellowships (no service required)			
Teaching fellowships			
Research assistantships			
Other assistantships			
Employment - self			
Employment - spouse			
Loans and work-study			
Veterans' benefits			
Parental aid			
Other: _____	_____ 100%		_____ $

3. Did you transfer to this program from another Graduate School? Yes____ No ____
   Name of institution_____ Date enrolled (mo./yr.) _____
   No. of credits earned _____ Field of study _____
   (e.g. Fine Arts)

4. Are you definite plans to continue your education beyond the Master's degree?
   Yes: _____ No: _____

Name _____

5. Whether or not you are continuing your education, please check any of the following that have encouraged you:

to complete current Master's program	to continue to intermediate or second Master's program	to continue to doctoral program	
			PEOPLE
_____	_____	_____	Faculty
_____	_____	_____	Fellow Students
_____	_____	_____	Friends
_____	_____	_____	Spouse
_____	_____	_____	Parents
			CIRCUMSTANCES
_____	_____	_____	Interest in field
_____	_____	_____	Prospects of being drafted
_____	_____	_____	To improve job prospects
_____	_____	_____	Nothing better to do
_____	_____	_____	Availability of financial aid
			Meaningful associations:
_____	_____	_____	with students in program
_____	_____	_____	with faculty in program
			STRUCTURES
_____	_____	_____	Well-designed degree program
_____	_____	_____	Availability of child care
_____	_____	_____	Opportunity for part-time study
_____	_____	_____	Readily available information on job prospects

Others: (please specify) _____
Comments: (use back of page)

6. Whether or not you are continuing your education, please check any of the following that have discouraged you:

			PEOPLE
_____	_____	_____	Faculty
_____	_____	_____	Fellow Students
_____	_____	_____	Friends
_____	_____	_____	Spouse
_____	_____	_____	Parents
			CIRCUMSTANCES
_____	_____	_____	Lack of interest
_____	_____	_____	No financial aid
_____	_____	_____	Poor job prospects
_____	_____	_____	Needed money
_____	_____	_____	Birth of child
_____	_____	_____	Marriage
_____	_____	_____	Relocation of spouse
_____	_____	_____	Family problems
			No meaningful associations
_____	_____	_____	with students in program
_____	_____	_____	with faculty in program

(Continued on page 3)

Name _____

6. (continued)

			STRUCTURES
_____	_____	_____	Poorly designed degree prog.
_____	_____	_____	No child care avaliable
_____	_____	_____	No opportunity for part-time study
_____	_____	_____	No readily available information on job prospects

Others: (please specify) _____
Comments: (use back of page)

7. Difficult as it may be for you to answer, please indicate what kind of job you realistically expect to hold: (Expected salary)

first job after degree: _____ _____
five years later: _____ _____
ten years later: _____ _____

8. Which one of the following most accurately describes your expected career plan:

____1. I plan not to work.
____2. I plan to work continuously.
____3. I plan to interrupt only for brief maternity/paternity leaves.
____4. I plan to work until I have children and not thereafter.
____5. I plan to interrupt work to raise children to school age.
____6. I plan to interrupt work until children are grown.
____7. I plan to take time off now and then.
____8. I don't know.
____9. Other (please specify) _____

9. Which one of the following most accurately describes your expected work pattern?

____1. I do not plan to work.
____2. I plan a career of part-time employment.
____3. I plan to combine part-time and full-time employment.
____4. I plan to work full-time only.

10. When you entered this program, did you expect to continue graduate study beyond this degree? Yes____ No ____

11. IF YOU PLAN TO CONTINUE STUDY please provide the following information:
Degree sought _____
Field _____
Continuing within next academic year:
Yes ____ No ____
Part-time _____ Full-time _____
At U-M: Yes ____ No ____
Will you receive financial aid? Yes___ No ___
(e.g., teaching fellowship, fellowship research assistantship, but not a loan)

IF YOU DO NOT PLAN TO CONTINUE STUDY please state why you will not be continuing your education beyond the master's degree
_____
_____
_____
_____
_____
_____

12. Additional comments on survey topics and other topics as you wish. (Use back of sheet.)

Appendix VI: B

CODING MODEL FOR OEPN-ENDED QUESTION
Masters Degree Recipient Survey

1.0 Higher degree not required for career goals

- 1.1 Higher degree not offered in this field
- 1.2 Higher degree would price me out of the market
- 1.3 Already have Ph.D. or M.D.
- 1.4 I have a good job waiting
- 1.5 I can pursue education on my own, without a degree program

2.0 Dissatisfaction with UM

- 2.1 Unhappy with the Graduate School
- 2.2 Unhappy with the department
- 2.3 Unhappy with the degree program
- 2.4 Unhappy with the faculty
- 2.5 Cost is prohibitive - general
- 2.6 Part-time cost excessive relative to full-time

