

**COMMITTEE ON THE STATUS OF WOMEN FACULTY
AT THE NEW JERSEY INSTITUTE OF TECHNOLOGY**

Report Presented to the Provost

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EXECUTIVE SUMMARY

Under the direction of NJIT's newly installed President, Dr. Robert A. Altenkirch, the university's commitment to faculty diversity will be increased. The report generated by the Committee on the Status of Women Faculty (CSWF), in conjunction with the university's strategic plan, seeks new means to promote diversity in the areas of faculty recruitment, retention, and representation.

Several years ago, at the request of former NJIT president Saul K. Fenster, the CSWF undertook a comprehensive effort to "thoroughly and objectively study the status of women faculty at NJIT over the last decade (1990 to 2000)." The committee's study has included "collecting and analyzing data regarding infrastructure allocation, salaries and merit awards, teaching loads, grants and matches, retention, promotion and tenure," among other issues. In addition, the committee considered qualitative indicators "such as the degree of collegiate interaction" (Memo from provost to university community, May 2000).

Based on these data, the committee submitted its initial report to the provost in February 2003. Since that time, the committee has received additional, more comprehensive data from the Office of Institutional Research and Planning, covering the period 1990-2003. The committee has incorporated these new data in its findings and hereby submits a revised and updated version of its report, containing a set of recommended strategies designed "to promote and sustain a diverse university community."

Conclusions:

Based on its analysis of the data, the committee has reached a number of conclusions, the most important of which are as follows:

- Although the number of tenure-track women faculty has increased dramatically in recent years, desirable diversity objectives have not been met in most university departments.
- Like many technological universities, NJIT's retention rate for women faculty is lower than it should be to achieve long-term diversity objectives.
- Reasonable diversity objectives have not been sufficiently achieved in key university decision-making positions.
- In the past, there were persistent differences in the average salaries paid to all full-time female instructional faculty members versus the average salaries paid to all full-time male instructional faculty members.

- Asymmetric collegial interaction means the career playing field is not consistently level for women faculty.

Recommended University Objectives:

In order to address the issues identified during the course of its study, the committee recommends that the university adopt the following broad objectives:

- Integrate increased diversity in recruitment and retention of faculty into the university's stated strategic objectives.
- Increase the number of tenure-track women faculty at all ranks in all schools/colleges and departments to a level comparable to the new female PhDs in the field.
- Increase the representation of women faculty in future strategic-planning and decision-making at all levels of the university.
- Increase awareness among faculty and academic administrators of the policies, behaviors, and attitudes that undermine the potential success of women faculty members.
- Ensure university-wide consistency and equity in the promotion and tenure process.
- Ensure university-wide consistency and equity in faculty salaries.
- Make demonstrated diversity leadership an essential qualification when filling senior administrative positions.

Recommended Tactics:

In order to accomplish the objectives listed above, the committee recommends that the university adopt the following specific tactics:

1. Improve job candidate search practices to increase the number and diversity of applicants.
2. Initiate a university-wide, team-based mentoring and peer-networking program for all untenured tenure-track faculty members. This program should be administered by the provost's office in concert with the deans and the department chairs.
3. Establish university faculty diversity targets for all departments based on the rate at which new PhD recipients enter the academic workplace—and the number of anticipated hires in each department.

4. Require each college/school dean to develop a plan to reach faculty diversity targets with specific outcomes and strategies designed to increase the recruitment and retention of women in each respective college/school. The plan should include a formal welcome/orientation program series for all new faculty appointments.
5. In evaluating performance, hold each college/school dean accountable for achieving faculty diversity targets for the increased recruitment and retention of women.
6. Require all department chairs to develop specific targets and strategies designed to achieve the planned department diversity.
7. In evaluating performance, hold each chair accountable for successfully meeting the department's targets for increased recruitment and retention of women.
8. Develop and implement an equity pay review exercise. This process, modeled on successful procedures developed by other institutions, should require justification of all salaries outside of the anticipated range. This exercise should be designed by Human Resources (HR) and the Office of Institutional Research and Planning (IRP) and supervised by the provost.
9. Reject search committee recommendations for new hires if there is a pattern of evidence suggesting that the committee has not seriously sought diversity among candidates.
10. Initiate a university-wide mentoring program for senior women faculty who may be interested in becoming administrators. The program should be administered by the provost's office in concert with the deans and the department chairs.
11. Mandate the Human Resources Office and the Office of Institutional Research and Planning systematically to collect, analyze, and publicly disseminate diversity data regarding recruitment, retention, and promotion of faculty.
12. Mandate the Human Resources Office to conduct formal exit interviews with each faculty member who leaves the university.
13. Encourage the provost, deans, and chairs to meet personally with women faculty—individually and in focus groups—on a regular basis to ask their advice on how best to make the university environment more supportive for them.
14. Create a more flexible family leave policy consistent with progressive university standards.
15. Create a partnership among senior administration and the Committee on the Status of Women Faculty and the Murray Center to oversee and monitor the success of the tactics described above.

Rationale for These Recommendations

The committee's conclusions and recommendations are based on a two-pronged qualitative/quantitative investigative approach, combining aggregate statistical data with in-depth interviews of individual women faculty. In developing its set of recommended strategies, the committee examined practices and procedures in place at other universities similar to NJIT.

Faculty Interviews

In addition to receiving and analyzing data from NJIT's Office of Institutional Research and Planning, the committee conducted in-depth individual interviews with 16 full-time, tenure-track NJIT women faculty. These subjects represented each of the academic ranks, all five of the university's academic schools/colleges (NCE, CSLA, SOA, SOM, CCS), and 10 different departments within those schools/colleges. (Two of the subjects, both tenured, subsequently left NJIT, in effect transforming their conversations with the CSWF into exit interviews.) In addition, the committee was able to contact and interview a former NJIT tenure-track faculty member who left NJIT several years ago and is now a tenured faculty member at another four-year university, bringing the total number of subjects to 17.

Other Data

In reaching its conclusions, the committee also analyzed the results of three other investigative efforts:

- 1) A faculty survey of job satisfaction and institutional climate perceptions conducted in the spring of 2001 by IRP and NJIT's Middle States Self-Study Committee, in collaboration with the CSWF.
- 2) A promotion and tenure rate study for the 1988-95 faculty cohort conducted in the fall of 2000 by Professor Robert Lynch, then chair of the faculty council, with the assistance of Paula Zigman of the provost's office.
- 3) An analysis of faculty retention, by gender, from 1991 to 2002, prepared in 2003 by IRP as part of a grant application to the Clare Boothe Luce Foundation.

INTRODUCTION

Why NJIT Needs More Women Faculty Members

Gender diversity means excellence. Moreover, recruitment and retention of women faculty is integral to the recruitment and retention of women students. As one female NJIT student told the CSWF, “Having women teachers creates positive mirror imagery that builds confidence. A woman student feels less pressure to be an overachiever or an underachiever. She can just achieve.” The presence of women faculty in the classroom also tends to change the attitudes of male students, creating a more inclusive set of professional norms and expectations for the future.

Finally, the transformation of NJIT into a nationally-recognized, comprehensive urban research university needs be accompanied by a demographic transformation of its faculty in order to be credible. Women are 51% of the US population and nearly 60% of first-year college students. As long as its programs fail to attract a true cross-section of American society, NJIT will tend to be perceived as a narrowly-focused, regional technology school.

Strategic Planning for Gender Diversity

NJIT has long recognized the need to increase the proportion of women faculty but has found it difficult to do so, as have most other technological universities. The 1992 Middle States *Self-Study Report* termed NJIT’s record on faculty diversity “disappointing” and “called for more aggressive recruitment strategies to attract a higher number of women and minority faculty” (*An Emerging Presence* 65-66). The university responded with a number of initiatives, among them the creation of the Committee on Women’s Issues (CWI) in 1994. President Fenster charged the CWI, “to explore strategies for recruiting additional women students, faculty and staff...to assess the impact of university policies on women...[and] to consult with and advise the president on relevant issues and recommend strategies for addressing areas of concern.” One of the first recommendations made by the Committee was the establishment of a women’s center named for Dean Constance Murray, a strong advocate for women, who died in December 1994. The Constance A. Murray Women’s Center (CMWC) opened its doors on March 6, 1996. (Several years ago, the CMWC changed its name to the “Murray Center for Women in Technology” to reflect more accurately its mission focus.)

In addition to these initiatives, university planners have made faculty gender diversity an official university priority for a number of years. Goal B1.2 of NJIT’s 2002 *Self-Study and Strategic Plan* mandates that the institute “increase the number of women and under-represented minority faculty” (107). The specific objective is to “have the composition of faculty relative to minority status and gender better reflect the make-up of the student body” (107).

From 1990 to 2003, the female student population grew from 16% to 24%; however, the female instructional staff grew much more slowly. It rose from 8% in 1990 to 13% in 1994, but then hovered between 12% and 13% for the next five years. In 2001, there was an encouraging jump to 17%, but since then the percentage of female teachers has decreased. It was officially 15% in the fall of 2003, but additional losses have occurred since then. Moreover, only 14% of NJIT *tenure-track* faculty is female.

As the NJIT 2002 *Self-Study* implicitly recognizes, continued failure to increase the number of women faculty to match the increase in the number of women students may exacerbate the serious graduation rate/retention problems that the university already faces. This failure threatens to become especially troubling as NJIT works to achieve a new strategic priority established in 2003 under President Altenkirch: a pledge to increase the body of newly admitted undergraduate students to 25% women by the fall of 2008.

Despite the urgency of this problem, the 2002 *Self-Study and Strategic Plan* proposed only one specific strategy: “Encouraging promising women and under-represented minority students to pursue doctoral degrees at NJIT in science and engineering and providing financial incentives to that end” (107). While this approach is laudable, the CSWF does not believe it is an adequate solution to the problem, especially because it does not address the thorny issue of female faculty retention. The CSWF strongly recommends that the university integrate increased diversity in recruitment and retention of faculty into NJIT’s list of stated strategic objectives and develop a set of measurable tactics to accomplish these objectives.

The report that follows uses qualitative as well as quantitative methods to explore the interrelationship of recruitment and retention, as well as to measure satisfaction and to evaluate equity. It proposes a range of specific tactics designed to help the university make its commitment to diversity a reality for NJIT’s entire faculty.

WOMEN FACULTY AT NJIT: A Statistical Snapshot

Women at NJIT in the Year 2000

When the Committee on the Status of Women Faculty began its work in the year 2000, we assembled some basic statistics in order to help us gauge how far women had come in the last twenty years and how far the university still had to go in order to create a state of sustainable gender diversity within the NJIT community. The numbers indicated a series of disturbing trends:

- Only 12% percent of the NJIT tenure-track faculty was female.
- Over the previous five years, the total number of women tenure-track faculty had increased, but only very modestly—from 32 in 1994 to 37 in 1999.
- During the last five years, there had been virtually no increase in the number of female associate professors (9 in 1994; 10 in 1999).
- Few women faculty were in decision-making positions—e.g., the deans of NCE, CSLA, SOM, SOA, and the Albert Dorman Honors College were all male.
- None of NJIT's 16 academic departments were chaired by a woman. (Since 1971, only one woman had ever served as a department chair, Dr. Barbara Kebbekus, Acting Chair of Chemical Engineering and Chemistry.)
- More than half of NJIT's 12 female full professors were in non-engineering disciplines.
- Three departments had no tenured women faculty at all.
- Five departments had no women faculty on their promotion and tenure committees.
- None of the university's research centers were headed by a woman.
- A disproportionate number of NJIT's lowest-paid, lowest-status teachers--non-tenure track lecturers--were women. (Women constituted 26% of NJIT's lecturers in 1998-99, up from 13% in 1991.)
- NJIT's latest data indicated that there were approximately a \$10,000 difference in the average salaries paid to all full-time female instructional faculty versus the average salaries paid to all full-time male instructional faculty.

- NJIT's secretaries and clerical staff were overwhelmingly female, as were its middle managers (e.g., Assistant Deans, Assistant Directors). However, upper management was almost exclusively male. There were no women on the president's senior staff or the provost's cabinet. All of the university's vice presidents were male. The most senior women were Judy Boyd, Vice President of University Advancement; Gale Spak, Associate VP for Continuing Education & Distance Learning; and Jean Llewellyn, executive director of University Communications.
- Since 1971, NJIT had had no female academic deans, except for Dr. Dorothy Levy, who served as dean of the so-called "third college" until it officially became CSLA.
- Since 1971, only three women had served as non-academic deans, all in the area of student services: Dr. Judy A. Valyo, Dean of Freshman Studies; Dr. Constance A. Murray, Dean of Students; and her successor, Dr. Eida Berrio.

Progress Since 2000

From 1999 to 2003, first under the leadership of President Saul Fenster and now under the leadership of President Robert Altenkirch, NJIT made dramatic progress in reversing some of the negative trends highlighted above. In both administrations, former provost William Van Buskirk was an especially forceful and effective advocate for increased faculty diversity. In consequence of these efforts:

- NJIT now has two female departmental chairs, Dr. Nadine Aubry, Chair of Mechanical Engineering, and Dr. Marilyn Tremaine, Chair of Information Systems.
- In 2001, 25% of new faculty hires were female (10 of 40). More than half of these 10 women are in technological disciplines.

Progress has been made in other areas as well:

- Despite some attrition, thanks to the 2001 new hires, the proportion of women among tenure-track faculty has increased from 12% to 14%.
- The total number of women tenure-track faculty has increased, from 37 in 1999 to 42 in 2003.
- ME chair and Jacobus Professor Nadine Aubry has been named director of the Keck Laboratory and (in 2002) promoted to the rank of distinguished professor.
- Neuroimmunologist Dr. G. Miller Jonakait has also been promoted to distinguished professor (in 2003), increasing the total number of NJIT's female distinguished professors to 4 (17%).

Remaining Concerns

Unfortunately, many problems remain. Indeed, the university has actually lost ground in several areas. For example:

- In the last decade--the “Decade of the Woman at NJIT”--there had been only a modest increase in the number of female associate professors: from 9 in 1994 to 14 in 2003. (This slow growth is largely a consequence of failed retention, not promotion.)
- The percentage of female tenure-track faculty in engineering has increased slightly from 8% to 10%, just below the national average of 11%. However, a number of departments still have substantially lower percentages of women faculty than the national average for their discipline. Five NJIT departments have no tenured women faculty at all. (See **Tables 3-9 below.**)
- Nine departments have no women faculty on their promotion and tenure committees—a worse situation than in 1999. Improbably, one of these departments is Humanities and Social Sciences.
- Although the number of NJIT female distinguished and full professors has increased to 15, thanks largely to new hires of senior faculty in biology and information systems, only two of these women are in engineering departments. (In addition, two of NJIT’s female full professors are retiring in 2004.)
- The proportion of female full-time, non-tenure-track faculty---NJIT’s lowest-paid, lowest-status teachers—has continued to increase, from 13% in 1991 to 21% in 2003.
- There are still too few women faculty in decision-making positions. As of Spring 2004, there is only one woman on the president's senior staff (General Counsel Holly Stern, Esq.), and there is no woman in the provost's cabinet. All of the university's academic deans and vice presidents are still male. There has been a decrease in the number of non-academic female deans.
- Despite the addition of the two new female departmental chairs to the university’s Long Range Planning Committee (Aubry and Tremaine), the proportion of men to women on the LRPC is still skewed at 20 to 2. There are 29 male voting members on the Committee on Academic Affairs but only five female voting members.
- NJIT’s latest data still indicate a difference in the average salaries paid to all full-time female instructional faculty versus the average salaries paid to all full-time male instructional faculty. The difference among senior faculty (distinguished and full) is disturbing.

