Report of the Task Force on the Status of Women Faculty in the Natural Sciences and Engineering at Princeton

Submitted to President Shirley Tilghman on 5/22/03

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Executive Summary

In the fall of 2001, Princeton President Shirley Tilghman appointed a Task Force to investigate the status of women faculty in the Natural Sciences and Engineering at Princeton. The Task Force grew out of a meeting at MIT in January of that year, at which the Presidents and Chancellors of nine research universities[1] discussed issues of gender equity in Science and Engineering.[2] At the conclusion of the meeting, the Presidents and Chancellors issued a statement that said, in part, "Institutions of higher education have an obligation, both for themselves and for the nation, to fully develop and utilize all the creative talent available. We recognize that barriers still exist to the full participation of women in Science and Engineering." They pledged to work toward the full inclusion of women in these disciplines.

President Tilghman charged the Task Force with developing a long-term strategy to attract and retain highly talented women faculty in the Natural Sciences and Engineering departments at Princeton. Over the course of the next several months, the Task Force collected data from: the University's personnel and registrar's databases; an online survey of current and former faculty on perceptions of their Princeton experiences; information supplied by departments and department chairs; and conversations with individual faculty.[3]

This report identifies a set of issues pertaining to the lives of women faculty in the Natural Sciences and Engineering, describes our analyses of the data relevant to those issues, and proposes recommendations designed to move Princeton toward greater inclusion of women.

Representation and Hiring of Women Faculty in the Natural Sciences and Engineering

In the last 10 years, Princeton has made progress in attracting and retaining more women faculty in the Natural Sciences and Engineering. In 1992, 8.4% of the faculty in the Natural Sciences and Engineering were women; by 2002, the percentage had increased to 13.9%. During this same period, the percentage of tenured women doubled, from 6.0% to 12.7%. In 1992, eight of the 13 Natural Science and Engineering departments had no tenured women (and four departments had no women faculty at all). In 2002, 13 of the now 14 Natural Science and Engineering departments had at least one tenured woman and only the recently formed Department of Operations Research and Financial Engineering had no women faculty.

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[1] California Institute of Technology, Harvard University, Massachusetts Institute of Technology, Princeton University, Stanford University, University of California at Berkeley, University of Michigan, University of Pennsylvania, Yale University.

[2] Princeton's delegation was led by then President Harold Shapiro and included Dean of the Faculty Joseph Taylor, then Professor of Molecular Biology Shirley Tilghman, Professor of Electrical Engineering Ruby Lee, and Professor of Psychology Joan Girgus.

[3] We thank the Survey Research Center for donating their services for the design and implementation of the surveys, the Dean of the Faculty's Office for providing the personnel data used in the analyses, and the department managers who provided information on resource allocations within their departments.

This overall progress has been unevenly reflected in the individual Natural Science and Engineering departments. Nine of the departments had more women faculty in 2002 than they had 10 years earlier. Several departments have made impressive gains in the percentage of women faculty, including Ecology and Evolutionary Biology (from 0% to 29%), Chemical Engineering (from 0% to 17%), and Psychology (from 29% to 36%). Four of the departments, however, had about the same percentage of women faculty in 2002 as they had 10 years earlier, and the percentage of women in Molecular Biology declined (from 30% to 19%).

Furthermore, the overall percentages of women continue to be quite low, as do the percentages in each department. Only in Ecology and Evolutionary Biology and in Psychology were the faculty in 2002 more than 20% female. An analysis of women receiving Ph.D.s in fields taught at Princeton showed that these two departments have utilized the large existing pool of women Ph.D.s in their disciplines reasonably well. Seven other departments whose disciplines had relatively small numbers of female graduate students in 1991-96 had women faculty in 2002 roughly in proportion to their representation among Ph.D.s in those years; long-term solutions to the low representation of female faculty in these departments will require increases in the number of women receiving degrees in these disciplines. (Two of these departments have, in fact, had dramatic increases in the percentage of women graduate students in recent years.) However, the analysis also shows that four departments have substantially underutilized the available talent in their hiring over the last decade. (One department, Operations Research and Financial Engineering, which has no women faculty, is recently formed and does not have a reference Ph.D. group for comparison.)

Tenure, Promotion, and Retention

The analyses of tenure rates did not reveal statistically significant differences[4] between men and women. Tenure rates for assistant professors hired in Natural Science and Engineering departments between 1980 and 1994 indicate that women were granted tenure at a somewhat higher rate than men (37% versus 29%). However, this difference is driven by the fact that tenure rates are very low in Mathematics and Physics, which have large numbers of assistant professors but small numbers of women. When Mathematics and Physics are removed from the analysis, the tenure rates for men and women in the other departments are essentially equal. The analysis of tenure rates in Mathematics and Physics also shows no difference between men and women, but in these departments the number of women is very small and statistical tests have little power.

