

# **Report on Women in the Sciences at Harvard**

## **Part I: Junior Faculty and Graduate Students**

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FAS Standing Committee on the Status of Women

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# **1 Introduction**

Harvard University must live with its times. Once it was reasonable to count Harvard's institutional and intellectual capital sufficient to attract the most gifted scholars to the faculty. It was assumed that those who received the call to teach here would be male and would have wives to manage their household affairs. Now the University can no longer expect to recruit faculty simply through a search process that identifies the most promising candidates. It faces stiff competition in many fields from other leading research universities and, in the sciences, from industrial research laboratories. Furthermore, there is no doubt that faculty who have another person to manage the affairs of daily life — and are therefore free to concentrate exclusively on research, teaching, and academic affairs — can devote more time to research. However, fewer and fewer faculty come accompanied by a full-time helpmate. Almost no women do.

Harvard is justly proud of the achievements of its faculty, but has yet to adapt its appointment processes and departmental structure to these changes. As a consequence, we have found that the University is having serious problems attracting women in the sciences, from the graduate level to the senior faculty. If Harvard is to be successful in senior appointments, it must attract and retain the best young women as junior faculty members, and must persuade its women graduate students that an academic research career in the sciences not only is within their grasp, but is an exciting and fulfilling possibility. At present, it is experiencing serious difficulties in both these areas.

The sciences present special problems for women at all levels. First, with few exceptions, women at all levels form a small minority in their peer groups; the percentages drop as they advance through their careers. The resulting isolation impedes research, increases stress, and may lead to abandonment of an academic scientific career. Second, a successful scientific career is usually forged between the ages of 25 and 40, which corresponds to the period of childrearing. Third, experimental work may make extraordinary demands on availability in time or location. Finally, women students often find themselves actively dissuaded from doing work in certain areas of science. In some disciplines women are discouraged by faculty and student colleagues from pursuing mathematical or theoretical investigations; in other fields women are discouraged from engaging in experimental work.

The sciences also present special problems for the University which must compete with the industrial sector as well as with other leading research universities for the most talented researchers and for a relatively small pool of senior women. The perception of many students to whom we spoke was that industry had adapted better to modern lifestyles, with parental leave more easily arranged and child care more readily available. University salaries, especially at the junior faculty level, are often significantly lower, exacerbating parental leave, child care, and housing problems. The major attraction of academia remains the reputation for freedom of choice in research, but this is often outweighed by other factors.

It is essential to increase the number of women in science departments at Harvard at all levels. In recruiting graduate students, departments must recognize that unless women form a significant portion of the graduate student population, their development is impeded. Junior faculty women

also fare better when not alone in their departments. The junior faculty is certainly a critical area of growth for the University, as the number of senior women scientists currently available is small. Furthermore, a senior scientist contemplating a move typically must uproot both her or his research group and family; because neither transplanting is easy, raiding other universities remains an unlikely way to increase the number of senior women scientists at Harvard.

**The Faculty of Arts and Sciences must make a commitment to the recruitment, retention, and professional development of women graduate students and junior faculty in the sciences, or the pool of women for senior science faculty positions will not be significantly greater in the twenty-first century than it is now.**

The next two sections of the report summarize our findings from meetings during the spring semester 1990 with graduate students and junior faculty in the science departments. Sections 4 through 6 describe factors that affect both graduate students and junior faculty: critical mass, sexual harassment, and issues related to family responsibilities and academic scientific careers. Our major recommendations are presented in the final section of the report.

## **2 Background on Graduate Students**

Women graduate students in each science department were invited to meet as a group with two members of the Committee. Before the meeting, they received a list of questions the Committee believes are germane to academic progress (see Appendix A.1) and were encouraged to bring to the Committee's attention concerns we neglected. Forty-five women who are currently graduate students in twelve science departments attended these meetings. Several women who were unable to attend wrote or called with comments. The percentage of students from a department who responded in some way varied widely. Because there are so few women graduate students in all departments except the biological sciences, this section of the report will not identify specific departments so that the students' confidentiality may be preserved.