Benchmark Comparisons

NJIT's historical problems in attracting and retaining women faculty, especially in engineering, are not unique. As the following tables illustrate, NJIT has done better at this task than some comparable universities and worse than others.

Table 1
Percentage of Full-time Female Faculty
2002-2003

University	Percentage
Drexel	37%
Tufts	35%
Case Western Reserve	31%
University of Washington	31%
Texas	30%
Rochester Institute of Tech	30%
Rowan*	29%
Virginia Poly	26%
Carnegie Mellon	24%
Michigan Tech	21%
Clarkson	17%
MIT	17%
RPI	16%
Georgia Tech	16%
NJIT	15%
Stevens Institute of Tech*	14%
Current National Average	32%

Source: Academe – Bulletin of AAUP, Mar-Apr 2004

* 2002 figures from IPDES

Table 2
Percentage of Female Tenure-Track Engineering Faculty
2002-2003

University	Percentage
Drexel	20%
Rowan	17%
Tufts	16%
University of Washington	16%
MIT	13%
NJIT	12%
Clarkson	12%
Carnegie Mellon	12%
Michigan Tech	11%
Rochester Institute of Tech	10%
Georgia Tech	10%
Texas	10%
Virginia Polytechnic	10%
Case Western Reserve	9%
RPI	6%
Stevens Institute of Tech	4%
Current National Average	10%

Source: ASEE

Faculty Growth, 1990 to 2003

Some of the trends discussed in the sections above are illustrated in greater detail by the tables and graphs included in **Appendices A-C**, supplied to the CSWF by the Office of Institutional Research and Planning. These tables compare the number of men and women in each faculty rank over a thirteen-year period (1990 to 2003). In one set of tables, average salaries by gender by rank are correlated with hire years.

Women Faculty: Where They Are, Department by Department

Because the quality of academic life for individual faculty members is primarily determined by the nature of the departments to which they belong, the committee decided to take a closer look at the statistics to see if there were salient differences across units. And, indeed, there are differences, as the tables below illustrate.

According to the AAUP data, about 32% of US Research University 1 class faculties are female; however, women comprise only about 14% of NJIT tenure-track faculty. Moreover, numbers and percentages differ substantially across NJIT academic units, from 100% female in Federated Biology to 0% in Physics and Engineering Technology.

Obviously, these figures do not speak for themselves. Percentages are especially deceptive when small numbers are involved. For example, the faculty of NJIT's Industrial and Manufacturing Engineering Department consists of one woman and 12 men. Thus, it is accurate to say that 8% of the IME faculty is female. However, phrasing the data as a percentage tends to obscure the cultural isolation and potential for asymmetric collegial interaction that may actually occur when N=1.

More importantly, the success of a given unit in recruiting and retaining women faculty needs to be measured against the size of the available labor pool, which differs greatly from discipline to discipline. In this context, for example, Civil and Environmental Engineering is actually doing better than Humanities and Social Sciences, despite the fact that the latter has a greater number and percentage of female faculty members. 22% of the NJIT CEE faculty is female--12 percentage points above the national average--at a time when women receive only 19% of US PhDs in civil engineering (AWIS 2002). In contrast, although women earn more than 51% of US PhD degrees in the Humanities and Social Sciences (Castner), only 33% of the HSS faculty is female, none above the rank of associate professor. Similar disparities appear in other departments. For example, women earn about 21% of PhDs in computer science and 25% of PhDs in Chemical Engineering but constitute only 4% [N=1] of NJIT's CS department and 5% [N=1] of its ChemE department.

Even more significantly, there are substantial differences across units in the number and percentage of women who have achieved tenure and therefore might be assumed to have substantial influence on departmental decision-making. 14% of the total tenured NJIT faculty is female, ranging from 100% in Federated Biology (N=1) to 0% in four departments: Biomedical Engineering, Chemical Engineering, Engineering Technology, and Physics. Nationally, women constitute about 24% of the tenured faculty members at Carnegie Class I Research Universities (Astin 57).

The most important consequences of these differences are that 1) women in some departments, especially in NCE, are much more vulnerable to isolation effects; and 2) women are likely to have very little say in decision-making in some departments. These issues are explored more fully in Section G of this report where we analyze the in-depth interviews we conducted with individual women faculty.

The gender distribution by NJIT academic unit, as of fall 2003, is summarized in the tables below and in an additional table in Appendix E.

Table 3
FACULTY BY GENDER BY DEPARTMENT
Fall 2003

Department	Dist Prof		Dist Res Prof		Prof		Res Prof		Assoc Prof		Asst Prof		Lect		Spl Lect		Visit Prof		Total		Grand Total		
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M			
Bio Medical Engineering		1				4		2		1	2				1				2	9	11		
Chemical Engineering		4		1		7				3	1	5				1			1	21	22		
Chemistry & Environmental Science	1	1			2	3		1		2		1				1			3	9	12		
Civil & Environmental Engineer		1			1	14		1		2	3	2			1				6	19	25		
Computer Science		1				12				1	10		5						1	28	29		
Electrical & Computer Engineer		3				17		1		2	7	1	5			2			3	35	38		
Engineering Technology						1					6		2		1	3			1	12	13		
Federated Biology	1							1											1	1	2		
Federated History Humanities and Social Sciences		1				2	4			4	3	1	1	3	2	5	3	8	1	1	11	24	35
Industrial & Manufacturing Eng						7		1		1	3		1						1	12	13		
Information Systems	1	1			2	1				3	1	5							4	10	14		
Mathematical Sciences		1		1	1	11		1		2	16	1	10	1	2		4		1	5	47	52	
Mechanical Engineering	1	1				8		1			9		1			4			1	24	25		
NJ School Of Architecture		1			3	5		2		1	5	1	2		1	7			6	22	28		
Office Of The Dean-CCS															5	16			5	16	21		
Physics		2		1		9		1	5		3		4		2	5			3	29	32		
School Of Management		2			2	3		1		1	6	3	3			3		3	6	21	27		
Total	4	20	0	3	11	108	1	17	14	80	14	48	3	7	13	55	1	5	61	343	404		

**Table 4
COMPARATIVE FACULTY GENDER DATA
BY DEPARTMENT/ DISCIPLINE**

Department/Unit	% of Tenure-Track Women Faculty	% of PhDs Awarded to Women Yearly	Average % of Women Faculty at "Top 50" Universities
Biomedical Engineering	25%	28%	16%
Chemical Engineering	5%	25%	11%
Chemistry & Environmental Science	30%	34%	10%
Civil & Environmental Engineering	22%	19%	10%
Computer Science	4%	21%	12%
Electrical & Computer Engineering	9%	12%	8%
Engineering Technology	0%		
Federated Biology	100%	43%	20%
Federated History	20%		24%
Humanities & Social Sciences	33%	50% / 46%	/38%
Industrial & Manufacturing Engineering	8%	29%	15%
Information Systems	31%	21%	See CS
Mathematical Sciences	9%	25%	8%
Mechanical Engineering	5%	12%	7%
NJ School of Architecture	28%		21%
Physics	0%	16%	7%
School of Management	26%	27%	

Sources: NSF : Science and Engineering Degrees 2002

Table 5

Units in Rank Order by Number of Tenure-Track Women Faculty	
DEPARTMENT	NUMBER OF WOMEN FACULTY
Humanities & Social Sciences	5
Civil & Environmental Engineering	5
<i>School of Architecture</i>	5
<i>School of Management</i>	5
Information Systems	4
Mathematical Sciences	4
Electrical & Computer Engineering	3
Chemistry & Environmental Science	3
Biomedical Engineering	2
Computer Science	1
Federated History	1
Federated Biology	1
Industrial & Manufacturing Engineering	1
Chemical Engineering	1
Mechanical Engineering	1
Physics	0
Engineering Technology	0

Summary and Analysis of Two Retention Rate Studies

Faculty Council Study P&T Rate Study

In AY 2000-2001, Faculty Council President, Professor Robert Lynch, assisted by Paula Zigman of the Provost's Office, conducted a systematic study of promotion and tenure rates for the 1988-1995 NJIT faculty cohort. Professor Lynch kindly shared all of his data with the CSWF, prior to giving a summary report at a university faculty meeting. Although the Council's study did not intentionally focus on gender, the information contained in its report has allowed the CSWF to calculate comparative male/female retention rates for the period 1988-1995.

The results suggest that NJIT faces a major challenge in retaining women faculty.

The Council's study included 135 people hired as untenured assistant, associate, full, or distinguished professors. The study did not include people who were hired with tenure or people appointed to non-tenure-track positions. Nor did it include already tenured associate professors recommended for promotion to full professor. Working backward from AY1994-95, Lynch and Zigman recorded data year by year and department/school by department/school. The CSWF has used these data to construct comparative tables. (See Appendix J.) To summarize the results in those tables:

- Only 13% percent of the new hires were female (17 of 135).
- The overall female promotion and tenure rate was about 35%--12 percentage points lower than the overall male rate (47.37%).
- Of the 17 new female hires in this study cohort, only four still remained at NJIT as of 2001—a female retention rate of 23.53%. In other words, in the recent past at least, NJIT has lost more than three-fourths of the women it has hired.

Office of Institutional Research and Planning Retention Rate Study

In the fall of 2003, in support of an NJIT grant application to the Clare Boothe Luce Foundation, the Office of Institutional Research assembled data on NJIT science and engineering faculty retention and promotion by gender from 1991 to 2002. (See Appendix I for raw data.)

The results of the IRP study seem to confirm the disturbing trends observed in the earlier Faculty Council study. There is an apparent disparity between the rates at which male and female faculty hires are tenured and promoted. That disparity is particularly large in NCE: 16%. The overall gender difference in retention (from hire to tenure) that was identified in the IRP study (10%) is consistent with the gap measured in the Faculty Council study (12%). Moreover, additional data assembled by the CSWF reveal that during the last two decades (1980-2000), more than half (55%) of the women faculty hired have subsequently left the university [N=27/49].

Because there are so few women in the technological pipeline, each new female hire constitutes a precious institutional resource. NJIT needs to do better than parity in retaining female faculty in order to make any progress at all. In fact, we have been doing worse.

The following sections of the CSWF report explore the factors in institutional culture that contribute to lower retention rates for women faculty. The report concludes with a set of recommended best practices that other universities have used to transform the institutional climate in ways that advance the status of women faculty. **The first and most important of these recommendations is that the increased recruitment and retention of women faculty needs to become one of the university's strategic objectives.**

Summary and Analysis of Middle States Self-Study Faculty Survey

In addition to analyzing statistical data and conducting interviews with women faculty, the CSWF collaborated with the Office of Institutional Research and Planning and NJIT's Middle States Self-Study Committee in developing questions for use in a faculty survey instrument. Two sets of CSWF questions—both concerning climate perception—were included in the final instrument, which was mailed in April of 2001. IRP received completed surveys from 29% of the full-time faculty and 15% of the part-time faculty.

Although the women's scores were lower than the men's score on 7 of the 8 items, only one of the male/female score differences rose to the level of statistical significance ($p < 0.05$). However, it was in a crucial area: the perception of social power.

Scale: 1= disagree strongly ←→5=agree strongly

Men and women participate equally in important decision-making within my department.

The mean score for the men on this question was 3.76, but the score for women was only 3.07. That is, women see a NJIT as turf that is still essentially controlled by men--or so the committee hypothesized.

The CSWF explored this issue by conducting a set of in-depth interviews with 17 tenure-track women faculty members. [See section G, below.] We found, as IRP had found when analyzing the faculty survey instrument above, that when one asks a woman faculty member whether or not she is generally satisfied with her life at NJIT, she is likely to say yes. We also discovered, however, that responses to more probing and specific questions tend to reveal an array of daunting problems and obstacles to success.

There are a number of ways to interpret this apparent contradiction. It is possible that these women are "in denial" or that they are reluctant to be seen—or to see themselves—as "whiney complainers." And indeed, there is a substantial body of sociological literature attesting to the axiom that when things go wrong, men publicly blame the system while women quietly blame themselves (Moody 151).

The committee has another thesis, however. We believe that our women subjects are neither over-reporting their contentment nor under-reporting their angst—and that there is no real contradiction in their testimony. As one of our interviewees suggests, successful women at NJIT are "way above the curve." They have to be. And they tend to find creative ways to get their needs met. Which is not the same thing as saying that NJIT is meeting their needs through its policies and programs. As the next section of this report demonstrates, these women faculty have survived not because they have received so much collegial support but in spite of the fact that they have received so little.

WOMEN FACULTY AT NJIT: A group self-portrait

Methodology

From late 2001 to early 2002, the Committee on the Status of Women Faculty conducted individual interviews with 16 full-time tenure-track NJIT women faculty. The subjects included representatives from each of the academic ranks. Seven of the women are tenured Full or Distinguished Professors; four are tenured Associate Professors; five are untenured Assistant Professors. (Two of the women subsequently left NJIT, transforming their conversations with the CSWF into exit interviews, in effect.) In addition, the committee was able to contact and interview a former NJIT tenure-track faculty member who left NJIT several years ago and is now a tenured faculty member at another four-year university—bringing the total number of subjects to 17.

The NJIT interview subjects represented all five of the university's academic schools/colleges (NCE, CSLA, SOA, SOM, CCS) and 10 different departments within those schools/colleges. Although the majority of the women are European-American in ethnicity, the sample included African-American and Asian-American women as well.

The interviews, lasting on average from one to two hours, were conducted by CSWF members, largely in a face-to-face mode. The questions covered nine basic areas:

1. Early Career--Expectations, Initial Welcome and Orientation
2. Promotion and Tenure
3. Allocation of Resources and Material Rewards
4. Influence
5. Opportunities for Intellectual Growth and Recognition
6. Balancing Professional and Private Life
7. Organizational Climate
8. Job Satisfaction
9. Advice for Change

[See Appendix F for the complete interview schedule.]