Analysis of time to promotion for assistant professors showed that women have slightly longer times to tenure than men but the difference is not statistically significant. The time between promotion to associate professor and promotion to full professor is longer for women than for men (by 1.4 years on average). This difference is statistically significant at the 8.8% level.

Women who are full professors in the Natural Sciences and Engineering leave the University at rates higher than their male peers (2.2% versus 1.4% per year), although the number of female

[4] Unless otherwise indicated, throughout the report, differences are said to be significant if the p-value on the associated statistical test is 5% or less.

faculty involved is too small for statistical analysis. According to the current and former faculty surveys, after corrections for rank and number of years at Princeton, women are 9.8 percentage points less likely than men to receive an outside offer, a difference that is not statistically significant. Men and women are equally likely to experience a retention effort by the University upon receipt of an outside offer.

University and Departmental Leadership

Although the gender makeup of the senior administration positions that impact the Natural Sciences and Engineering has changed dramatically over the last two years (currently the President, the Provost, the Dean of the College, and the Dean of Engineering and Applied Science are women), the leadership in Natural Science and Engineering departments continues to be largely male. Only two departments have had women chairs (Geosciences from 1988-91 and Psychology from 1992-present).

This picture was also reflected in the survey data. Men and women faculty reported similar amounts of service on University-level committees or in University-level leadership positions. But the story was different at the departmental level. Tenured men reported significantly more frequently than tenured women that they have served on an important departmental committee or in a department leadership position (91% versus 67%). Senior women also hold a smaller percentage of endowed chairs than their presence in the faculty would warrant. In 2002, women comprised 12.7% of the tenured faculty but held only 5.7% of the endowed chairs.

Compensation and Resource Allocation

Extensive analyses by an outside consultant of the salary data for the last 11 years showed no significant differences between the salaries of women and men, once years since Ph.D., departmental affiliation, and rank are taken into account. The fact that women have slightly lower salaries than men (a mean difference of -3.5% over the 11-year period) when rank is not included in the analyses is probably explained, in large part, by the fact that women have longer times to promotion to both associate and full professor.

The allocation of resources and workloads can have a major impact on the success of faculty. In the survey of current faculty, more men than women thought they had “better than average” overall resources (15.7% versus 5.1%) such as space and start-up funding, while more women than men thought they had “worse than average” resources (25.6% versus 6.6%). In contrast, women and men perceived their teaching, advising, and department committee workloads to be equal.

Both the Task Force and department managers devoted considerable time and effort to gathering data about the allocation of resources and workloads. In the end, it was clear to the Task Force that systematic information about the allocation of departmental resources and workloads was not readily available. Only five departments supplied fairly complete data, and these data were sufficiently complex and individualistic to suggest that analyses are best done on a department-by-department basis. In the five departments examined, we found no statistical support for gender differences in startup space, current space, or startup financial packages.

Climate

The survey of current and former faculty also collected information on elements of a campus climate that might be especially important in attracting and retaining women faculty. These included: mentoring, tenure extension and workload relief policies, availability of daycare, and the professional environment.

Survey respondents – male and female, former and current faculty – overwhelmingly rated mentoring as valuable. Approximately 50% of currently tenured faculty in the Natural Sciences and Engineering (both men and women) reported having been mentored as assistant professors. However, among both currently untenured faculty and former faculty who were untenured when they left Princeton, the percentages were quite different. In these groups, approximately 64% of the men but only 33% of the women reported receiving mentoring.

At Princeton, both men and women assistant professors are allowed to request up to two one-year extensions of their time as an assistant professor following the birth or adoption of a child. During the last five years, six men and one woman in the Natural Sciences and Engineering requested a tenure extension. Thus, during this time when women were 23% of the assistant professors, they requested and received 14% of the tenure extensions. There appears to be considerable ambivalence about the tenure extension policy as currently implemented. In the survey, women faculty who had younger children while at Princeton were slightly more likely than similarly situated men to view tenure extensions as beneficial (56% versus 47%), but were much more likely than their male colleagues to view such extensions as detrimental (27.8% versus 3.8%).