Appendix B provides information classified by gender for each science department on the number of Ph.D. students in the department, years to obtain the Ph.D., and attrition rates; it also includes yields on men and women students admitted to Ph.D. programs in the sciences. As the tables in this appendix demonstrate, in many science departments women constitute a small minority. Not only do fewer women apply, but also the yield for women offered admission to many graduate programs in the sciences is lower than that for men. In addition, a higher percentage of women leave without completing their doctorates. Although most of our recommendations concerning graduate students are directed at improving the environment for the women enrolled and thus decreasing attrition, others aim to increase the number of women entering the program.

Several common problems and themes emerged from our meetings with graduate students. They fall into three general areas that give structure to this composite report: the environment of the department, graduate education for women in science, and the outlook for women's ca-

reers in science. Although differences among disciplines and departments are striking, many of the challenges women graduate students in the sciences encounter are common to all the science departments. The small number of women scientists working at each stage of a scientific career decreases sharply as women ascend the academic ladder. The imbalance that these small numbers produce in most science departments has many consequences for graduate education and for the retention of women in science departments.

## 2.1 Department Environment

*What happens to women graduate students reflects the intellectual and social life of a department as a whole. In departments where the environment inhibits graduate training, research and collegiality for both women and men, it is particularly damaging for the professional and personal outlook of women.*

As might be expected, we found great variation in the attention given to the introduction and integration of graduate students into departments. The size of the department, the organization of laboratories and the involvement of faculty in undergraduate teaching are among the factors that influence graduate student experience, satisfaction and self-confidence. Faculty participation in the department often reflects the state of general morale. Departmental infrastructure varies greatly as do the kinds of activities provided for the integration of new graduate students. In those departments where academic planning consciously shapes intellectual and collegial relations women students have a more positive experience.

The departments with the best environments employ a variety of activities to integrate graduate students into departments. One department uses an intensive introductory seminar and rotations through laboratories to acquaint new students with the department and the research of faculty and advanced students. Another department sponsors a departmental retreat at which faculty and students present and discuss their research. In another department, the graduate student organization prepares a handbook for entering students, introducing new members to the department's academic programs, the faculty, staff and students, and University resources. Women graduate students in these departments reported that their participation in collegial functions continues throughout the year, and that the faculty shares important information and responsibilities with students. In another department, an informal "buddy" system has been initiated by students to serve new students in the absence of department orientation programs.

In contrast, there are both large and small departments which provide no activities to aid in the integration and professional development of students. In these departments, a student's development is even more heavily dependent than usual on the adviser and problems of isolation may be severe. The diversity of training programs in some disciplines may intensify a student's isolation especially in the absence of clear requirements. Students believe that advisors are randomly assigned and feedback is haphazard from the time they enter the department to their postdoctoral appointments. There is little collegiality among graduate students or between students and faculty.

In one department, for example, the meeting with our committee served as the first introduction of students to each other. Students conclude that the faculty neither knows nor cares about their intellectual needs or their academic and professional development.

In many departments we found that women students' self-esteem, and especially their self-assurance in their scientific capabilities, decreased as they advanced through graduate school. This decrease in self-esteem, frequently accompanied by increased passivity, was exacerbated by isolation and often led to even greater isolation and a sense that there was nothing they could do to improve their situation.

**It is thus crucial that departments, and GSAS, take steps to integrate graduate students into departments and to provide activities aimed at overcoming the isolation women experience as a small minority in science departments.**

Students report that in many graduate seminars and laboratory settings competitiveness overwhelms collegiality. This competitiveness often corrodes the quality of graduate education for both women and men, but the effect on women is more severe. Women graduate students perceive that men, in an effort to overcome a lack of confidence in their own work, make points at the expense of their female colleagues. Male graduate students experiencing uncertainties were described as resorting to "macho" boasting. A common result is that women's self-esteem decreases and they become more likely to accept allegations that they are "not as good" as men as a consequence of immutable gender-differences, even though these allegations have no rational basis.