Results of the Qualitative Study

As we analyzed the interviews, several broad thematic patterns emerged, allowing us to understand better why NJIT has had difficulty in retaining the women faculty members it hires. The common denominator is *isolation*. Like similar research conducted at many other universities (e.g. MIT), the CSWF study suggests that the problem of small numbers—coupled with the accumulation of small inequities over time—often has a devastating effect on female career success.

Although nearly 90% of the women interviewed expressed considerable satisfaction with their lives and careers overall, most of them indicated that they had achieved success *in spite of* NJIT rather than because of it. Many of the obstacles to success that the women identified may have been encountered by male faculty members as well—for example,

the absence of any departmental welcome or initial orientation. However, lack of proactive departmental/institutional support tends to have a greater impact on women's career trajectories because it is amplified by isolation.

The women interviewed were virtually unanimous in saying that they had not been mentored at all. Those who survived did so in part by developing support networks among colleagues at other universities. Some of them were also mentored informally by women in other NJIT departments; however, such connections are inherently difficult to make because the total number of women faculty in the university is so small and because, in the past at least, the institute has done relatively little to foster inter-departmental collaboration and communication.

For a number of the women we interviewed, the lack of opportunity for collaboration and partnership with their female and male colleagues was a source of deep dissatisfaction and frustration. Indeed, two women in our interview decided to leave NJIT largely because of the absence of intellectual stimulation and collegial interaction within their departments.

Diminished opportunity for collaboration is a product of the small numbers problem, in combination with a cultural climate that defines women as outsiders. Investigators have often noted that universities are really run by "invisible colleges" within them, composed of informally networked male peers. NJIT is no exception. The majority of women we interviewed said that they had felt "out of the loop" during much their careers at the university. They experienced the climate in their departments as pervasively, if subtly, negative toward them as women. These asymmetric collegial interactions have created a career playing field that is not consistently level for women faculty.

Many women described the accumulation of micro-inequities over the years, the product of a system in which male experiences are silently defined as the human norm. Such a system can be intrinsically difficult for women to negotiate. One woman made an especially telling point, suggesting that the university's prevailing "sink or swim on your own" ethos tended to increase feelings of isolation and stereotype stress among female faculty, making it more difficult for them to build support networks. Another woman was more blunt, arguing that in order for a woman faculty member to survive at NJIT, she has to be a great deal better at everything than her male peers.

Most of the women we interviewed have managed to endure, despite the difficulties they have encountered; however, we believe that, by its very nature, the male-inflected system in place at NJIT tends to "weed out" more women than it does men.

The report sections below summarize the interview data on which these conclusions are based.

1. EARLY CAREER SUPPORT

Attraction to NJIT Over 60% of women responding [10 of 16] decided to come to NJIT primarily because of its geographical location. For seven of these women, location was important for family reasons. Most of the women responding came to NJIT expecting to have fulfilling intellectual collaborations with their colleagues; however, not all of these expectations were fulfilled.

Welcome & Orientation Nearly 50% of the women responding [7 of 15] indicated that they had not been welcomed by their chair and/or departmental colleagues when they first came to NJIT. Seventy percent of the women responding [12 of 17] reported receiving no formal orientation. Several women mentioned being welcomed by the Murray Center for Women in Technology. However, aside from interactions at Murray Center and ACE-NET events, women described themselves as having felt isolated. Two women reported that they had been met with overt hostility from their new male colleagues and from their departmental chairs.

Obtaining Resources for Research Four women responding said that their departments had made no effort to support their scholarly productivity during the first three years of their careers at NJIT. Eleven women said that when they first came to NJIT they had experienced difficulties in obtaining the material resources they needed for their research--e.g. lab space, lab equipment, computer hardware and software, grant funding, etc. Both the nature and severity of the difficulties encountered by the women varied considerably—from a crippling absence of lab space to “irritating” problems with the Computer Maintenance Facility.

- Of the women for whom lab space was a crucial issue, the majority said that they had had initial difficulty in obtaining the space and equipment they needed.
- More than half of the women responding [8 of 15] said that they had not received a reduced teaching load during their first years at NJIT.
- More than half of the women responding (7 of 12) said that during the early years of their career they had not been assigned to teach courses that focused on their area of research.
- The vast majority of women responding [8 of 11] said that they had not been provided with GAs during the crucial early years of their careers.
- Only half of the women faculty responding [7 of 14] reported that they had been able to obtain adequate computer equipment from the university. Several women reported having been given computers that were much older than those given to their male peers.
- One tenured woman reported waiting over 20 years before receiving a private office, although a number of men with less seniority were given private offices over the years.

Because the committee has not attempted to conduct a systematic comparative study, we do not know whether or not new women hires are treated any differently than their male colleagues in the areas discussed above.

Research Start-up Funds The overwhelming majority of the women responding said that they had received start-up research funding during the early years of their careers and were appreciative of the support. Most of these funds came from university SBR grants. The committee hopes that the level of support for research by junior women faculty will continue to increase as the SBR program is replaced by a larger, more targeted funding program.

2. PROMOTION AND TENURE

Mentoring & Guidance The majority of women responding said that they were never told by their chairs what they needed to do in order to get tenure. Others received general advice--that published research was valued more highly than community service, for instance--but got only limited practical help. 70% of the women [12 of 17] said that they had received no mentoring from their chair or their departmental colleagues during their first years at NJIT. When senior women were later asked how they had been mentored after tenure for future promotion to the rank of Full Professor, the women responding were unanimous in saying that they had not been mentored at all, except very informally by other women at the university.

Two of the four women who reported having relatively good orientation and departmental mentoring experiences are junior faculty, hired within the last five years, so it is possible that the situation is improving; however, the data do not show a clear generational trend. The single most positive mentoring experience was reported by a very senior faculty member and was attributed to the proactive stance of the then-departmental chair, a man who retired some years ago. *This same senior faculty member reported that the environment for women in her department has deteriorated in recent years.* Moreover, one of the younger faculty members who reported being mentored also reported that her current chair has created “a climate of fear” within the department.

Some of the women coped very well despite not having been mentored. For others, however, the absence of clear guidance was devastating. One former woman faculty member, now a tenured full professor at another university, unfavorably contrasted the “adversarial stance” of her NJIT departmental P&T committee with the “advocacy stance” of P&T committees at her current university.

Obstacles to Tenure The vast majority of women responding to this question [9 of 11] said that they had indeed faced obstacles to tenure. The most frequently cited obstacle was lack of support and mentoring from the departmental chair and/or senior colleagues. Slightly more than half of the tenured interviewees said that they did not have the enthusiastic support of their departments when they first came up for tenure. When asked to discuss how they had managed to overcome the obstacles they had faced, most tenured women faculty in our sample cited their own scholarly perseverance. A number of them compensated for their isolation by developing support networks among colleagues at other universities. Interestingly, only one of the tenured women faculty members attributed her success to good mentoring within her department:

Obstacles to Further Promotion When asked about the adequacy of the departmental support they received after they had been tenured, the majority of women responding (6 of 9) said that they had received little or no effective mentoring for promotion. Almost all of the tenured women responding (7 of 8) said that they had faced major obstacles when they tried to achieve promotion to full professor. The nature of these obstacles differed. Half (4 of 7) cited lack of support from their chair as the principal impediment. Two other women said that the principal obstacle they had faced was the opposition of the institute's P&T committee; but they also felt that their chairs had been less than fully supportive in arguing their case.

Gender Discrimination in P&T Seventy-two percent of the women responding (8 of 11) said that they believed that their gender had negatively affected their P&T trajectory. Several women reported what they perceived to be overt inequities. The majority, however, tended to report more subtle inequities--e.g., gender stereotyping that was invisibly hard-wired into institutional norms, "chilly climate" effects, etc.

3. ALLOCATION OF RESOURCES AND MATERIAL REWARDS

Although the majority of women said that they had experienced difficulties in obtaining appropriate material resources and rewards, they were evenly divided about whether or not these difficulties were the result of gender discrimination. 50% of those responding said yes; 50% said no. (The remaining interviewees offered no opinion.) Some women were very blunt in their accusations. Others felt that inequities were the function of a subtler climate problem.

In general, the women interviewed said that they had been able to get adequate resources for their research only through their own grants. The committee does not have comparative data to suggest whether these women's male peers experienced the same constraints; however, four women in our study said that they had observed male peers being given preferential treatment.

The majority of women faculty responding believe that it has received merit increases commensurate with the quality of work produced and in line with what male peers have been given. Three women believe that they have been discriminated against re. merit increases. One woman added that her very success in getting merit money has generated sexist comments from several of her colleagues.

4. INFLUENCE

Three-fourths of the women responding (9 of 12) said that they had felt "out of the loop" during much or all of their careers at NJIT and that this isolation had caused problems for them. Fewer women (5 of 12) were willing to attribute their isolation to a hostile climate for women, but those who did spoke with considerable vehemence. In some instances, the gender problems described seem to be the work of a few biased individuals. However, other women feel the problem is more systemic, attributing the sense of exclusion they experience at NJIT to the continued operation of an "Old Boys' Club."

5. OPPORTUNITIES FOR INTELLECTUAL GROWTH AND RECOGNITION

Collaboration Most of the women responding (11 of 17) said that faculty members within their departments often collaborated on research projects; however, only 7 of these women reported that they were usually invited to be part of these collaborations. For a number of these women, the lack of opportunity for intellectual partnership with their colleagues was deeply troubling.

One woman described her departmental climate as too hostile to permit effective collaboration, even among male peers. In contrast, another woman described the almost ideal collaborative climate she had helped to foster in her department. Neither of these extremes is typical, however. Most women reported that there was an “intellectual loop” of sorts in their department but that they were positioned outside of the loop. In some cases, respondents felt that they were being excluded because of their gender. One junior faculty member asserted that she is “not treated as an equal” by her male colleagues. She observed that other women in her department are not treated as equals either. She suspects that this (male) behavior may be “due to cultural differences.”

Other junior faculty members felt the same degree of isolation but were less certain about its causes. Senior faculty members reported feeling isolated as well. One woman for whom intellectual collaboration is very important said that she had experienced an almost constant sense of loss during her career: She would begin to develop collaborative projects with new female hires, only to have them leave the university a few years later. This happened over and over again and became quite demoralizing.

This woman has stayed at NJIT, but two women in our sample have left the university in large part because of the absence of intellectual stimulation and collegiality within their departments. One of these women had been attracted to NJIT by the apparent opportunity for collaborative research across disciplines, but she was disappointed in the collegial indifference she actually experienced. She tended to blame herself; however, the examples she cited suggested otherwise. She also noted that nobody had invited her to be a Co-PI on a grant proposal. She would have liked to have had some “facilitation from mentors and colleagues.” The other woman who has left NJIT also came to the university expecting that exciting intellectual partnerships would develop; but she, too, was disappointed.

Not all of the female faculty members who are similarly dissatisfied with the collaborative climate in their department leave the university as these two women did. However, their decision to stay seems to have been largely a function of their ability to find collaborators at other universities with whom they could do satisfying work while still remaining in place at NJIT.

Service Work Virtually all of the women in our sample said that they do substantial amounts of “service” work in addition to their teaching and research. Although often lacking mentors themselves, a number of women have spontaneously decided to mentor junior faculty as well. The majority of the women believed that they

routinely did more service work than their male peers, largely without reward or acknowledgement. Most didn't seem to mind, as long as the work was satisfying; but at least one faculty member felt that excess service was a problem for NJIT women: precisely because they are so capable and reliable, they tend to be on everybody's "go to" list. Moreover, minority women are too often asked to be role models and recruiters.

6. BALANCING PROFESSIONAL AND PRIVATE LIFE

Contrary to our expectations--and contrary to many published studies (Wajcman, 1998, e.g.)--the vast majority of women in our sample said that they had not had much difficulty in balancing the demands of their professional and private lives. For example, more than 75% of women [13 of 17] reported that doing "household chores" was not a problem for them and had not affected their career trajectory. The majority of women in our study have a husband/domestic partner who shares household chores and/or child-raising with them, albeit not always on an equal basis. Most expressed satisfaction with the balance in their lives.

Children Significantly, nearly 60% of the women in our sample do not have children—an extraordinarily high figure. Moreover, of the women in our sample who do have children (7 of 17), only four are taking care of young children in their homes right now. (The other women's children are grown.) The absence of child-care responsibilities may well account for the relative absence of career/family stress and conflict that most of our interviewees reported.

The women who do have children described their lives as logistically complicated and pressured, however. When their children were young, they found it difficult to do substantial research. One young faculty member believes that she would "now be at a different level in her career" if she had not had so many family responsibilities.

Although most of the childless women in our sample said that their careers had had little to do with the fact that they had no children, many also indicated that the time demands of their careers had had a negative effect on their social lives. In general, the women in our sample described their lives as not only replete with responsibilities but also replete with a sense of responsibility that never left them. One woman commented, almost in passing, that she had cancelled a class only once in her entire career—on the day her mother died. Her fidelity is typical of the group as a whole.

Further comparative research is needed in order to establish whether male faculty at NJIT lead similar lives and whether or not family responsibilities create a non-level playing field for women.

7. ORGANIZATIONAL CLIMATE

Level Playing Field? More than three-fourths of the women responding (13 of 17) said that the career playing field had not been level for them. Indeed, many of them were quite emphatic in their responses. Several of the more senior professors believe that

they have not received equal pay, in large measure because they were hired at an inappropriately low starting salary years ago and have never caught up. Two women also believe that they have not received fair merit pay increases. Many other women described the problem as more amorphous—and more pervasive—“like a “fog” obscuring the institutional landscape.

Sexual Harassment Slightly more than half of the women responding (7 of 13) said that they had personally experienced sexual/gender harassment at NJIT. Some of the more overt sexual advances reported happened many years ago, when what is now regarded as actionable behavior was merely business as usual. Other incidents are much more recent, however, and involve women students as well as faculty.

In addition to those who reported specific incidents, many women said that they experienced the climate in their departments as pervasively, if subtly, negative toward them as women. Although asserting that they had not been harassed personally, five of the women in our sample reported sexual/gender harassment incidents involving other women faculty or students. Some of these stories are based on second-hand knowledge, others on direct observation. Reported harassment incidents involving students were especially troubling to the committee. The offensive behavior ranged from public humiliation to sexual involvement.

Departmental Climate More than 70% of the women responding (10 of 14) used negative terms to characterize the current climate in their departments. Words used included: *hostile, climate of fear, cold, overly competitive, insensitive [to morale], unfocused, disappointing, forced, mixed, amorphous*. Four women characterized their departmental climate as positive. They used terms ranging from *wonderful* and *excellent* to *improved* and *ok*.

When asked how their departmental climate could be improved, the women made a variety of suggestions. One woman thought that progress should begin by getting rid of her chair! Others proposed more systemic changes, most of them focused on building a greater sense of collegiality and community.