3.0 Desire to leave academe

- 3.1 Tired to school
- 3.2 Need/want to earn money
- 3.3 Need/want to get practical or real world experience
- 3.4 Uncertain about career goals

4.0 Ph.D. job prospects poor

5.0 Military or government service required

- 5.1 Military personnel sent here by the service
- 5.2 Foreign students obligated to return home

6.0 Family considerations prohibit continuation

- 6.1 Family is moving from the area
- 6.2 Children require attention
- 6.3 Spouse disapproves of my continuing

7.0 Matriculation difficulties

- 7.1 Didn't get admitted to Ph.D. program
- 7.2 Didn't get financial aid

8.0 Not interested in Ph.D.

9.0 Lack personal qualities--skills, intelligence, etc.--for Ph.D.

9.9 Other

Appendix VI: C

THE UNIVERSITY OF MICHIGAN

Horace H. Rackham
School of Graduate Studies
Ann Arbor, Michigan 48104

Office of the Dean

Spring, 1973

CONFIDENTIAL

Please return by May 1, 1973

Print Name _____ Student Number _____

Field of Concentration _____

Date Degree to be completed: Month _____ Year 19____

Sex F ___ M ___ Married ___ Single Divorced or Separated ___ Number of Dependent Children ___

Do you need to coordinate your job plans with a spouse, intended spouse or some other person?
Yes ____ No ____
If Yes is that other person also a doctoral student? Yes ____ No ____

1. (a) On completion of your Ph.D. degree, in which of the following areas do you have or do you want a job? Please rank the three or four jobs you consider most desirable.

Educational Research/Teaching	Administration	Other
____ in a university department	____ primary/secondary	____ government research
____ in a university research institute	____ college/university	____ industrial research
____ in a four-year college	____ government	____ business/industrial management
____ in a two-year college	____ non-profit organization	____ professional practice
____ primary or secondary	____ other	
____ other		

Other career plans not listed

(b) Please CIRCLE the job you already have or are most likely to get.

2. Departments or programs may play an important role in placing their graduates. Has your department designated a special person as placement officer for doctoral students? Yes ____ No ____

If Yes is that person ____ a faculty member ____ a department secretary
____ the department chairman ____ someone else (who?)
____ a student

(b) Does he/she serve mainly as a focal point for inquiries and notices about job openings?
Yes ____ No ____

(c) Does he/she actively promote students needing jobs? Yes ____ No ____

If No Who, in general initiates placement activity for students in your department?

____ the students themselves ____ the department chairman ____ other (who?)
____ a student's dissertation advisor ____ other faculty members

3. How does news of job openings come to the attention of students in your department? Please check all that apply.

___ The department maintains/posts an open file of all notices of jobs which come to its attention from ALL SOURCES, ranging from personal contacts, through circularized letters and professional job listings.

___ The department maintains/posts an open file of job openings from circularized letters, journals, professional job listings, etc., BUT DOES NOT ALWAYS make public requests that come through personal contacts or efforts of faculty members.

___ The placement officer contacts specific students about specific jobs.

___ Dissertation advisors notify their students about jobs when they hear of them.

___ Dissertation advisors seek jobs for their students.

___ Students find out through casual contacts with faculty members.

___ The Office of Career Planning and Placement in the Student Activities Building sends notices of job openings to students.

___ The regular placement office or unit of your school or department notifies students of openings.

___ Students hear about jobs at national meetings of the profession.

___ Students use private employment agencies.

___ Other:

4. (a) Have you sent or do you plan to send letters of application for specific jobs you know are available? Yes ___ No ___

If Yes: What assistance does your department offer?

___ reproduces resumes and/or letters of application
___ addresses envelopes
___ pays postage costs

Approximately how many letters are involved? ___

(b) Have you sent or do you plan to send letters of application to employers where you do not know about the availability of specific jobs? Yes ___ No ___

If Yes: What assistance does your department offer?

___ reproduces resumes and/or letters of application
___ addresses envelopes
___ pays postage costs

Approximately how many letters are involved? ___

5. Below is a list of various procedures that can be used to locate interested prospective employers. Please rate them as to your opinion of their effectiveness in finding good job leads for you, using the following scale:

4 = extremely effective 3 = quite effective 2 = minimally effective
1 = used but effectiveness unknown 0 = not used

(a) Procedures initiated by students generally

___ letters of inquiry reproduced
___ individually typed letters of inquiry
___ telephone calls
___ listing dossier with department
___ listing dossier with Office of Career Planning and Placement
___ listing dossier with other placement office
___ attending national meetings of profession
___ answering circularized letters
___ answering other job ads or listings
___ other: what?