**The responsibility for clarifying the difference between appropriate measures of meritorious work and gender-specific behaviors irrelevant to the value of scientific research lies with the faculty.**

In certain circumstances some women graduate students discover that they are inadequately prepared for graduate study, but find insufficient opportunities to remedy the deficit. In many fields, students lack confidence in their quantitative and mathematical preparation for graduate work, but find no small set of courses appropriate for augmenting their background. Most women in such circumstances assume that they alone have such problems. None of the women who raised this issue mentioned the possibility of inadequate preparation among their male colleagues, although the women had no evidence that there were actual gender-related differences in background. In at least one department, women students reported that they were actively discouraged by their advisers from taking refresher mathematics courses; the implication was that if they could not keep up with high-level math courses, they had no place in graduate school at Harvard.

Inadequate preparation and academic advising at the beginning of graduate training conspire later to restrict access of women scientists to research opportunities (see Section 2.2). Hence, **it is essential that departmental advisers assist students in developing a program of study appropriate to their background and their professional goals, and that every department provide effective mechanisms for communicating with students about their progress in graduate study.**

Although overt sexism is rare among faculty, the few cases we encountered were astonishingly blatant and appalling in their damaging effects on talented women. We met graduate student women who were professionally and personally devastated by harassment perpetrated by faculty in their departments. In some departments, verbal and gender-specific academic harassment (e.g. discouraging women from pursuing scientific careers because they were women) are prevalent although sexual harassment may not be.

It is extremely difficult for graduate student women to bring grievances forward, because faculty, especially advisers, have extensive influence on a graduate student's advancement and future career. If the grievance is against her adviser, it is likely to have an especially strong negative effect on a student's own career. In some departments there is no alternative faculty member to whom the student could turn for research direction; she might be forced to try to complete her degree elsewhere. In all cases, women students recognize that any senior member of a field could undermine their careers by spreading a negative reputation through the professional grapevine.

Several graduate students who had experienced harassment expressed great disappointment in the procedures and support available for dealing with it. In the current procedures, one administrator is responsible both for supplying guidance to the student experiencing harassment and for fact-finding for the adjudication process. This system does not serve students well. Several students told the Committee that they had abandoned attempts to address harassing behavior because they were unable to get sufficient advice and support.

**GSAS must provide someone who can assist graduate students who experience harassment through the entire process of filing a complaint and subsequently in overcoming the damage harassment causes. Although she could play an important mediation role in some cases, this person must be able to provide support to the student until the harassment problem is solved and hence should neither be responsible for neutral fact-finding nor be directly involved as an adjudicator.**

In some departments, sexism also continues to block the entry of women to certain fields or subfields. Even women not directly affected suffer from an environment that does not condemn undervaluation of women. Furthermore, a department's bad reputation from rumors about sexism among the faculty often lasts beyond actual experience. For example, the reputation of one department in which women were excluded from specific laboratories and the reputation of sexism among senior faculty in another department have lingered even though the causes in these cases have been addressed. Such negative reputations unfortunately are often carried outside the University and may affect graduate applications and hence help perpetuate the underrepresentation of women in certain departments.

We found that male graduate students present a greater problem in many departments than male faculty. In some sciences, one must still prove oneself according to "macho" standards (e.g. who can climb the biggest rock, write the fastest program), and graduate students seem to find it acceptable to claim that women are only capable of research in the "softer" subareas.

Some of the most overt and uncontrolled sexism among graduate students occurred within the

classroom. Some behavior was explicitly sexist (e.g. viewing some parts of the field as “manly” or women as less qualified merely because they were female), but less overt behavior is also a problem (e.g. [paraphrase] “I gave an answer to a question that was dismissed, but when the male student next to me said the same thing, he received a lot of encouragement from the instructor.”). Such attitudes are harmful not only to women graduate students. When male teaching fellows carry such attitudes into the classroom, they may have strong negative effects on undergraduate women as well. This possibility is especially troublesome in view of the disproportionate drop-off of women undergraduate science concentrators. Further investigation is needed of the sources of this drop-off; initial efforts in this direction are currently being undertaken by the Science Center Executive Committee and this Committee.