University Climate Seventy percent of the women reporting also used negative terms to characterize the climate for woman at NJIT as a whole. Four women thought that the university climate was *fair, friendly, supportive*, or at least *ok*. Many more had specific criticisms, however. Some of those criticisms focused on a need for greater sensitivity to diversity issues. Others focused on “civility” issues.

Despite the number of sexual harassment incidents they reported, in general the women in our sample characterized the campus climate for women students as good or at least improving slowly. They were somewhat less positive about the climate for women faculty, however—especially women adjuncts.

“*It’s still a little hard being a minority,*” as one senior woman faculty member remarked. That awareness moves many women faculty to make a special effort to help their women students. Not surprisingly, the most often-repeated suggestion for improvement made by

our sample was simply to “get more women!”—especially women students. In order to do this, several felt that there needed to be more women in key decision-making positions. Some women argued that the curriculum itself needs to become more gender-inclusive. Two women focused on the need for a more consistent—and therefore more equitable—faculty mentoring system, across the university. One woman also thought that there needed to be formal gender-sensitivity training instituted for all new faculty, as well as students.

The women also made a number of specific requests for more and/or better material resources. Suggestions ranged from “Have a daycare of higher quality” to “Clean the bathrooms!” to “Get a decent salad bar!” The latter may seem to be trivial, but the committee regarded such suggestions as important reflections of a desire we felt emanating from virtually all of the women in our sample—a desire that the total quality of life at NJIT be more satisfying.

8. JOB SATISFACTION

Sources of Satisfaction Despite the problems they raised in other phases of the interview, nearly 90% of women responding (14 of 16) expressed considerable satisfaction with their lives at NJIT. The most commonly cited sources of satisfaction were interactions with students and the freedom to do research that interested them. Even if they were not always happy with the university climate, the women in our sample obviously felt pride in what they had been able to accomplish within that climate, particularly in alliance with other women. Virtually all of the women indicated that they were very glad that they had chosen an academic career.

Sources of Dissatisfaction Sixteen of the 17 women interviewed expressed some level of dissatisfaction with their lives at NJIT. Many women said that they routinely experienced great frustration and stress. Another common denominator in the women’s complaints was isolation. Over and over again, the women in our study expressed sadness that they did not experience much collegial support or intellectual interaction with the men in their departments and found it difficult to network with women colleagues, simply because there are so few of them. Minority women in particular felt that their “difference” was continually being spotlighted in ways that increased their isolation.

Three women in our study decided to leave NJIT in part because of limited opportunity for collegial interaction and collaborative research. One of these women’s ultimate decision to leave NJIT was sealed when she ran into a wall of another sort as well—this time involving Human Resources and the university’s lack of a broad leave policy covering the birth/adoption of children. The university’s position on family leave was apparently not an issue for other women in our study—presumably because so few of them are still considering having children. (See section 7.0 above.) It may well be an issue for potential new female hires, however. And having more women to interact with was clearly a priority for current women faculty members.

9. ADVICE FOR CHANGE

Recruitment Recommendations At the end of the interview, the women in our sample gave specific advice on how the university could best recruit more women faculty. Most focused on the need for institutional change. A number of interviewees stressed that women faculty should lead departmental faculty recruitment efforts and that successful alumnae should be enlisted in the effort as well. They agreed that the most important inducement for potential female faculty is the perception (and reality) that NJIT treats women equitably. They stressed that NJIT needs to have more women in top leadership positions.

Several women made specific suggestions on how to market NJIT more effectively to women, stressing the advantages of NJIT's locale for dual-career families, access to childcare, etc. NJIT also needs to make itself more visible to women nationally in each of the key disciplines. Other women argued that faculty recruitment efforts need to begin much earlier, when potential candidates are still in graduate school.

One faculty member suggested that department chairs work formally with the Murray Center and the Committee on Women's Issues to develop discipline specific toolkits for the recruitment of women faculty. Another took a different tack, stressing that "quality of life" issues that are important to her may also be important to potential female hires. In general, the women in our sample agreed with the notion that NJIT needs to make itself visible as a leader in gender equity.

Retention Recommendations In addressing the crucial issue of retention, many of the women reiterated the advice they had given re. recruitment—especially the importance of equity. They stressed that, in order to ensure equity, the university needs to institute more consistent and detailed orientation and mentoring programs, across all colleges/schools and departmental units. One faculty member lauded the orientation program for new faculty established by former NCE dean William Swart, a program that has been discontinued. She argued that it should be reinstated. Another woman advised that tenured women faculty need to be involved in the orientation of new women faculty. A third woman stressed that chairs need to treat new female hires as precious resources and not to waste their energies. There was a consensus that NJIT should do more to help faculty balance family and career demands and should create a genuine maternity leave policy.

Networking with Women Colleagues In concluding their interviews, three senior professors stressed that the isolation they might otherwise have experienced as women at NJIT has been mitigated by networking opportunities provided by such groups as the Murray Center, the Committee on Women's Issues, and the ACE-Network.

CONCLUSIONS

Based on its analysis of the data, the committee has reached a number of conclusions, the most important of which are as follows:

- Although the number of tenure-track women faculty has increased dramatically in recent years, desirable diversity objectives have not been met in most university departments.
- Like many technological universities, NJIT's retention rate for women faculty is lower than it should be to achieve long-term diversity objectives.
- Reasonable diversity objectives have not been sufficiently achieved in key university decision-making positions.
- In the past, there were persistent differences in the average salaries paid to all full-time female instructional faculty members versus the average salaries paid to all full-time male instructional faculty members.
- Asymmetric collegial interaction means the career playing field is not consistently level for women faculty.

Recommended University Objectives:

In order to address the issues identified during the course of its study, the committee recommends that the university adopt the following broad objectives:

- Integrate increased diversity in recruitment and retention of faculty into the university's stated strategic objectives.
- Increase the number of tenure-track women faculty at all ranks in all schools/colleges and departments, to a level comparable to the new female PhDs in the field.
- Increase the representation of women faculty in future strategic planning and decision-making at all levels of the university.
- Increase awareness among faculty and academic administrators of the policies, behaviors, and attitudes that undermine the potential success of women faculty members.
- Ensure university-wide consistency and equity in the promotion and tenure process.
- Ensure university-wide consistency and equity in faculty salaries.
- Make demonstrated diversity leadership an essential qualification when filling senior administrative positions.

Recommended Tactics:

In order to accomplish the objectives listed above, the committee recommends that the university adopt the following specific tactics:

- Improve job candidate search practices to increase the number and diversity of applicants.
- Initiate a university-wide, team-based mentoring and peer-networking program for all untenured tenure-track faculty members. This program should be administered by the provost's office in concert with the deans and the department chairs.
- Establish university faculty diversity targets for all departments based on the rate at which new PhD recipients enter the academic workplace—and the number of anticipated hires in each department.
- Require each college/school dean to develop a plan to reach faculty diversity targets with specific outcomes and strategies designed to increase the recruitment and retention of women in each respective college/school. The plan should include a formal welcome/orientation program series for all new faculty appointments.
- In evaluating performance, hold each college/school dean accountable for achieving faculty diversity targets for the increased recruitment and retention of women.
- Require all department chairs to develop specific targets and strategies designed to achieve the planned department diversity.
- In evaluating performance, hold each chair accountable for successfully meeting the department's targets for increased recruitment and retention of women.
- Develop and implement an equity pay review exercise. This process, modeled on successful procedures developed by other institutions, should require justification of all salaries outside of the anticipated range. This exercise should be designed by Human Resources (HR) and the Office of Institutional Research and Planning (IRP) and supervised by the provost.
- Reject search committee recommendations for new hires if there is a pattern of evidence suggesting that the committee has not seriously sought diversity among candidates.

- Initiate a university-wide mentoring program for senior women faculty who may be interested in becoming administrators. The program should be administered by the provost's office in concert with the deans and the department chairs.
- Mandate the Human Resources Office and the Office of Institutional Research and Planning systematically to collect, analyze, and publicly disseminate diversity data regarding recruitment, retention, and promotion of faculty.
- Mandate the Human Resources Office to conduct formal exit interviews with each faculty member who leaves the university.
- Encourage the provost, deans, and chairs to meet personally with women faculty—individually and in focus groups—on a regular basis to ask their advice on how best to make the university environment more supportive for them.
- Create a more flexible family leave policy consistent with progressive university standards.
- Create a partnership among senior administration and the Committee on the Status of Women Faculty and the Murray Center to oversee and monitor the success of the tactics described above.

IMPLEMENTATION & EVALUATION

ISSUE: Recruitment

- **Although the number of tenure-track women faculty has increased dramatically in recent years, desirable diversity objectives have not been met in most university departments,**

OBJECTIVES:

- Integrate increased diversity in recruitment of faculty into the university's stated strategic objectives.
- Increase the number of tenure-track women faculty at all ranks in all schools/colleges and departments to a level comparable to the new female PhDs in the field.

RECOMMENDED TACTICS:

- Improve job candidate search practices to increase the number and diversity of applicants.
- Reject search committee recommendations for new hires if there is a pattern of evidence suggesting that the committee has not seriously sought diversity among candidates.

- Require each college/school dean to develop a Diversity Plan with specific outcomes and strategies designed to increase the recruitment of women and underrepresented minority faculty in each respective college/school. The plan should include a formal welcome/orientation program series for all new faculty appointments.
- In evaluating performance, hold each college/school dean accountable for the success of the unit's Diversity Plan in meeting its targets for increased recruitment of women and underrepresented minority faculty.
- Require all department chairs to develop specific targets and strategies designed to achieve the planned department diversity.
- In evaluating performance, hold each chair accountable for successfully meeting the department's targets for increased recruitment of women and underrepresented minority faculty.
- Mandate the Human Resources Office and the Office of Institutional Research and Planning systematically to collect, analyze, and publicly disseminate diversity data regarding recruitment of faculty

The CSWF strongly recommends that the Strategic Plan, as promulgated in the fall of 2003, be modified to include increased recruitment and retention of women and underrepresented minority faculty as one of its objectives.

More specifically, the CSWF recommends that the university take steps to improve job candidate search practices in order to increase the number and diversity of applicants. The provost should meet personally with each faculty search committee at the beginning of its deliberations to reiterate that identification of women candidates needs to be proactive and not merely pro-forma. The provost should continue what the committee believes is already university practice: namely, rejecting search committee recommendations for new hires if there is a pattern of evidence suggesting that the search has not seriously sought women and underrepresented minority candidates. The university should also develop and disseminate specific diversity tactics for search committees. When possible, the provost should provide incentives to schools/departments for successfully recruiting women and underrepresented minority faculty.

Next Step: The provost should work with the deans to ensure that outcome-based faculty diversity plans for each school/college are in place by the beginning of AY 2005. The provost and president should instruct the Office of Institutional Research and Planning to begin developing appropriate diversity recruitment metrics for each school/college. The university should begin identifying and pursuing funding sources that will help NJIT create attractive packages and endowed chairs for new women faculty hires. In addition, the provost should encourage deans and, through them, department chairs, to work with the director of the Murray Center, the chair of the Committee on Women's Issues, members of the CSWF, and the Vice President for Human Resources to

create discipline-specific Search Committee Toolkits designed to help committees maximize the diversity of their candidate pools. Diversity performance data should be regularly disseminated via the NJIT Fact Book.

ISSUE: Retention

- **Like many technological universities, NJIT's retention rate for women faculty is lower than it should be to achieve long-term diversity objectives.**
- **Asymmetric collegial interaction means the career playing field is not consistently level for women faculty.**

OBJECTIVES:

- Integrate increased diversity in retention of faculty into the university's stated strategic objectives.
- Ensure university-wide consistency and equity in the promotion and tenure process.

RECOMMENDED TACTIC: Mentoring & Peer Networking Program

- Initiate a university-wide, team-based mentoring and peer networking program for all untenured tenure-track faculty members. This program should be administered by the provost's office in concert with the deans and the department chairs.

The vast majority of women interviewed by the CSWF for this study said that they had not been warmly welcomed when they first joined the NJIT faculty and that they had received very little orientation or mentoring. For many, this lack contributed to feelings of isolation that has made life at NJIT more difficult. In three cases, the sense of isolation became so troubling that the women decided to leave NJIT for jobs elsewhere.

A number of studies have concluded that the availability of mentoring and support systems is crucial in retaining women faculty in technological institutions where they are a minority. (See Wenzel 1998, e.g.) Because NJIT is publicly committed to increasing its cohort of women faculty, and because both anecdotal evidence from the CSWF study and statistical evidence from the 2001 Faculty Council P&T study suggest that retention failures are undercutting recruitment successes, the committee strongly recommends that the provost initiate a university-wide orientation, mentoring, and peer networking program for all untenured tenure-track faculty. Such a program would help the university respond to the observation of the 2002 Middle States evaluators that NJIT needs to more "clearly articulate expectations to new faculty coming in."

The committee recognizes that the best mentoring experiences flow from a personal "chemistry" between mentor and mentee and that such chemistry is difficult to legislate. This truth should be a guideline for program design rather than a rationale for inaction,

however. Historically, the lack of a formally-mandated mentoring system has differentially disadvantaged women; potential mentors tend to reach out to young faculty members with whom they can most readily identify. Women may receive excellent orientation and support in some departments and none at all in others, depending on the personalities of the chair and senior faculty members.

In order to maximize the number of contacts that a new faculty member receives, and thus increase the opportunity for “chemistry” to develop, the committee suggests a cross-disciplinary, team-based approach. This approach draws on the orientation program developed by former NCE Dean Dr. William Swart and a mentoring program promulgated in a 1998 task force report on women faculty at Kansas State University. The key features of this strategy are as follows:

- A **welcome reception/dinner** for all new faculty and instructional staff members, hosted by the president and provost.
 - Similar welcome receptions within each school/college and department.

- A formal, one-semester **university-wide orientation program** for all new untenured tenure-track faculty and new full-time non-tenure track instructional staff members. New faculty hired with tenure may participate at their discretion.
 - New hires meet as a cadre bi-weekly for 1.5-hour luncheon sessions throughout the first semester.
 - A new topic is discussed during each session (e.g., expectations governing promotion and tenure, strategies for effective classroom teaching, grantsmanship, etc.) Presenters should primarily be senior faculty and senior administrators, not administrative staff. Presentations should be interactive.
 - In the second semester, tenure-track faculty members are assigned to a mentoring team (below).

- A formal, **university-wide mentoring and peer networking program** for all new untenured tenure-track faculty members (and new faculty hired with tenure, at their discretion).
 - New tenure-track faculty members meet as a cadre bi-monthly throughout the second semester as part of a formal “First Year Faculty Development Program” (FDP). [See Appendix K for details.]