PLEASE CIRCLE ANY OF THE ABOVE PROCEDURES WHICH YOU PERSONALLY HAVE USED.

5. b) Procedures initiated by faculty members

____ letters written by department chairman
____ letters written by dissertation advisor
____ letters written by department's placement officer
____ telephone calls from department chairman
____ telephone calls from dissertation advisor
____ telephone calls from department's placement officer
____ informal contacts of faculty at national meetings
____ other: what?

PLEASE CIRCLE ANY OF THE ABOVE PROCEDURES WHICH YOU PERSONALLY HAVE USED.

6. Which do you consider most effective in locating job prospects for you?

____ Student initiated procedures ____ Faculty initiated procedures

7. Do you think your department is more effective in placing students in some types of job than in others? Yes ____ No ____

If Yes: In which types?

8. Does your department offer advice on:

a) ____ how to prepare a curriculum vita
b) ____ how to locate job prospects
c) ____ general career strategy
d) ____ none of the above

If your department does offer advice, please indicate where such advice is given by placing the letters a), b), or c) in the appropriate blank spaces.

_____ in individual sessions with placement officer
_____ in talks with dissertation advisor
_____ in informal talks with other faculty members
_____ in group sessions organized by department
_____ other:

9. Do you use the services of the Office of Career Planning and Placement in the Student Activities Building?

Yes ____ No ____

Why?

10. Please rate your satisfaction with the various aspects of your placement experience listed below by CIRCLING the appropriate number according to the following scale:

5 = satisfied
4 = moderately satisfied
3 = neither satisfied nor dissatisfied
2 = moderately dissatisfied
1 = dissatisfied
0 = not relevant

5 4 3 2 1 0 The information offered by various faculty members in your department about job hunting, career strategy, etc.

5 4 3 2 1 0 The counseling and advice on suitable career plans for someone with your skills and ability that you have received from faculty members.

5 4 3 2 1 0 Direct assistance in locating job prospects which has been provided by faculty members in your department.

5 4 3 2 1 0 The effectiveness of assistance offered by the Office of Career Planning and Placement.

5 4 3 2 1 0 The effectiveness of student-orgamzed programs on placement.

5 4 3 2 1 0 The fairness and equitability with which you have been treated by faculty members while seeking employment.

Comments on the above:

11. Do you already have a job, or a commitment for a job? Yes ___ No ___

If Yes: Do you regard this job as a suitable step in your career ladder? Yes ___ No ___
Were you working in this job during your student years? Yes ___ No ___

12. If you have held a job or jobs, whether part-time or full-time, during your student years, has that experience improved your career training prospects? Yes ___ No ___

If Yes: Please list the jobs.

13. Part-time professional jobs are rare. If it were possible, after completion of your doctorate, to work part-time in your profession for a period of time, would you prefer to do so? Yes ___ No ___

If Yes: Under what circumstances?

We would appreciate any additional comments you might want to make on your placement experiences, any recommendations you might have or any comments about the questionnaire.
(Use back of page if necessary)

APPENDIX VII-1

RESPONSES TO PH.D. PLACEMENT QUESTIONNAIRE - SPRING 1973

Department	No. Questionnaires Sent					No. Questionnaires Returned					No Answer	Env. Returned
	Total	M		F		Total		M		F		
I.												
Anatomy	4	3	75%	1	25%	4	100%	3	100%	1 100%	--	--
Biological Chemistry	22	17	77%	5	23%	16	73%	11	65%	5 100%	4	2
Botany	23	15	64%	8	36%	15	65%	9	60%	6 75%	7	1
Zoology	22	11	50%	11	50%	13	59%	7	64%	6 55%	8	1
Subtotal	71	46	65%	25	35%	48	68%	30	72%	18 72%	19	4
II.												
Chemistry	31	29	93%	2	7%	18	58%	17	59%	1 50%	12	1
Mathematics	25	22	91%	3	9%	16	64%	14	64%	2 67%	7	2
Subtotal	56	51	91%	5	9%	34	61%	31	62%	3 60%	19	3
III.												
Education(Administration & Supervision)	25	21	84%	4	16%	15	60%	12	57%	3 75%	8	3
Education & Psychology	12	10	83%	2	17%	6	50%	5	50%	1 50%	1	1
Psychology	79	52	66%	27	34%	60	75%	40	77%	20 74%	14	5
Subtotal	116	83	72%	33	28%	81	70%	57	69%	25 73%	27	9
IV.												
English	67	43	64%	24	36%	47	68%	28	65%	19 79%	16	4
German	10	4	40%	6	60%	6	67%	2	50%	4 67%	4	
History of Art	18	10	55%	8	45%	9	50%	4	40%	5 63%	8	1
Linguistics	22	15	68%	7	32%	18	85%	11	73%	7 100%	3	1
Music	62	49	79%	13	21%	40	63%	32	65%	8 62%	20	2
Romance Languages	31	11	35%	20	65%	19	61%	5	45%	14 70%	10	2
Subtotal	210	132	63%	78	37%	139	66%	82	62%	57 73%	61	10
TOTALS	453	312	69%	141	31%	302	67%	200	64%	102 72%	126 28%	26 5%