The science faculty must take steps to address this type of inappropriate behavior (cf. the Section “Sexism in the Classroom” in the Sexual Harassment Guidelines). The development of appropriate classroom conduct and suitable relationships with peers is an important part of graduate education and thus a responsibility of the faculty. The apprenticeship approach of graduate study makes it incumbent on faculty to insure that graduate students know that even subtle forms of harassment and gender discrimination are unacceptable. In those disciplines that have traditionally been unaccepting of women as equals, it is especially important for faculty to take an active role in education about gender discrimination

**It is imperative that the faculty in science departments assume responsibility for educating graduate students about the forms that gender discrimination may take and the unacceptability of gender discrimination of any kind. The University must take strong action to insure that teaching fellows are made aware of gender issues and their responsibilities for avoiding discriminatory behavior.**

## 2.2 Women Scientists and Graduate Education

*A critical mass of women in the university is essential to establish a scholarly community that can attract and retain women scientists. The small number of women students and faculty in science departments, both in proportion to men in science and in total number, constrains the intellectual and social life of these departments as a whole, most seriously for women.*

The very small proportion of women in each of the science departments effects an even greater gender imbalance in the smaller research groups and laboratories that form the graduate student working environment. The pressures of laboratory research often aggravate many of the tensions associated with graduate training. Furthermore, experimental research may carry additional stress as a result of the frequent need to work late at night; such night work causes special safety concerns for women students.

The pervasive use of stereotypically male terms to describe research style plays a subtle but nonetheless significant role in eroding research opportunities and long-term goals for women. Although there is broad agreement that the presence of more women among the students and at all

faculty ranks would mitigate the impact of gender-based rhetoric and style, this is only a symptom of more substantial and intractable obstacles faced by women scientists. Women in several departments encountered marked resistance to their research plans when these involved more mathematical or theoretical programs rather than experimental studies. They found that assumptions about inadequate preparation needed to be challenged, but they were often reluctant to do so. In instances where personal determination and persistence eventually enabled more satisfactory research assignments, women believed they were initially stigmatized, and felt that their tenacity was responsible for success. Women with less positive experiences believe that a larger proportion of women students and more women faculty would open the way for them.

Women graduate students reported few efforts to accommodate their requirements for full participation in laboratory research. The fears and real dangers that arise because of working late in isolated laboratories are belittled; in one department during a discussion of security, it became clear that the male graduate students were concerned about the prevention of theft of equipment whereas the women were concerned about their personal safety.

Although faculty, in general, understand and accept their responsibilities with respect to ending sexism, women who are pregnant or have children report disparaging behavior amounting to neglect because of perceptions of conflict between their status as graduate students and as mothers. Many graduate students, men and women, implicitly or explicitly accept the view that an academic career in science requires postponement of family life. Prevailing opinion might be caricatured in the observation that “having children is viewed as a personal decision, just like buying a Mercedes.” In addition, there are no established procedures for leaves of absence connected with exposure to toxic substances or other hazards in the first trimester of pregnancy. Women graduate students believe that their standing and stipends would suffer should they request leaves for these reasons. In spite of these biases and problems, some women graduate students expressed the opinion that graduate school was the best time to have children because responsibilities increase later in an academic career. The difficulties of managing a successful academic or scientific career while having and rearing children are well known. Faculty should not increase the stresses and difficulties by imputing a lack of seriousness to women who decide to have children during graduate school.

**GSAS and the science departments must take steps to increase the number of women graduate students both by actively recruiting qualified women applicants and by ensuring that their applications are seriously considered. They should develop strategies for improving the yield of women offered admission to graduate study, especially in the physical sciences. Furthermore, GSAS and the departments should work together to ensure safe working conditions for all graduate students, including safe night-time access to laboratories. GSAS should develop clear policies for maternity and parental leave and should obtain from departments clear policies on leaves to avoid exposure to health risks during pregnancy.**

## **2.3 Graduate Education and the Outlook for Careers in Science**

*Graduate student experience reshapes goals that students bring with them on admission. A substantial number of women graduate students believe the opportunities for a productive scientific life are limited by university structure and traditions. By contrast industry appears to provide an environment that facilitates scientific research and accommodates individual needs.*

Women gave a number of reasons why they had accepted admission to a doctoral program at Harvard. The reputation for excellence of the department and opportunities for employment of a spouse were cited frequently. No one reported consideration of other women's experiences at Harvard, or indicated that they had any reason to believe women in science fared less well in Harvard's graduate programs than elsewhere. Some women explicitly stated this would not have deterred them. Most women said they would encourage other students to enter their doctoral program. They were less certain that they would encourage candidates for junior faculty positions to accept an offer.