The goal of this two-phase Faculty Development Program is to promote both vertical networking (between junior and senior faculty) and horizontal networking among new faculty, across disciplines. Such networking opportunities are crucial in assisting new faculty to reach their full potential as contributors to departmental and institutional goals. In addition to ensuring that new faculty of both genders are effectively and consistently supported in their scholarly research and teaching, the FDP should benefit the university as a whole by facilitating collaboration and interdisciplinary research.

Evaluation: The committee recommends a six-step process for assessing the success of the new orientation/mentoring program in achieving its goals. (See Appendix L for

details.) Ultimately, the success of the Faculty Development Programs is best measured by the success of new faculty in achieving promotion and tenure.

The Next Step: The provost should appoint a committee to design an orientation and mentoring program for new faculty, based on the recommendations of the CSWF (above). This committee should include representatives from each school/college and the CSWF, plus other appropriate administrative resource persons. The new orientation/mentoring program should be in place by the beginning of AY 2005.

RECOMMENDED TACTICS: Diversity Plans & Data Dissemination

- Integrate increased diversity in recruitment and retention of faculty into the university's stated strategic objectives.
- Establish university faculty diversity targets for all departments based on the rate at which new PhD recipients enter the academic workplace—and the number of anticipated hires in each department.
- Require each college/school dean to develop a plan to reach faculty diversity targets with specific outcomes and strategies designed to increase the recruitment and retention of women in each respective college/school. The plan should include a formal welcome/orientation program series for all new faculty appointments.
- In evaluating performance, hold each college/school dean accountable for achieving faculty diversity targets for the increased recruitment and retention of women.
- Require all department chairs to develop specific targets and strategies designed to achieve the planned department diversity.
- In evaluating performance, hold each chair accountable for successfully meeting the department's targets for increased recruitment and retention of women.
- Mandate the Human Resources Office and the Office of Institutional Research and Planning to systematically collect, analyze, and publicly disseminate diversity data regarding retention and promotion of faculty.

The committee recommends that each college/school dean develop a Diversity Plan (DP) with specific outcomes and strategies designed to increase the recruitment and retention of women and underrepresented minority faculty in the college/school. Each chair, in turn, should develop specific targets and strategies designed to achieve the planned department diversity.

The committee reiterates the recommendation of the April 2002 Middle States evaluators that, “[NJIT should] collect more qualitative versus quantitative data” and that “results of

research studies should be better disseminated to [the] entire university community.” Under President Altenkirch and Provost Van Buskirk, NJIT has now joined the ranks of major technological institutes who routinely collect and publish gender-related data concerning their faculty on their websites and elsewhere. The CSWF recommends that the university continue to expand this initiative, disseminating demographic data that track progress each department has made in achieving greater faculty diversity. Specifically,

- The Human Resources Office and the Office of Institutional Research and Planning systematically collect, analyze, and publicly disseminate diversity data regarding recruitment, retention, and promotion of faculty.
- The Human Resources Office conduct formal exit interviews with each faculty member who leaves the university.

The Next Step The provost should work with the deans to ensure that outcome-based faculty diversity plans for each school/college are in place by the beginning of AY 2005. Working with IRP, the provost should develop specific performance metrics to track the success of each school/college in increasing the retention of women faculty over the next five years. Diversity performance data should be regularly disseminated via the NJIT Fact Book.

ISSUE: Salary Equity

- **There have been persistent differences in the average salaries paid to all full-time female instructional faculty members versus the average salaries paid to all full-time male instructional faculty members.**

Objectives:

- Ensure university-wide consistency and equity in faculty salaries.

RECOMMENDED TACTIC: Equity Pay Review

- Develop and implement an equity pay review exercise, modeled on successful procedures developed by other institutions. This exercise should be designed by Human Resources (HR), the deans, and the Office of Institutional Research and Planning (IRP) and supervised by the provost.

The aggregate data collected by the CSWF reveal a substantial, sustained gender salary gap over the eleven-year period. As of 2003, male faculty members still earn more than female faculty members in each rank. The lone exception is the rank of assistant professor for the years 2001-2003. In general, the men in each rank have greater seniority than the women. Thus, much of the apparent gender salary gap can be explained by gender differences in number of hire years. Despite this observation, the committee was not entirely reassured, however—for three reasons.

1) The 2001 Faculty Council study of the 1988-1995 faculty cohort and the 2003 IRP retention rate study found a significant gender gap in promotion and tenure rates. This suggests that the hire-years gap that apparently explains away the gender salary gap may itself be the product of inequitable institutional P&T practices and/or factors in institutional culture that differentially affect women faculty.

2) Analysis of individual salary data department by department suggests that, in some departments, the gender salary gap transcends the difference in hire-years.

3) Similarly, in several instances, analysis of individual salary data seems to support the belief expressed by a number of senior women faculty that they were hired at salaries lower than their male peers and have never made up the difference--and/or have not received appropriate merit increases. The gender salary gap is especially disturbing at the rank of distinguished professor.

For these reasons, the committee believes that the university should develop a uniform proactive policy to ensure salary equity, rather than reacting to individual grievances as they arise.

The Next Step The provost, in cooperation with Human Resources (HR) the deans, and the Office of Institutional Research and Planning (IRP) should develop and implement an equity pay review exercise, modeled on successful procedures developed by other institutions, including Washington State University. The exercise should take place during AY 2005-2006.

ISSUE: Diversity Among Decision-Makers

- **Reasonable diversity objectives have not been sufficiently achieved in key university decision-making positions.**

OBJECTIVES:

- Increase the representation of women faculty in future strategic-planning and decision-making at all levels of the university.
- Make demonstrated diversity leadership an essential qualification when filling senior administrative positions.

RECOMMENDED TACTIC: Identification & Mentoring of Future Leaders

- Initiate a university-wide mentoring and peer networking program for senior women faculty who may be interested in becoming administrators. The program should be administered by the provost's office in concert with the deans and the department chairs.

Success stories at the University of Washington and elsewhere indicate that an institution's ability to recruit and retain women and underrepresented minority faculty is significantly enhanced when there are women in senior academic administrative roles. Therefore, the CSWF recommends that the provost initiate a university-wide mentoring program for senior faculty who may be interested in becoming administrators. The program should be administered by the provost's office in concert with the deans and the department chairs.

The Next Step The provost should ask the deans, and through them, the chairs to recommend tenured female and underrepresented minority faculty who have the interest and the potential to become successful senior academic administrators. He should choose five of these recommended faculty, ideally one from each school/college, and initiate an informal coaching process, meeting with them individually and as a group several times throughout the year. Depending on feedback from this experience and feedback from the new Faculty Development Program (above), the university may deem it appropriate to create a more formal faculty-to-administrator mentoring program some time in the future.

ISSUE: Family-Friendly Policies

- **Asymmetric collegial interaction means the career playing field is not consistently level for women faculty.**

Objectives:

- Increase awareness among faculty and academic administrators of the policies, behaviors, and attitudes that undermine the potential success of women faculty members.
- Ensure university-wide consistency and equity in the promotion and tenure process.

RECOMMENDED TACTIC: New Parenting Leave Policy

- Create a more flexible family leave policy consistent with progressive university standards.

According to the United Nations, the United States is one of only six countries that do not have a paid maternity leave policy (*NEA Advocate*). In recent years, a number of major corporations have stepped in to fill the gap, as part of a trend toward more “family-friendly” employment policies. Industry leaders such as IBM and Colgate-Palmolive argue that helping employees balance their careers and their lives is good for the corporate bottom line, enhancing the company's ability to attract and retain a diverse workforce. For example, IBM offers two months of paid maternity/adoption leave and three years of job-protected family leave, during which company-paid benefits remain intact, in addition to flextime, telecommuting, and financial assistance for adoption.

For technological universities such as NJIT, these corporate best practices make good bottom-line sense as well. As WEPAN studies have demonstrated, the ability of technological institutes to increase the number of women faculty—an imperative in its own right—is inextricable from the goal of increasing the number of young women students who successfully enter the technological workplace. Since sixty percent of high school students who go to college are female, success in such recruitment/retention is a crucial component of institutional health.

Both substantively and symbolically, family-friendly policies are important markers of institutional hospitality for prospective women faculty hires. NJIT has an opportunity to become a nationally-visible leader in this area, since its peer institutions have been slow to understand the importance of family-friendly policies as a marketing tool.

Two exceptions to this trend are Princeton and Wellesley, both of which offer paid parenting leave to their faculties. Significantly, the Wellesley and Princeton policies separate parenting leave from sick leave. This is an important distinction because the leave policies in effect at NJIT and many other institutions implicitly discriminate against child-bearing women, forcing them to disguise a natural and positive life process as a medical misfortune. As the authors of the 1998 Georgia Tech *In Gear* report observe:

The lack of a policy that ensures paid leave for family care-taking needs is one of the most widely cited reasons for female faculty discontent. The current policy that requires women to use accrued sick leave to effect a paid maternity leave differentially disadvantages female employees. Because they have to deplete personal sick leave time, women incur a greater health risk than men do. Moreover, there is a potential inequity in retirement benefits now that the State Retirement System increases the service calculation to compensate for unused sick leave upon retirement.

The principal features of the Princeton policy are:

- Paid maternity leave from 3 weeks before to 6-10 weeks after a birth.
- Upon request, a one-year extension in the term of appointment of an Assistant Professor of either sex, after the birth or adoption of a child. A second one-year extension (in the second term of an Assistant Professor's appointment) is permitted for a second child.
- Up to one year of unpaid parenting leave, for parents of either sex.
- One semester of workload relief from classroom teaching and administrative duties, or two semesters of half relief from such duties.

This relief is not considered a leave, and the faculty member receives full salary while on workload relief. The faculty member's responsibilities for research, student consultation and advising remain unchanged from those of a normal term.

The key features of the Wellesley policy are:

- One month of paid leave for a woman who gives birth or for the primary caretaker of a newborn or newly-adopted child. ("One month" is flexible.)
- Two units of course relief for a primary caregiver, without reduction of salary, following the birth or adoption of a child. (Eligible regular part-time faculty who are primary caretakers may receive one unit.)

The first unit may be taken in the semester of the birth or adoption, or in the semester immediately following. The second may be taken at the same time as the first, or in the semester immediately following the first.

Time spent on parental leave does not count as time in rank for the purpose of calculating eligibility for sabbatical leave.

The Next Step The Committee on the Status of Women Faculty recommends that the provost appoint a taskforce to work with him or her and the Office of Human Resources to create a more flexible family leave policy consistent with progressive university standards, as described above. The Committee on Women's Issues has been actively involved in designing just such a policy, and thus representatives of the CWI should be included in the taskforce.

ISSUE: Interaction & Awareness

- **Asymmetric collegial interaction means the career playing field is not consistently level for women faculty.**

Objective:

- Increase awareness among faculty and academic administrators of the policies, behaviors, and attitudes that undermine the potential success of women faculty members.

RECOMMENDED TACTICS: Increased Consultation

- Encourage the provost, deans, and chairs to meet personally with women faculty—individually and in focus groups—on a regular basis to ask their advice on how best to make the university environment more supportive for them.
- Create a partnership among senior administration and the Committee on the Status of Women Faculty and the Murray Center to oversee and monitor the success of the tactics described above.

The provost, deans, and chairs should meet personally with women and underrepresented minority faculty—individually and in focus groups—on a regular basis to ask their advice on how best to make the university environment more supportive for them. The president,

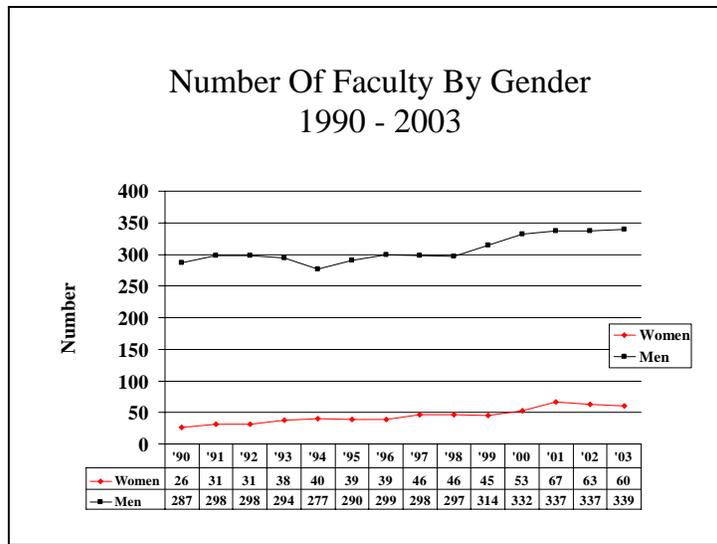
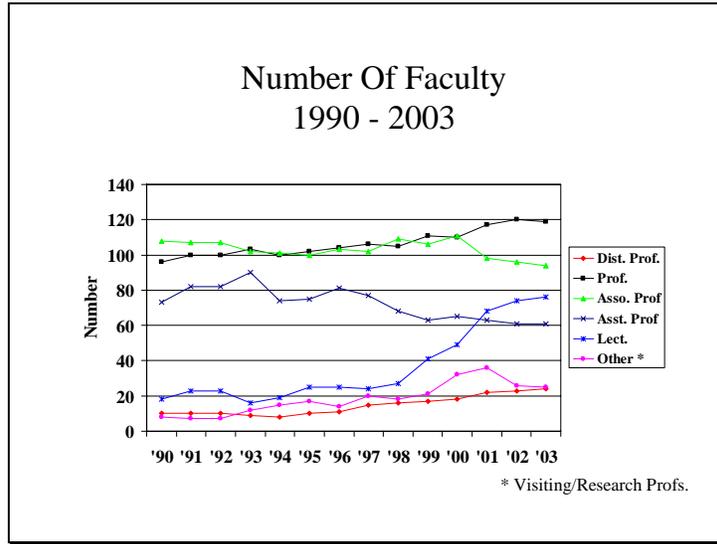
provost and other senior administrators should continue to work with a Committee on the Status of Women Faculty, the Murray Center for Women in Technology, the Committee on Women's Issues, and the Affirmative Action and Human Relations Council to oversee and monitor the success of the strategies described above.