Appendix VII-2: Anticipated Date for Completion of Ph.D. Degree

Table 2

Whole Sample

	Dates	n	%	% cum
Before	August 1972	18	6	6
	August 1972	21	7	13
	December 1972	29	10	23
	April 1973	62	21	44
	August 1973	84	28	72
	December 1973	47	15	87
	April 1974	25	8	95
	August 1974	10	3	98
	December 1974	5	2	100
After	December 1974	1	.3	100.3
		302		

By Sex

		Female			Male		
	Dates	n	%	% cum	n	%	% cum
Before	August 1972	7	7	7	11	5	5
	August 1972	7	7	14	14	7	12
	December 1972	6	6	20	23	12	24
	April 1973	17	16	36	40	20	44
	August 1973	25	24	60	59	30	74
	December 1974	24	23	83	23	12	86
	April 1974	10	10	93	15	8	94
	August 1974	4	4	97	6	3	97
	December 1974	4	4	101	1	.5	97.5
After	December 1974	-	-	101	1	.5	98
		104			198		

DOCUMENT RESUME

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ABSTRACT

Departments, schools, and colleges within the University of Michigan differ widely in the procedures used to evaluate members of their faculties. In some instances student rating forms are used but practices differ as to the kind of information obtained and the weight given to these assessments. Each set of procedures is designed to serve local purposes; this report summarizes research findings that should be considered when interpreting evaluative data already on hand or when mapping out new arrangements for evaluating teachers. Emphasis is placed on student ratings, sources of variation in student ratings, the use of student ratings, ratings by colleagues, ratings by administrators, self-ratings, limitations of performance measures, and student achievement and student ratings. (MJM)

EVALUATION OF TEACHING

The impact on students of outstanding teachers lasts through the years and into settings far removed from the classroom. Over time, however, these influences are difficult to isolate and to measure and so, for practical purposes, the formal evaluation of teachers is focused on the here-and-now. Even so, the task is difficult. Judging the quality of instruction is a far too complicated process to be based solely on an administrator's personal assessment, or on the consensus judgment of peers, or on the filling out of rating forms by students, or on an examination of the course syllabus, tests, and other instructional materials prepared by the teacher. Each of these is useful but none is sufficient. Teaching is an omnibus profession but each teacher is an idiosyncratic person, and many yardsticks are needed to measure competence in this role. Care must be taken to establish the criteria appropriate for each instructional setting and to judge the teacher within this context.

Departments, schools and colleges within this University differ widely in the procedures used to evaluate members of their faculties. In some instances student rating forms are used but practices differ as to the kind of information obtained and the weight given to these assessments. Each set of procedures is designed to serve local purposes and it would be presumptuous for this *Memo* to outline a uniform system of teacher evaluation. Rather, the present report will summarize research findings which should be considered when interpreting evaluative data already on hand or when mapping out new arrangements for evaluating teachers. We are fortunate in having access to a current review of the literature on teacher evaluation by Dr. James A. Kulik, Acting Director, CRLT, and except for the box on pages 5–6, the rest of this *Memo* is a condensation of his manuscript. SCE

* * *

Professors approach their jobs variously; as scholars, researchers, disciplinarians, healers, managers, and molders. They teach to different audiences, and hold their audiences to different degrees. In the subtle art of teaching, cues as to success and failure take many forms. Students likewise take different approaches to their studies. They learn different amounts in their courses, and rate their teachers with varying degrees of tolerance. Variety is the substance, not the spice, of college life.

The research question in the evaluation of teachers concerns the relationship among these varying but measurable quantities. How much do actual differences among teachers contribute to differences in the ratings that they receive? How much do teacher differences influence student learning? Which are the teacher differences that make the difference?