Since 1998, any faculty member who is the primary caregiver of a newborn can request a semester of workload relief from classroom teaching and administrative duties. During the last four years, six men and seven women in the Natural Sciences and Engineering requested workload relief (about half were assistant professors and half were associate professors). During this time, when women were 23% of the assistant and associate professors, they received 53% of the workload reliefs. None of the assistant professors who took workload relief between 1997 and 2002 also requested tenure extensions.

The survey also asked current and former faculty whether they had experienced problems with daycare: 37% of men and 55% of women who had pre-school-age children while at Princeton reported that they had “somewhat,” “moderate,” or “substantial” problems. The last question on the survey asked respondents what changes at Princeton would make a significant impact on the climate for women. While hiring more women was the most frequent suggestion, improving daycare options was the second most frequent. About 45% of men and women with young children while at Princeton reported having some conflicts between the schedule for faculty meetings or seminars and childcare hours, with women more likely than men to report such conflicts.

In the survey, approximately 24% of the women faculty in the Natural Sciences and Engineering reported that their colleagues “occasionally” or “frequently” engage in unprofessional behavior

on gender-related matters; a similar percentage reported that their colleagues "occasionally" or "frequently" exclude women. These rates are much higher than those reported by men (5.1% and 2.0% as compared to 24% and 24%). Women faculty rated their departments as being less collegial than men did: 29% of women and 52% of men rated the collegiality in their departments as "very good." Women faculty also are less satisfied with their jobs than men are: 39% of women versus 63% of men reported being "very satisfied," while 7.3% of women and 0% of men reported being "very dissatisfied." The gender difference in job satisfaction is significantly greater among tenured than among untenured faculty members, which mirrors findings at other universities.

Recommendations

The following are the major recommendations from the Task Force. Members believe that implementation of these recommendations, along with a number of smaller, but still important, additional recommendations listed in the report, will substantially improve the situation for women faculty – indeed for all faculty – in the Natural Sciences and Engineering over the coming decade. In order to help implement these recommendations, the Task Force recommends that a senior member of the Natural Science and Engineering faculty be appointed as a Special Assistant to the Dean of the Faculty.

Increase the representation of women in the Natural Sciences and Engineering. Although there has been some progress in the representation of women in the Natural Sciences and Engineering, this progress has been slow and unevenly distributed across departments. The Task Force recommends greater recruitment and hiring at both junior and senior levels and more attention devoted to the retention of tenured women. Specific recommendations include:

- establishing a $10 million Women in Science and Engineering Fund (WSEF) to be used to promote the recruitment, hiring, and retention of women faculty in these disciplines;
- facilitating flexible hiring practices by continuing and expanding the faculty lines available under the "Target of Opportunity" program[5] so that opportunities to hire women faculty do not have to be forgone for the lack of faculty lines and by taking an active role in helping spouses find suitable positions;
- monitoring recruiting and hiring practices by asking the Dean of the Faculty's office to work closely with departments throughout the search and appointment process; and
- maintaining historical records on all faculty searches, both those that are and are not successful, that include the gender of applicants, finalists, offers, and acceptances.

Make Princeton a more family-friendly environment. Making the University a more family-friendly environment will aid in recruiting women faculty as well as in helping them succeed once they are here. The Task Force recommends addressing several issues, including:

- establishing affordable childcare;
- providing an automatic tenure extension for new parents and studying whether Princeton's time to tenure should be increased;

[5] The University currently has a "Target of Opportunity" program that provides new faculty lines to make it possible to hire exceptional new faculty members in departments that do not have lines available.

- giving priority in housing and parking to members of the faculty, research staff, technical staff, and postdoctoral fellows, who are the primary care givers of young children; and
- working to counter the notion that faculty who are parents cannot succeed in the Natural Sciences and Engineering.

Make departmental and University policies and practices more clear and equitable. Along most dimensions, Princeton has policies and practices that are equitable to women. However, the Task Force identified several areas where the University can make improvements, including:

- providing professional mentoring for all junior faculty;
- working toward greater representation of women in positions of leadership within departments and among those holding endowed chairs;
- developing transparent, well-publicized policies to promote understanding among all faculty on issues such as tenure and promotion, allocation of resources, nominations for external and internal awards, assignment of teaching and other departmental duties;
- publicizing, observing, and enforcing Princeton's already strong policies regarding abuse of power and sexual misconduct, even when doing so might result in adverse publicity for the University;
- working toward eliminating the small gender gap in faculty salaries; and
- developing a streamlined process through which departments can maintain data on resources such as research and office space, laboratory personnel, research expenditures, departmental and University leadership roles, and teaching loads and other work assignments.