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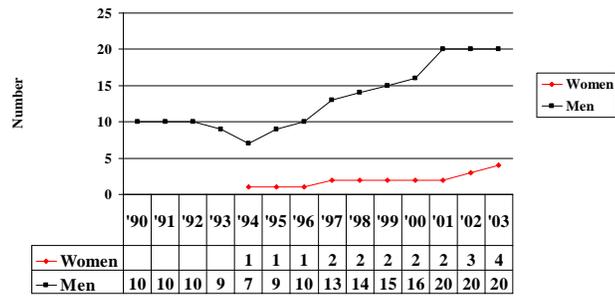
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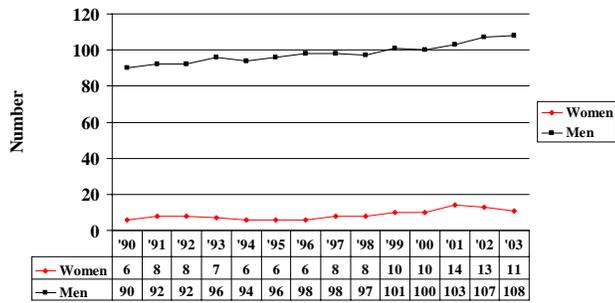
APPENDIX A



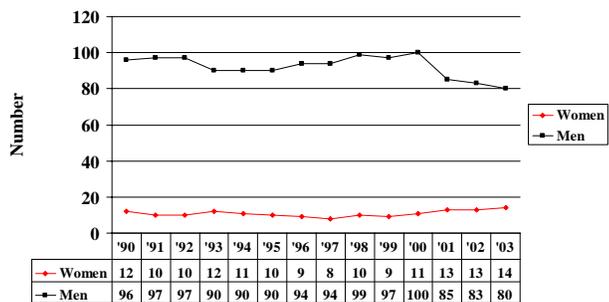
Number Of Distinguished Professors 1990 - 2003



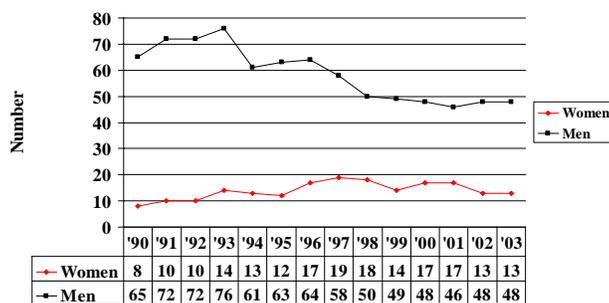
Number Of Professors 1990 - 2003



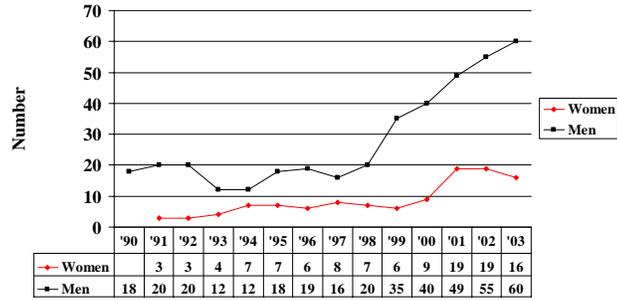
Number Of Associate Professors 1990 - 2003



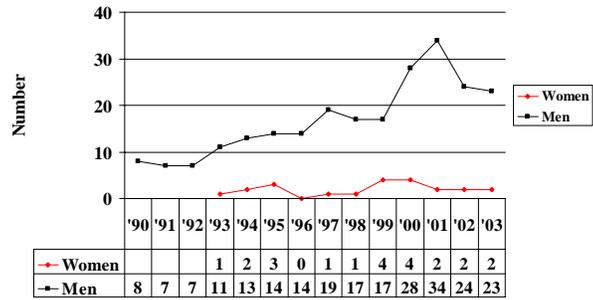
Number Of Assistant Professors 1990 - 2003



Number Of Lecturers 1990 - 2003

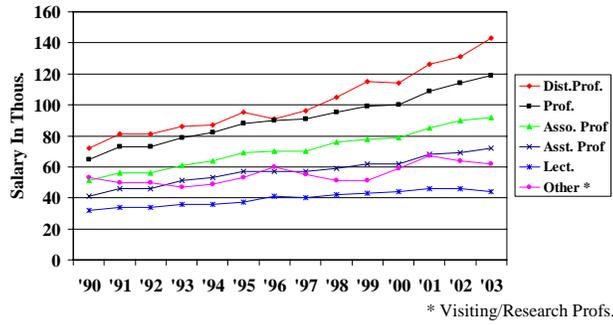


Number Of Visiting/Research Prof. 1990 - 2003

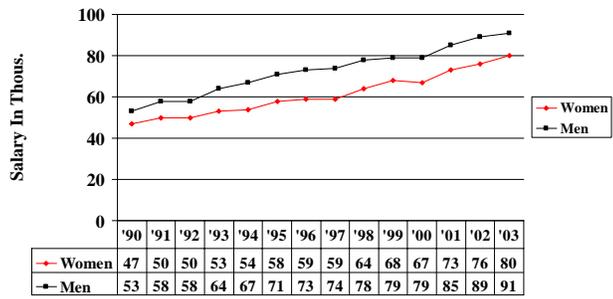


APPENDIX B

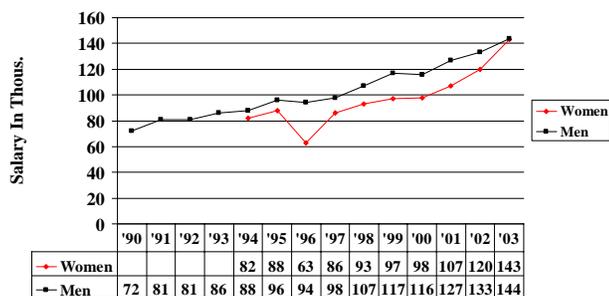
Average Salaries For Faculty 1990 - 2003



Average Salaries For Faculty By Gender 1990 - 2003

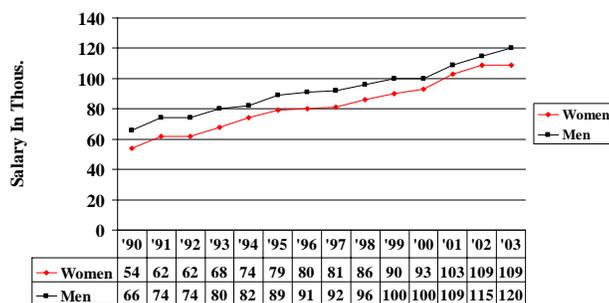


Average Salaries For Distinguished Professors 1990 - 2003

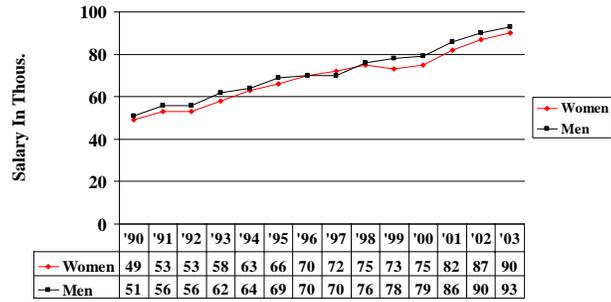


No women Dist. Profs. during '90 to '93

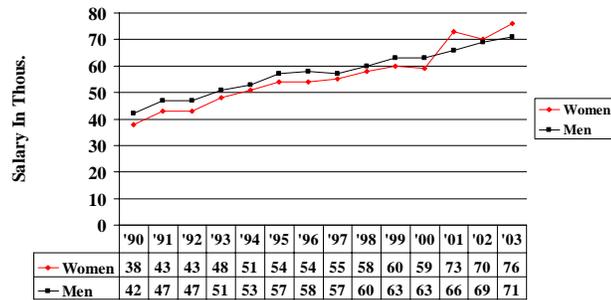
Average Salaries For Professors 1990 - 2003



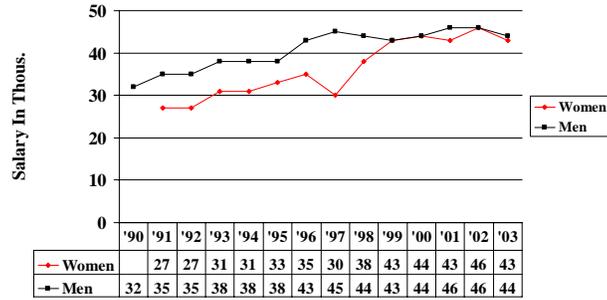
Average Salaries For Associate Professors 1990 - 2003



Average Salaries For Assistant Professors 1990 - 2003

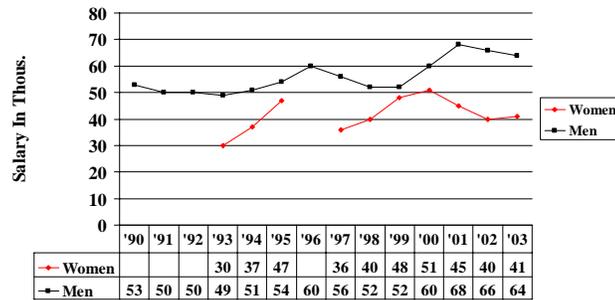


Average Salaries For Lecturers 1990 - 2003



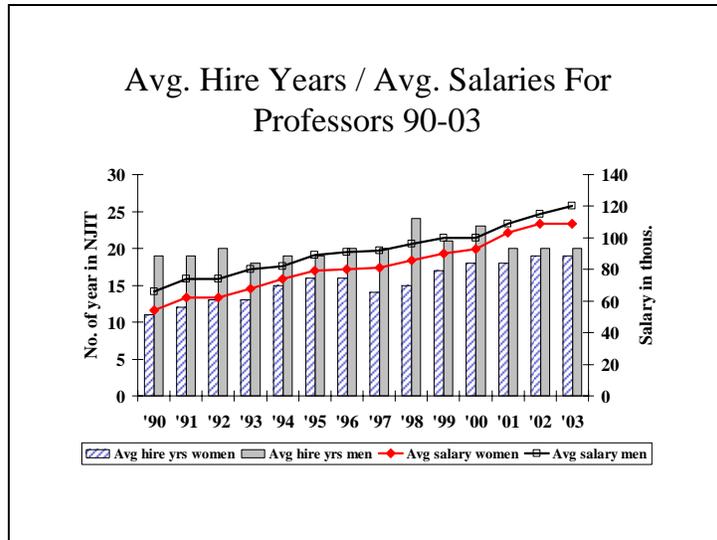
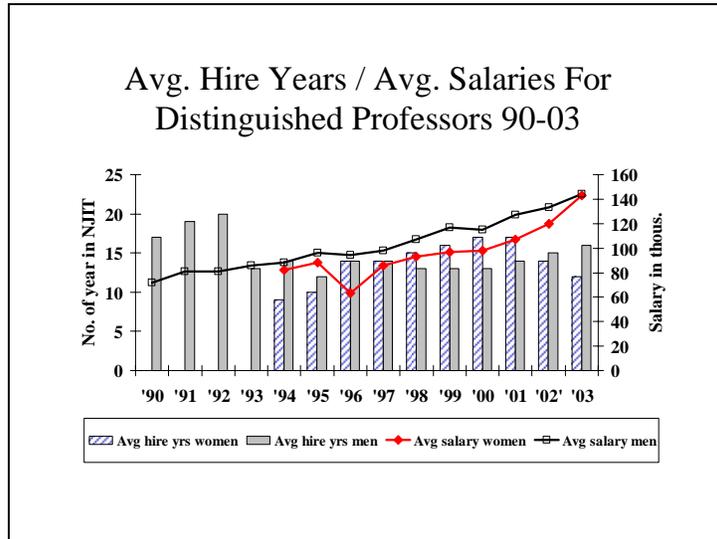
No women Lecturers during '90

Average Salaries For Visiting/Research Prof. 1990 - 2003

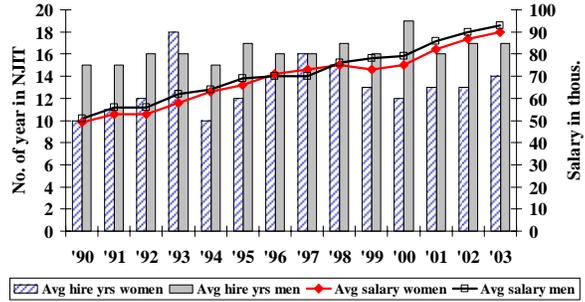


No women Visiting/Res. Profs. during '90 to '92 and '96

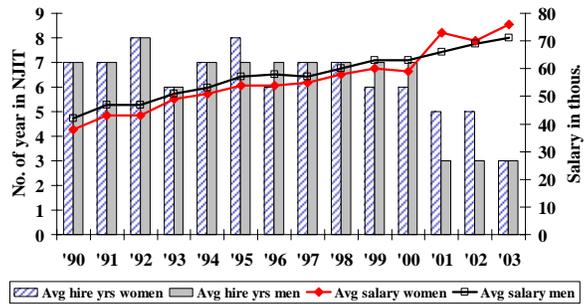
APPENDIX C



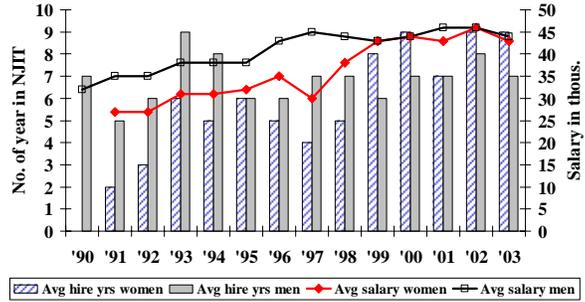
Avg. Hire Years / Avg. Salaries For Associate Professors 90-03



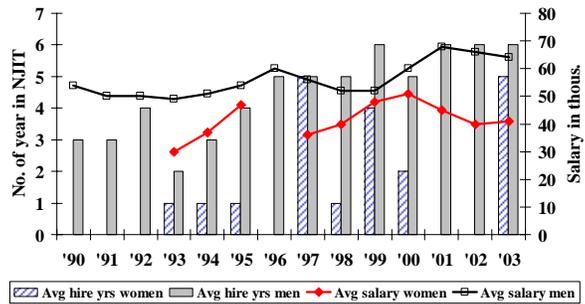
Avg. Hire Years / Avg. Salaries For Assistant Professors 90-03