STUDENT RATINGS

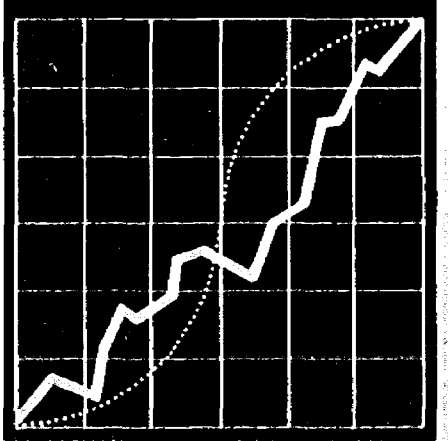
In evaluating teachers, it is commonplace to rely on judgments made by observers: a teacher's students, colleagues, superior, or the

Memo to the Faculty

From the Center for Research on Learning and Teaching

The University of Michigan

NO. 53
FEBRUARY 1974



teacher himself. Student ratings are easiest to obtain, and students have obvious assets as judges of teaching. They are the audience for whom the teaching is intended; they see the teacher day in and day out and are in a unique position to judge a teacher's effectiveness. Many commentators feel that this daily exposure to the teacher's performance more than makes up for the student's lack of age and experience.

Numerous investigators have asked how students judge their teachers, and there is general agreement about the answer. Students see their teachers as differing along several dimensions: (1) in overall teaching skill; (2) in the degree of rapport they establish in the classroom; (3) in the organization and structure of their courses; and (4) in the amount of work they require. While these four factors (Skill, Rapport, Structure, and Overload) are commonly found, the Skill dimension is without question the overriding quality to which student judges react when making an evaluation. "Skill" scores correlate positively and strongly with such general ratings as "all around teaching ability" or "all around value of the course."

Sources of Variation in Student Ratings

It may seem self-evident that a good teacher will get good overall ratings from his students, and a poor teacher will get poor ratings. But much more than good teaching goes into a good rating. The research findings summarized in Table 1 show that a number of factors influence a student's view of his teacher. Some students, for example, are more severe critics than others and their ratings reflect their overall disposition. It is also clear that the conditions under which an instructor teaches and his/her own personal qualities make a difference in the ratings given by students.

There is some consistency in results of studies relating teacher characteristics to student ratings. Relationships are small or nonexistent between rated teaching effectiveness and general measures of a teacher's knowledge, ability, research productivity, or scholarly traits. The teacher who is rated effective by students differs from the noneffective teacher, however, on measures of communication ability. The highly-rated teacher is verbally fluent and strikes his peers as cultured and sophisticated. He is expressive and enthusiastic. Items describing such an effective communicator are prominent in the evaluative scales of every student rating form. Such items are so salient that evaluative scales—while usually labeled Competence, Skill, and so on—have been labeled Communication or Teacher's Presentation by some investigators. The good teacher is a good talker.

The prevailing forms in higher education today—lectures and discussions—demand verbally-effective educators. The student role in these forms of education is largely that of audience. The verbally-fluent educator who can hold an audience for an hour or two each day is naturally rated more effective than his less verbal colleagues. If the forms of education change in the future and the role of oral presentations becomes less salient, the correlates of rated teaching effectiveness may change.

The Use of Student Ratings

The first investigators to study ratings of teaching concluded that the reliability of well-constructed rating forms was adequate. This conclusion has weathered the years like the Rock of Gibraltar, and it is now generally agreed that the responses of individual students to commonly-used rating forms are both internally-consistent and fairly stable over time. How, then, are these instruments used?

Student ratings can serve various functions: providing administrators

Table 1

Summary of Determinants of Variation in Student Ratings of Instruction

I. Student variables: The student's general disposition toward instructors and instruction is the most important influence on within-class differences in ratings. Sex, age, grades, and major are of trivial importance.

II. Teaching conditions: Variables which influence class ratings are class size, elected vs. required status of course, and discipline or department of course. While subject matter differences in class ratings within departments have not been demonstrated, this is a likely further source of variation in class ratings, e.g., the teacher of the modern novel may enjoy an advantage over the medievalist.

III. Teacher characteristics: There is probably a weak, positive correlation between experience or academic rank and student ratings, although the size and direction of this relationship may differ somewhat at different types of schools. Research productivity of faculty members shows a similar weak, positive relationship to student ratings. Also highly-rated instructors strike students (as well as peers) as generally cultured and sophisticated and especially as being articulate as classroom lecturers.

IV. Interaction effects: Morsh and Wilder (1954) conclude that if the instructor teaches for the bright students, he will be approved by them and there will be a positive correlation between ratings and grades; if he teaches for the weaker students, he will be disapproved by the bright students and a negative coefficient will be obtained. There is some evidence that college students with different personality traits respond differently to highly structured and less structured teaching styles.

with information for their use in promotion and hiring; giving feedback to teachers for their use in course revision; providing information to students for their use in course selection; and sensitizing all involved to the processes and purposes of teaching and learning.'

There are undoubtedly many factors that contributed to administrative caution in the use of student ratings in hiring and promotion. One of these factors can hardly escape the researcher's attention, and that is the non-teacher factors that contribute to variance in class ratings. If factors such as class size, discipline, and course content affect course ratings—as they appear to—then student ratings reflect more than teacher skills. Unless such factors can be taken into account, the use of student ratings for hiring and promotion can be misleading.

Administrators can bypass this difficulty by comparing an individual teacher's ratings with locally-developed norms. In the case of large courses consisting of many sections, one per teacher, such norms can be developed easily. It is more difficult to develop adequate norms for evaluating the hundreds of instructors who teach in non-sectioned courses. To evaluate such teachers, comprehensive, college-wide data on courses and students would have to be collected and used as the basis for norms for courses classified according to size, department, content, elected or required, etc.

It is also possible for individual teachers to use their ratings to improve their courses, but there is little evidence that such ratings are effective aids for the improvement of teaching. Centra's (1972) results are typical. His study on student feedback involved five different types of colleges. On each of 23 items of a rating questionnaire, end-of-semester ratings of teachers who received earlier feedback were nearly identical to those of teachers not receiving feedback. Likewise, instructors who received midsemester feedback did not modify their teaching practices before the end of the course and these results were consistent for instructors in all disciplines, from both sexes, and with varying amounts of teaching experience. In spite of these negative results, Centra concluded that student ratings have some value in improving instruction. He based this view on his finding that at least those teachers who had unrealistically high opinions of their teaching practices at midsemester were affected by feedback, improved their teaching practices, and received improved ratings at the end of the semester.

RATINGS BY PEERS, ADMINISTRATORS, AND ONESELF

A teacher's students are the obvious group to criticize his teaching. Unlike department chairmen, colleagues, and deans, the students have heard and seen the teacher's classroom performances. When colleges evaluate their faculty, however, they consult a teacher's peers and superiors more often than his students. In Astin and Lee's (1967) survey, 85% of all schools used chairmen's evaluations in assessing teacher performance, just over 82% used deans' evaluations, and 49% included colleagues' opinions in such assessments. In contrast, student opinion was utilized in 41% of the schools and systematic student ratings were solicited in only 12% of all institutions. In colleges, but not in courts, hearsay evidence is preferred to testimony from eye-witnesses.

Ratings by Colleagues

Ratings by faculty colleagues agree fairly well with students' ratings of a teacher. Several investigators have looked into this point, and their findings are remarkably similar. This agreement may indicate that teaching skill is a generalized ability. If it is, then a teacher's colleagues could infer his effectiveness at the podium from his performance in faculty-lounge discussions, in debates at department meetings, and in quadrangle conversations. Investigators at the University of Michigan have in fact shown that teaching fellows who are rated highly by students are also considered to be generally artistically sensitive, intellectual, refined, and imaginative by fellow graduate students. To some extent, teaching skill must be a generalized ability.

It should be noted that in this discussion, I have considered ratings that are systematically collected from a teacher's colleagues. Ratings collected and analyzed in this way agree acceptably well with student ratings.

Ratings by Administrators

Insofar as it is possible to judge from published research, ratings of a teacher by college administrators are virtually interchangeable with ratings by the teacher's colleagues. Blackburn (University of Michigan's Center for the Study of Higher Education) and Clark (1971) provide the best data on this point in their study of a small midwestern college. They found a correlation of .62 between ratings by administrators and by colleagues, and this is probably about as high a correlation as the reliabilities of the two composites will allow. These investigators also found a correlation of .47 between administrative

STUDENT RATINGS IN LS&A

In the early 60's, the College asked each teacher to obtain course evaluations from students every third semester. Later, the evaluation procedures were turned over to the students but this proved unsatisfactory. Each department is now expected to carry out its own evaluation program. The Executive Committee of the College insists that the results of student evaluations be included in every department recommendation for promotion to associate or full professor. The college is currently reviewing alternative procedures relating to student evaluation of teachers and courses.

ratings and student ratings of teacher effectiveness. While this correlation is somewhat lower than the correlation between ratings by students and by colleagues, the discrepancy may simply be a function of the different reliabilities of the mechanisms and procedures used to obtain the evaluative data. It seems likely that the correlation between ratings of administrators and of students—if adjusted for unreliability—would be about the same as that between ratings by students and by colleagues.

Self-Ratings

Blackburn and Clark (1971) found little support for the usefulness of self-ratings. They report negligible correlations between self-evaluations and evaluations by administrators or students. The correlation of self-evaluations with ratings by colleagues was also very small. If Blackburn and Clark's result is representative, self-evaluations—whatever they reveal—do not reflect what is commonly taken to be teaching effectiveness.