Avg. Salaries / Avg. Hire Years For Lecturers 90-03

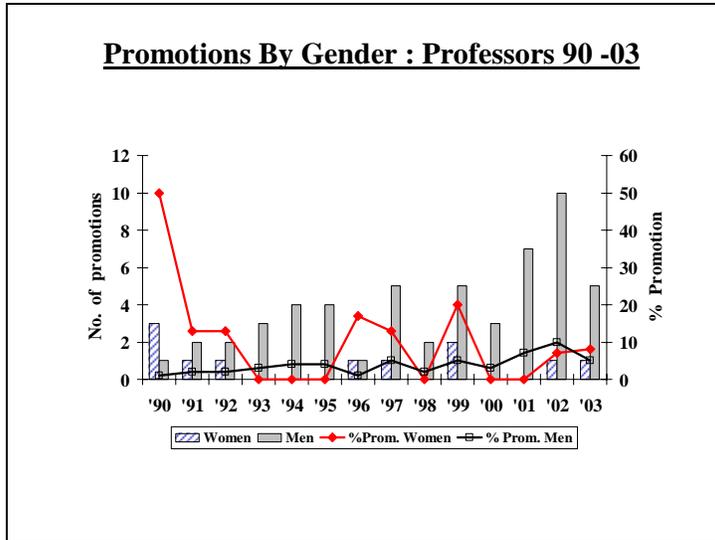
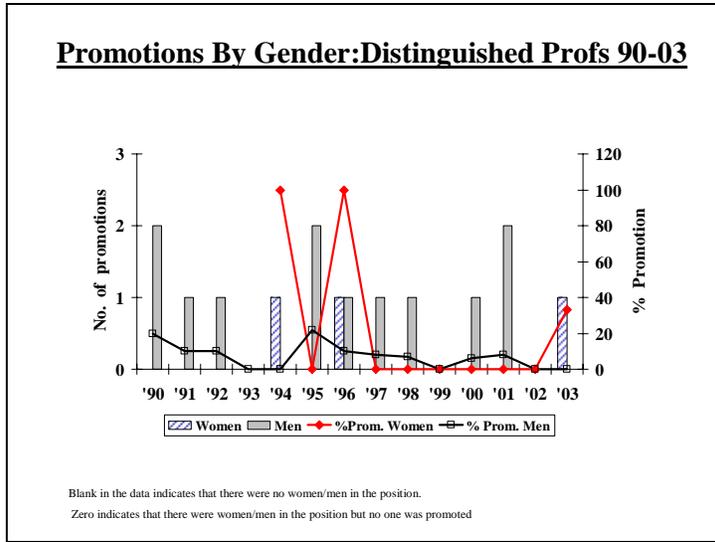


Avg. Salaries / Avg. Hire Years For Visiting/Research Profs. 90-03

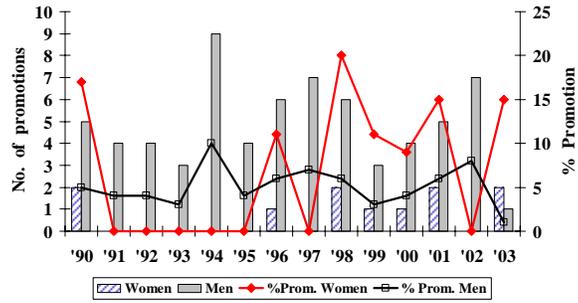


APPENDIX D

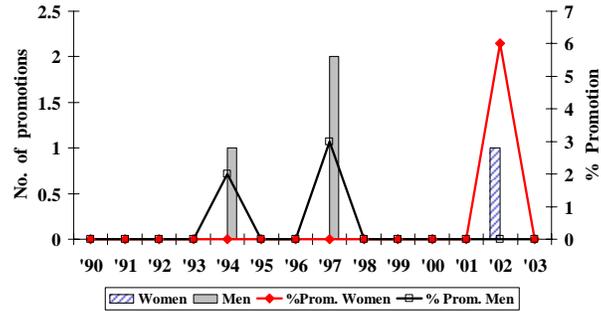
Faculty Promotions by Rank by Gender



Promotions By Gender : Associate Professors 90-03



Promotions By Gender:Assistant Professors 90-03



APPENDIX E

NJIT FACULTY GENDER DISTRIBUTIONS, BY SCHOOL/ DEPARTMENT

FACULTY BY GENDER BY SCHOOL Fall 2003

	Female		Male		Total
	#	%	#	%	
CCS	10	15.6%	54	84.4%	64
CSLA	24	17.4%	114	82.6%	138
NCE	15	10.2%	132	89.8%	147
SOA	6	21.4%	22	78.6%	28
SOM	6	22.2%	21	77.8%	27
Grand Total	61	15.1%	343	84.9%	404

**FACULTY BY GENDER
BY TENURE STATUS
Fall 2003**

Department	Females					Males					Grand Total
	Tenured (a)	On Track (b)	Tenured/ On Track (a + b)	Others (c)	Total (a)+(b)+(c)	Tenured (a)	On Track (b)	Tenured/ On Track (a + b)	Others (c)	Total (a)+(b)+(c)	
Bio Medical Engineering		2	2		2	6		6	3	9	11
Chemical Engineering		1	1		1	15	4	19	2	21	22
Chemistry & Environmental Science	3		3		3	6	1	7	2	9	12
Civil & Environmental Engineer	3	2	5	1	6	18		18	1	19	25
Computer Science		1	1		1	18	9	27	1	28	29
Electrical & Computer Engineer	1	2	3		3	26	6	32	3	35	38
Engineering Technology				1	1	6	2	8	4	12	13
Federated Biology	1		1		1				1	1	2
Federated History	1		1		1	3	1	4		4	5
Humanities and Social Sciences	5		5	6	11	7	3	10	14	24	35
Industrial & Manufacturing Eng	1		1		1	10	2	12		12	13
Information Systems	3	1	4		4	4	5	9	1	10	14
Mathematical Sciences	3	1	4	1	5	28	12	40	7	47	52
Mechanical Engineering	1		1		1	16	3	19	5	24	25
NJ School Of Architecture	4	1	5	1	6	11	2	13	9	22	28
Office Of The Dean-CCS				5	5				16	16	21
Physics				3	3	15	3	18	11	29	32
School Of Management	3	2	5	1	6	10	4	14	7	21	27
Total	29	13	42	19	61	199	57	256	87	343	404

**Units in Rank Order by Percentage of Tenure-Track
Women Faculty**

Federated Biology	100%
Humanities & Social Sciences	33%
Information Systems	31%
Chemistry & Environmental Science	30%
<i>School of Architecture</i>	28%
Biomedical Engineering	25%
Civil & Environmental Engineering	22%
<i>School of Management</i>	20%
Federated History	20%
Electrical & Computer Engineering	9%
Mathematical Sciences	9%
Industrial & Manufacturing Engineering	8%
Mechanical Engineering	5%
Chemical Engineering	5%
Computer Science	4%
Physics	0%
Engineering Technology	0%

Units in Rank Order by Percentage of Tenured Women Faculty

Federated Biology	100%
Humanities & Social Sciences	33%
Chemistry & Environmental Science	30%
Information Systems	25%
<i>School of Architecture</i>	22%
Federated History	20%
<i>School of Management</i>	16%
Civil & Environmental Engineering	13%
Industrial & Manufacturing Engineering	8%
Mathematical Sciences	7%
Mechanical Engineering	5%
Electrical & Computer Engineering	3%
Computer Science	0%
Biomedical Engineering	0%
Chemical Engineering	0%
Engineering Technology	0%
Physics	0%

APPENDIX F

Schedule of Interview Questions

1.0 EARLY CAREER---expectations, initial welcome, orientation, mentoring

- 1.1 Why did you decide to come to NJIT?
 - 1.1.1 What were your initial expectations?
- 1.2 How were you welcomed when you first came to NJIT?
- 1.3 What initial orientation and mentoring did you receive?
- 1.4 Were you told what you need to do to get tenure?
- 1.5 During your first three years, were special arrangements made to enhance your scholarly productivity? For example...
 - 1.5.1 A reduced teaching load?
 - 1.5.2 Graduate student assistants provided?
 - 1.5.3 Clerical support?
 - 1.5.4 Computer equipment supplied?
 - 1.5.5 Laboratory space and equipment supplied, if applicable?
 - 1.5.6 Research start-up funds?
 - 1.5.7 Your choice of courses or course(s) assigned focused on your research area of research?

1. PROMOTION AND TENURE

- a. When you first came up for tenure, did you have the enthusiastic support of your department chair, dean and P&T committee?
 - i. If not, how did this lack of support manifest itself?
- b. Did you face any obstacles to getting tenure? If so, what was the biggest obstacle you faced?
 - i. How were you able to overcome this obstacle?
- c. If you received tenure, what was the most important factor in ensuring that you were successful?
- d. If you received tenure, what were you told about what you needed to do in order to get your next promotion?
 - i. Describe the mentoring and support you received as you worked to achieve the next promotion.
 - ii. Did you face any obstacles? If so, what was the biggest obstacle you faced? How were you able to overcome this obstacle?
 - iii. If you were promoted, what was the most important factor in ensuring that you were successful?
- e. Looking back over your career, do you think that your gender affected your Promotion & Tenure trajectory?

2. ALLOCATION OF RESOURCES AND MATERIAL REWARDS

- a. Please describe how you went about obtaining the material resources you needed for your research when you first came to NJIT—e.g., lab space, lab equipment, computer hardware and software, grant funding, etc.

- i. Who helped you?
 - ii. What problems did you encounter?
- b. Today, how do you get the resources you need for your research?
- c. How do your office space, lab space, lab equipment, and computer hardware/software compare to the space and equipment of male professors at your level?
- d. Over the years, have you received merit increases commensurate with the quality of your work?
 - 1. If not, have you ever complained?
- e. Have you ever had difficulty getting the travel money you need?
- f. In general, has your gender ever affected the quantity or quality of material resources you have received? If so, explain the circumstances.

3. INFLUENCE

- a. Please tell us a little about your influence on important decisions in your department—for example...
 - Departmental curriculum decisions.
 - Selecting new faculty members .
 - Influencing the departmental research agenda and goals
- b. In general, has your gender ever affected the way your colleagues treat you in making these kinds of decisions? Have you ever felt a little isolated or out of the information loop?

4. OPPORTUNITIES FOR INTELLECTUAL GROWTH AND RECOGNITION

- a. Please describe the ways in which colleagues support and collaborate with each other in your department.
 - i. What is your role in this collaborative process?
 - ii. Please describe the work you do besides for teaching and research—e.g., committee service, formal student advising, informal student mentoring, etc.
 - iii. What rewards and recognition have you received for this work?
 - iv. How does the ‘service’ work you do compare to the work of other professors at your level?

5. BALANCING PROFESSIONAL AND PRIVATE LIFE

- a. On average, how many hours a week do you spend on ‘household chores’ (including cooking, shopping, cleaning, transportation, childcare)?
 - i. Does anyone else share these responsibilities with you?
 - ii. If so, how do you divide the work?
- b. Looking back over your years at NJIT, do you think that your private responsibilities have affected your career?
- c. Has your career has affected your private life?
- d. If you have children, do you think that your decision to raise a child (or children) has affected your career?
- e. Has your career affected your decision about whether or not to raise a child?

6. ORGANIZATIONAL CLIMATE

- a. Looking back over your career, do you think that the playing field has been level for you?
 - i. If not, where were the bumps and hills?
- b. As an NJIT faculty member, have you ever been harassed, discriminated against or denied something because of your race/ethnicity, gender, sexual orientation, physical appearance, religion, age, or other non-relevant characteristics?
 - i. If yes, please describe the incident(s).
- c. Have you ever witnessed anybody else at NJIT being harassed, discriminated against, or denied something for non-relevant characteristics?
 - i. If yes, please describe the incident(s).
- d. In general, how would you describe the climate today in your department?
 - i. What is the most important change your department could make to improve the climate?
- e. How would you describe the climate today at NJIT as a whole?
 - i. For women faculty?
 - ii. For women students?
- f. What is the most important change NJIT could make to improve the climate for women?

7. JOB SATISFACTION

- a. What satisfies you the most about your life at NJIT?
- b. What is your biggest source of dissatisfaction?
- c. In what ways, if any, has your actual career differed from your expectations when you first came to NJIT?
 - i. For better?
 - ii. For worse?
- d. If you had it to do over (knowing what you know now) would you still decide to become a faculty member at NJIT?
 - i. What would you like to be different the second time around?

8. ADVICE FOR CHANGE

- a. What is the most important thing the university should do to effectively recruit more women faculty?
- b. In your discipline, what is the best way to reach out to potential women faculty?
- c. What is the most important thing the university should do to effectively retain women faculty?

9. Is there any issue that we have not covered in this interview that you'd like to talk about?

APPENDIX G

NJIT Women Faculty: A Group Portrait of Achievement

In the present as in the past, NJIT women faculty are small in numbers but large in their contributions to the intellectual life of the university. From 1990 to 2003, women comprised, on average, only about 13% of NJIT faculty, but they won nearly 20% of the institute's Excellence in Teaching Awards. NJIT women have been equally adept at research, authoring dozens of nationally-recognized books and bringing in millions of dollars in grant funding. Increasingly, women teacher/researchers have taken on senior leadership responsibilities as well. For example:

- Department of Mechanical Engineering Chair, Dr. Nadine Aubry

The only woman in New Jersey to head a mechanical engineering department, Dr. Aubry also holds the Leslie and Mildred Jacobus Research Chair. She is director of NJIT's Keck Lab which uses Micro-Flow Control technology to identify particles. Eventually, her work may help researchers find new ways to kill deadly bacteria, viruses and cancer cells. Dr. Aubry is a member of the American Physical Society/Division of Fluid Dynamics and the US National Committee of Theoretical and Applied Mechanics. She has been honored with the Ralph R. Teetor Educational Award from the Society of Automotive Engineers. Dr. Aubry holds the rank of Distinguished Professor.

- Department of Information Systems Chair, Dr. Marilyn Tremaine

Dr. Tremaine is well known as an expert in the creation and evaluation of new human-computer interface technologies. These technologies enable researchers to develop simpler hardware and software systems for people with disabilities. Her current research includes two projects in multimodal interface design. The first one is developing a system for gaze and speech interaction with computers. The second project is the development of a mobile portable interface for visually impaired users. In addition, she has recently developed a virtual reality-based program to rehabilitate stroke victims. Dr. Tremaine holds the rank of full professor.

Many other NJIT women faculty members have received national recognition for their work as well, including:

- Distinguished Professor, Biological Sciences, Dr. Gene Miller Jonakait

A recognized scholar in neuroimmunology, Dr. Jonakait is a fellow of the American Association for the Advancement of Science (AAAS). Her research may eventually help doctors to more effectively treat such diseases such as

multiple sclerosis, Alzheimer's disease, and arthritis. Dr. Jonakait is the author of over 47 articles in scholarly journals and has received more than 25 grants from federal, regional, and private funders. Like many women faculty members at NJIT, she has a wide range of interests beyond her discipline, especially literature. Before she decided to go into neurobiology, she earned an AB in English literature from Wellesley College and a MA in English literature from the University of Chicago.

- Distinguished Professor, Information Systems, Dr. S. Roxanne Hiltz

An internationally recognized pioneer in the fields of computer-mediated communication and distance learning, Dr. Hiltz originated the concept of the Virtual Classroom® and is building an educational database for the web. She has been the principal investigator on a series of major grants from the National Science Foundation and the Sloan Foundation and other sources. Her award-winning book *The Network Nation* (co-authored with husband Murray Turoff) foresaw the coming of the electronic global village. She is also the author of *Learning Networks: A Field Guide to Teaching and Learning* from MIT Press; *The Virtual Classroom: Learning without Limits via Computer Networks*, and *Online Communities: a Case Study of the Office of the Future*. In 2000, she was named New Jersey's "Woman of the Millennium" by the Easter Seals Foundation for "creating solutions and changing lives, in the field of educational technology." Dr. Hiltz is Director of the PhD Program (and former Associate Chair) of the Department of Information Systems.