The problems with self-evaluation are partially a matter of numbers. Ratings by students, colleagues, and administrators are composite ratings. In such composites idiosyncrasies of viewpoint cancel each other out. The severe judgment by one student may be balanced by a more lenient rating from another and, thus, a tempered judgment emerges from disparate views. Self-ratings, on the other hand, are not composites but ratings from a single individual. If the self-evaluating teacher is dull but generous, a poor teacher will get a favorable review; if he is brilliant and self-effacing, a good teacher will get a poor rating.

ACHIEVEMENT MEASURES IN TEACHER EVALUATION

In the sixties, the tide of behaviorism rose once again in the social sciences, swept over educational circles, and flooded journals and textbooks with behavioral terms and concepts. "Behavior management," "behavioral objectives," "behavior modification," and "behavioral measures" became watchwords in education while less behavioral concepts started to drift to sea, to become flotsam and jetsam in an S-R (stimulus-response) world.

Even the area of teacher evaluation was influenced by the behaviorist temper. Rating methods which depend on inferences or judgments by observers came under strong behaviorist attack. McNeil and Popham (1973), for example, concluded their review of teaching competence with the warning that ratings by students, peers, or administrators lack all the desirable attributes of good measures of teaching ability. According to these authors, ratings are contaminated by inference; they do not assess learner growth; and they are collected in non-uniform teaching situations.

Limitations of Performance Measures

Practical difficulties surround the use of performance measures in teacher evaluation measures, and empirical results obtained so far do not encourage high hope. Unless extensive norms have been developed, only instructors giving the same course can ordinarily be compared, and then only when these instructors agree about the content to be covered in their courses. If teachers do not agree on such matters, then any test of student achievement is bound to be somewhat unfair, and differences in class achievement will reflect the degree of unfairness for various teachers.

Even where different sections of the same course are being compared, there is a problem with using student achievement as a measure of teacher effectiveness, and that is the relatively uniform achievement levels of sections taught by different teachers. When students are taught the same subject matter by different teachers, course examinations show that the students often learn fairly similar amounts from these teachers. The point is illustrated in Bendig's (1953) study of student ratings and student achievement. From each student in the introductory psychology classes of five instructors, Bendig obtained an achievement score based on three common examinations and the student's rating of the course and instructor. Bendig found substantial differences between classes in ratings of the course and instructor, but differences between classes in student achievement were trivial and insignificant.

In their reanalysis of data from nearly 100 comparative studies of college teaching, Dubin and Taveggia (1968) document the lack of such achievement differences. These investigators examined reported differences in final examination scores for course-sections taught by different methods, and concluded that the "data demonstrate clearly and unequivocally that there is no measurable difference among truly distinctive methods of college instruction when evaluated by student performance on final examinations" (p. 35). At least as measured by performance on examinations, differently-taught sections of courses produce a common outcome.

Hilgard (in Dubin and Taveggia, 1968) has proposed a plausible explanation for the failure to find differences in achievement measures for students taught by different methods. He states:

> Most studies have relied very heavily on a common textbook in all the courses, and, in order to be "fair" most of the examination questions are based on that book. I can't help but believe that more careful exposition goes into a good textbook than a lecturer can put into a lecture. . . . Hence I believe we are often measuring what the student learned from his textbook, which makes it quite indifferent what amusing stories the lecturer told, or how skilled the student was in winning a point in a class argument. (p. 47).

If it is true that textbooks are powerful enough to override differences in teaching methods, it is also very likely true that the textbook will overshadow differences among teachers in flair, skill, and style when the criterion of a teacher's success is his students' achievement.

Student Achievement and Student Ratings

For some time, investigators have tried to relate achievement levels in sections of a course to the average student ratings of the sections. Since it is hard to find real differences among sections in achievement, one would not expect these small differences to relate highly to other characteristics of the sections or instructors.

A recent study by two investigators at the University of California at San Diego (Rodin and Rodin, 1972), however, found a substantial negative correlation (−.75) between student ratings of an instructor and the mean examination score of his students. The report attracted a good deal of attention, and its message was unsettling to many. In the course under consideration at least, students learned least from the teachers they rated most highly.

Several points should be made about this study. First, the N in this study is especially small, and the sampling error of the correlation coefficient is quite large. Second, to a large extent, teaching was the same for all students in all sections of the course. That is, all students met for three days a week for a lecture by the professor in charge of the course, and for all students "the course content was defined by 40 paradigm problems" (p. 1165). Since the students were exposed to the same material and methods for the most part, large differences on examination performance would not be expected. Third, the role played by the unusual criterion measure of student achievement—number of types of problems mastered by students one by one—is essentially unknown. Fourth, no data are presented on section withdrawals and transfers although such factors could easily affect results.