- Distinguished Professor, Chemistry, Dr. Carol Venanzi

Dr. Venanzi is internationally known for her research on the application of computational chemistry and molecular modeling to studies of biomimetic chemistry and chemoreception. Currently, she and her team are studying how and why certain molecules bind to DNA, including analyzing the molecular structure of a drug used to treat hypertension. She is the winner of NJIT's prestigious Harlan J. Perlis Research Award.

- School of Architecture professor Leslie Kanés Weisman.

Professor Weisman is a widely-recognized authority on gender and design. She has received the Creative Achievement Award from the Association of Collegiate Schools of Architecture; the Gustavus Myers Center Award for authoring *Discrimination by Design, a Feminist Critique of the Man-Made Environment*; the American Institute of Architects International Book Publishing Award for co-editing the book *Sex in Architecture*; and the California Women in Environmental Design (CWED) Award, among other honors. She has also won NJIT's Foundation Board of Overseers' Award for Public and Institute Service and NJIT's Excellence in Teaching Award.

NJIT junior women faculty members are engaged in cutting-edge research as well. For instance, Assistant Professor of Biomedical Engineering Dr. Treena Livingston Arinze is an expert in applied biomaterials and tissue engineering. Her work may eventually result in techniques for growing new bone and cartilage and regenerating lost nerve tissue from stem cells. Even non-tenure track women faculty members are engaged in important research. For example, Dr. Doris Fleischer, a Special Lecturer in the Humanities Department, has recently written a widely-acclaimed book entitled *The Disability Rights Movement: From Charity to Confrontation*. Dr. Fleischer's co-author is her sister, Dr. Frieda Zames, a retired NJIT math professor.

APPENDIX H

HISTORY OF THE CSWF AND ITS CHARGE

In February 1999, the Committee on Women's Issues, chaired by Professor Leslie Kanés Weisman, met with Provost William Van Buskirk to discuss ways of improving the environment for women at NJIT. The provost encouraged the committee's efforts to develop a strategic plan. In June 1999, the CWI presented the provost with a report entitled *Advancing the Status of Women at NJIT: Recommendations for the Strategic Planning Process*. The report recommended that the president and provost establish a Committee on the Status of Women Faculty (CSWF), to be composed of senior female and male faculty members and empowered to gather data on issues of equity, recruitment, and retention.

The provost and president agreed, and in May 2000, the provost issued a memo to the university community announcing the creation of the CSWF, listing its members, and summarizing its charge:

This committee will investigate thoroughly and objectively the status of women faculty at NJIT over the last decade (1990 to 2000). The committee's objective is to recommend to the Provost and President procedures to ensure the equitable treatment of current women faculty and strategies to increase the recruitment and retention of new women faculty (and, in so doing, to increase the recruitment and retention of new women students). The committee will meet with the Provost frequently and provide interim reports in an effort to immediately address any inequities identified during its research.

Over the course of one year, the committee's research will characterize the history and current status of NJIT women faculty. This task includes, but is not limited to, collecting and analyzing data regarding:

- infrastructure allocation,
- salaries and merit awards,
- teaching loads,
- grants and matches,
- retention,
- promotion and tenure.

In addition, qualitative indicators will be considered, such as the degree of collegiate interaction.

Based on these data, the committee in its final report will recommend a set of best practices designed to promote and sustain a diverse university community.

The committee held its first meeting on September 2000 and elected Nadine Aubry and Nancy Steffen-Fluhr as co-chairs.

Methodology

Approach

Early in its deliberations, the committee decided to take a two-pronged qualitative/quantitative investigative approach, combining aggregate statistical data with in-depth interviews of individual women faculty. While understanding the perils of generalizing from anecdotal evidence, the committee believed it was important to listen to women's voices and credit them with expertise in their own lives. Even when they are skewed, perceptions of reality have power to shape reality. The committee wanted to understand how women faculty from various departments and ranks perceived the university climate in which they lived.

In taking this approach, the CSWF agreed with Seymour and Hewitt who argue in their 1997 book *Talking About Leaving: Why Undergraduates Leave the Sciences* that,

In complex human affairs, noticing the patterns in independent accounts of expert witnesses plays the same role as laboratory observations in the formation of hypotheses (396).

The committee's approach also anticipated the April 2002 recommendation of the Middle States evaluators that the university needs to do more qualitative research.

Gathering Statistical Data

On October 28, 2000, CSWF chairs Aubry and Steffen-Fluhr sent a memo to Robert Avery, then head of Legal Affairs, requesting that he authorize Human Resources to release the following data:

1. Demographic data in the following format, if possible:
Rank # Female % Female # Male % Male

2. Aggregate faculty salaries by gender, by rank (Special Lecturers, Assistant Professors, Associate Professors, Professors and Distinguished Professors) and by department in the following format, if possible:
Rank Female Salary Male Salary Difference %difference

3. Salary and retention data
 - Names of women faculty members by department and by rank
 - their date of hire
 - their date of departure (if any)
 - their salary history, including merit awards (we can be more specific when we talk with one of your staff members, if needed).

The committee spent most of its first year of operation in an unsuccessful effort to get a response to this and subsequent requests for data. Eventually, with the help of the provost, a cooperative link was established between the CSWF and the Office of

Institutional Research and Planning, then headed by Dr. Martha Zola. By the end of 2001, the committee had received much of the statistical information it had requested, including

- Number of Faculty by Gender by Rank
- Average Salaries for Faculty by Gender by Rank
- Sabbatical Leaves Granted by Gender by Rank
- Grants by Gender
- Average Faculty Load Hours by Gender by Rank
- Average Number of Courses by Gender by Rank
- Merits Increases by Gender
- Promotions by Gender

IRP made every effort to honor the committee's requests, with two exceptions: 1) the data starting point was 1990 rather than 1980; and 2) initially, none of the data was broken down by department. The committee received explanations for both decisions: 1) The pre-1990 data were neither readily accessible nor "clean"; and 2) Because there were three NJIT departments that had only one woman faculty member each, to disclose departmental data would be to disclose individual data (e.g. salary). Although the CSWF believed that, by law, all data about NJIT as a public university are public property, including faculty salaries, the committee chose not to press the point. In consequence, however, it was initially much more difficult for the CSWF to accomplish one of its important tasks—i.e., to establish whether equity/inequity is uniformly distributed or, as we suspected, clumped in certain departments more than others. The absence of pre-1990 data also made it impossible for the CSWF to systematically investigate the perception held by a number of senior women faculty that they were hired at a significantly lower starting salary than their male peers and have never been able to close the gap. [See "Strategy #6" in the Implementation and Evaluation section below for further discussion.]

After the inauguration of Dr. Robert Altenkirch as NJIT's seventh president in July of 2002, however, faculty gender data became much more accessible than in the past. The Office of Institutional Research, now headed by Dr. Eugene Deess, has been exceptionally cooperative in helping the CSWF obtain additional data. Thanks to Dr. Deess and his assistant, Kamal Joshi, the statistical data presented in subsequent sections of this revised report are broken out by departments, making it possible for us now to make benchmark comparisons by discipline.

Conducting Interviews

While it was collecting statistical data, the committee also created a detailed schedule of interview questions for use in the qualitative phase of our study. [See Appendix I for the complete interview schedule.] The questions covered nine basic areas:

1. Early Career---expectations, initial welcome, orientation, mentoring
2. Promotion and Tenure
3. Allocation of Resources and Material Rewards
4. Influence
5. Opportunities for Intellectual Growth and Recognition

6. Balancing Professional and Private Life
7. Organizational Climate
8. Job Satisfaction
9. Advice for Change

The committee identified a group of woman faculty it wished to interview. This group included representatives of all schools/colleges and all faculty ranks. The only departments not included were those that have no women faculty.

The committee would have liked to interview a representative group of non-tenure track women faculty as well. Although women constitute only 14% of tenure track faculty, they make up nearly 21% of NJIT's lowest-paid, lowest-status teachers (lecturers and special lecturers); and it is important understand more about how these women experience the university. However, the CSWF simply did not have the person-hour resources required to conduct this additional study.

For much the same reason, the committee also decided not to develop a control group of male faculty interview subjects. Although the CSWF would have liked to have been able to compare institutional climate perceptions across gender, it decided to focus its very limited resources solely on elucidating the experiences of its target group, female faculty. It may well be that male faculty experience many of the same problems and frustrations that the women faculty report. (See below.) However, since the committee's primary charge was to recommend ways to increase *female* recruitment and retention, whether or not there is parity in angst seemed beside the point. It is the angst that the women say that they experience that the committee was concerned with understanding and mitigating.

18 of the 20 women that the committee had identified ultimately agreed to be interviewed. (One woman declined; another never responded.) All were full-time tenure-track faculty members at the time of interview, with the exception of one woman who had left NJIT in 1997 for a tenure-track appointment at another four-year New Jersey university. (During the course of their interviews two women revealed that they had decided to leave the university and have subsequently done so.) The interviews were conducted by members of the CSWF, largely in a face-to-face mode.

The very strength of the CSWF's composition—that most of its members were chairs and senior researchers—proved to be its principal limitation: very few people had very much time to spare for the required work. In addition, the committee lost four of its 11 members during AY2001-2002, one of them permanently. Nevertheless, by spring 2002, all of the planned interviews had been completed, coded, and correlated. The summary and analysis of those interviews constitutes the singular core the committee's study and is the principal (though not sole) source upon which we have based our recommendations.

Additional Activities

In addition to analyzing statistical data collected from IRP and to conducting interviews with women faculty, the CSWF collaborated with IRP and NJIT's Middle States Self-Study Committee in developing questions for use in a faculty survey instrument. Two

sets of these questions—both concerning climate perception—were included in the final instrument, which was mailed in April 2001.

In the fall of 2000, the CSWF also established a liaison with Professor Robert Lynch, then chair of the faculty council, who (with assistance from Paula Zigman of the provost's office) was in the process of conducting a promotion and tenure rate study for the 1988-95 faculty cohort.

The results of both the Middle States faculty survey and the faculty council P&T study are summarized and analyzed in later sections of this report, along with data from a 2003 faculty retention study done by IRP in support of an NJIT grant application to the Clare Boothe Luce Foundation.

APPENDIX I

15-Year Faculty Retention & Promotion Rates for Chemistry, Computer Science, Information Systems/Information Technology, Mathematics, Physics:

	1991-1992	2001-2002
# of Male Faculty	55	99
# of Female Faculty	7	13

	# Hired from 1987-2002	# Retained as of 2002	# Tenured	Tenure Rate
# of Tenure-Track Male Faculty	113	70	35	31%
# of Tenure-Track Female Faculty	16	9	4	25%

Current Rank of Faculty Hired & Retained During Period 1987-2002

	Assistant Professor	Associate Professor	Full/ Distinguished Professor
Male Faculty	28	22	20
Female Faculty	4	2	3

15-Year Faculty Tenure Rates for Biomedical Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Engineering Science, Engineering Technology, Environmental Engineering, Geoscience Engineering, Industrial & Manufacturing Engineering, Mechanical Engineering:

	1991-1992	2001-2002
# of Male Faculty	103	115
# of Female Faculty	9	12

	# Hired from 1987-2002	# Retained as of 2002	# Tenured	Tenure Rate
# of Tenure-Track Male Faculty	79	57	39	49%
# of Tenure-Track Female Faculty	15	11	5	33%

Current Rank of Faculty Hired & Retained During Period 1987-2002

	Assistant Professor	Associate Professor	Full/ Distinguished Professor
Male Faculty	18	18	23
Female Faculty	5	4	1

APPENDIX J

2001 Faculty Council P&T Rate Study 1988-95 Faculty Cohort

Dept/ School	% Retained	N Retained
SOA	33.33%	1 of 3
CSLA	16.6%	11 of 66
SOM	11.11%	2 of 18
NCE	6.25%	3 of 48
Humanities	33.33%	5 of 15
Math	15.77%	3 of 19
CIS	10%	3 of 30
Physics	0%	0 of 2
IME	16.66%	1 of 6
ME	12.5%	1 of 8
ET	9.09%	1 of 11
ChemE/Ch	0%	0 of 5
CEE	0%	0 of 3
ECE	0%	0 of 15

APPENDIX K

Structure of the Faculty Development Program

- The FDP is administered by the provost in concert with the deans.
- Each mentoring team consists of three experienced faculty members and/or senior administrators.
- Mentors are selected by the provost from recommendations by the deans.
- Two of the three mentors may be from the same school/college.
- Faculty mentors are compensated according to a formula developed by the provost, in concert with the deans and department chairs. Compensation might include teaching release time or a monetary equivalent or release from other service obligations, etc., depending on the needs of the individual and the department involved.
- Faculty mentors are trained in an annual all-day interactive workshop run by the provost's office. Sessions include role-playing practice and interviews with recently-hired faculty.
- Each team is assigned up to six new faculty members to mentor.
- Assignments are made by the provost in concert with the deans.
- In addition to formally scheduled bimonthly meetings throughout the spring semester of the first year, mentors will look for opportunities to meet informally with their mentees and to facilitate collegial networking between mentees and other faculty members, including colleagues within the mentee's own department.
- Department chairs recognize the additional time commitment that the FDP makes on new faculty members and adjust departmental demands on their time to compensate, according to a formula developed in concert with the provost and the deans. Such adjustments might include teaching release time or release from other departmental service obligations, etc., depending on the needs of the individual and the department involved.

APPENDIX L

Assessment of Faculty Development Program

1. The provost will appoint an independent committee to oversee the administration and evaluation of the FDP. This committee will include representatives from each school/college and the CSWF, plus other appropriate administrative resource persons.
2. At the close of the annual Mentors Training Workshop, faculty will be asked to complete a survey instrument evaluating the usefulness of the workshop. This instrument will be administered again at the end of the spring semester.
3. At the close of each formally-scheduled orientation and FDP session, new hires will be asked to complete a brief survey instrument evaluating the usefulness of the session.
4. The FDP meeting schedule will include feed-back sessions once a semester with the provost during which new faculty can make suggestions about how the program can best serve their needs.
5. At the end of their first hire year, new faculty will be asked to complete a questionnaire designed to elicit their positive and negative experiences in the FDP. A small subset of the newly hired faculty cohort will be interviewed by the members of the FDP evaluation committee.
6. The provost's office, in concert with the deans, department chairs, and the FDP evaluation committee, will track the careers of each entering new faculty cohort over a seven-year period. At the end of the first seven-year period, the FDP evaluation committee will report the results of this study and make recommendations about modifications that may need to be made to the FDP.