A most important point is that the results of this study are not consistent with those of other investigators. Frey (1973), for instance, investigated the same problem but used a more carefully controlled design. His correlations between ratings of a teacher's classroom presentations and his exam performance were .91 and .60 for the two calculus courses. Other investigators have reported moderate positive correlations, no correlation, and inconsistent correlations between student achievement and ratings.

In spite of recent enthusiasm about evaluating teachers through their students' achievement, there is little data to suggest that performance measures are really useful in this role. Comparison of achievement measures is practical only in multiply-sectioned courses, and it is hard to see how performance measures can ever provide a common yardstick for ranking faculty members in different fields. A further problem is that students in different sections of a multiply-sectioned course apparently learn fairly similar amounts. Perhaps the most impressive thing about studies relating class achievement to class ratings of instructors is the inconsistency of the results. JAK

A more complete review and bibliography by Dr. Kulik and Dr. Wilbert J. McKeachie will be published in: Kerlinger, F. N. (Ed.), *Review of Research in Education*, Vol. 3. Preprints are available on request from CRLT.

Evaluation and the Individual Teacher

The research studies reviewed by Dr. Kulik involve quantified measures derived from ratings made by groups of teachers, students, and administrators. When viewing oneself in the context of the research analysis of *average* scores or correlations between two sets of *grouped* data, the individual teacher can nearly always take exception—"My case is somewhat different"—and it is.

Teaching is an extremely ego-involved activity and teachers don't like to be categorized and compared any more than do their students. It is interesting to note that a few years ago when the LS&A faculty was considering a formal system of student course evaluation they insisted that the procedure stress qualitative analyses rather than providing a single numerical index of teaching competence—resisting a "grade" is a point well taken whether made by students or teachers.

A teacher's influence on students derives from many factors but in different combination from one teacher to the next or from one course to another. The clarity and relevance of course objectives, for example, should carry considerable weight in teacher evaluation, as should the ability to organize course content into a productive hierarchy, to evaluate students in a manner that supports rather than hinders learning, to provide instructional materials relevant to the objectives of the course, to tutor, to counsel, to arouse students and, finally, to serve as an exemplar or model for the attitudes and values germane to a particular area of research, teaching and public service.

Student ratings can be helpful but contribute only one segment of the evaluation profile. Similarly, the information derived from a classroom visit by a supervisor relates to only part of what it takes to be an effective teacher. The video tape review of teaching performance often limits attention to stylistic manners and maneuvers as the

teacher engages the blackboard, the students, his notes, the scene out the window, the ceiling, and the like. In other words, no single evaluating procedure will do justice to the individuality of the teacher and his long-term impact on students.

Evaluative judgments reflect the values of those making the rating. Deans, department chairmen, and other supervisors view the educational scene from a particular vantage point and their evaluations should emphasize those aspects of teaching consistent with administrative matters—cost effectiveness, housekeeping duties, curricular balance, consistency with institutional goals, etc. One's peers, on the other hand, are in a better position than administrators or students to evaluate such factors as course content, tests and examining procedures, a course outline or syllabus, reference materials and the like. As Kulik points out, students are in a particularly advantageous position to judge the classroom style of the teacher, the interactive environment within a class and, of course, to express their own evaluation of course content.

Student evaluations must be tempered in the light of three rather frequent sources of error: 1) the distortion inherent in the selection of aspects-to-be-rated and the words and phrases used in the item statements. Ideally, each teacher should prepare the rating form to be sure that responses will be received to questions, issues, and about procedures that have personal concern. (Purdue University is developing a procedure which involves a uniform set of evaluating questions to which the individual teacher can add four optional items of his own selection.) 2) comparison against inadequate norms, e.g., a large introductory course has a different instructional climate than the small advanced offering. 3) the fact that unless nearly all students in the course complete the questionnaire (if asked to), the instructor will likely receive a biased sample of opinions.

The less experienced teacher may be disturbed by the fact that despite his best efforts and despite the high ratings he receives from a significant number of students, others in the class see things differently and he is downgraded on several items. These "contrary opinions" have informational value for the teacher. He learns that he cannot be an across-the-board successful teacher; that students will inevitably interact differently with the teacher and with the subject matter of the course.

Quick and easy and superficial evaluating measures tend to degrade the quality of teaching to the level of the assessment procedure. The classic educational aphorism: "The power to test is the power to control the curriculum" applies, in principle, with equal force to the evaluation of teachers. A questionnaire instrument, for example, will not likely serve the purposes of the administration (for promotion and pay), students (as a guide for course selection), and the teacher (as a basis for improving teaching). These different purposes call for particular evaluative procedures. How to tie them all together into a fair and valid profile of the idiosyncratic teacher is the problem that keeps the matter of teacher evaluation on the agenda and an open issue for debate. SCE

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