While women graduate students expressed few regrets about coming to Harvard, many did not regard Harvard as a necessarily desirable environment for their future careers in science. Several women said that they would not accept an offer as a postdoc or on the junior faculty at Harvard. Several students in the physical and mathematical sciences expressed skepticism about academic careers more generally.

Many of the students we interviewed, painfully conscious of conflicts between personal and professional demands in graduate school, looked to members of the Committee for reassurance that there would be greater flexibility in postdoctoral and lifetime careers. Women students believe that men students share their outlook on the future, but that the burden of adjusting "private" or "family" life falls more heavily on women. They realize that good scientific research can be done in industry, and that industry may provide a better work environment and more adaptive conditions of employment. These better conditions include, but are not restricted to, better and more affordable child care options. Most strikingly, they understand that the intellectual rewards of positions in industry compare favorably to what they find in the university.

All but one of the women interviewed plan to be research scientists and look forward to demanding and rewarding careers, although a fair number (perhaps half of those interviewed) have altered the specific area of their research, or expect to do so in the future, to accommodate demands of private life. With rare exceptions women believe that although men make these adjustments also, they are less likely than women to do so.

**The University should become a leader in increasing the number of women on science faculties, both by acting to increase the number of women science faculty at Harvard and by taking steps to make academic careers in science more appealing to women graduate students.**

### **3 Background on Junior Faculty**

The Committee invited each of the thirteen women junior faculty currently in the sciences at Harvard (FAS) to participate in one of two luncheon discussions: one devoted to the Biological Sciences (including Biological Anthropology, and the Natural Sciences areas of Psychology), and the other to Mathematics and the Physical and Applied Sciences. Our invitation letter included a list of questions addressing various aspects of academic research and careers (see Appendix A.2), and encouraged these women to raise other issues they considered germane.

Twelve of the junior faculty women responded to the Committee's queries in some form. Eight women participated in one of our lunch meetings. Two who were unable to attend wrote detailed responses to our questions. One spoke at length with the Chair; another met separately with two members of our committee. One woman who did not attend our meeting had recently accepted a tenure offer from another university.

Because of the small number of junior faculty women in science, the results of our inquiry could not have a statistical basis. Most problems that we address here, however, appeared in the oral and written comments by non-tenured women across science departments. However, the absence of historical records presents a problem not only in limiting our understanding of the current situation. Ongoing assessment of Harvard's progress in gender-related areas requires better records in a number of areas, including appointments. It is the ephemeral nature of the reports the Committee heard, not their reliability that is problematic.

Some of the problems we encountered are clearly gender-related. Indeed, the dearth of women in science at Harvard has resulted in their general sense of isolation, of being "outsiders" in this community. The male dominance of the tenured science faculty results in many nontenured women feeling powerless. Other problems that the junior women faculty reported would appear to be rooted in more general phenomena: the trappings of "junior" status in a faculty with a distinctly hierarchical structure; inadequate resources for establishing and carrying out scientific research projects in general, including research funding both public and private, as well as office and laboratory facilities at Harvard; and membership in a community of research scientists who tend to be oriented toward their professional lives *beyond* rather than *within* Harvard. As described below, although such problems impact the experience of all young scientists at this institution, the effect on women is more severe.

The extent to which these problems encourage junior faculty women to look elsewhere for senior appointments (in some cases because they do not find the environment at Harvard a happy one) presents a serious obstacle to increasing the participation of women on our science faculty. The dearth of senior women was repeatedly discussed ("Although in theory I could go to any senior faculty member for advice, in practice I would be more likely to consult a woman (if any were available)"). There is proportional underrepresentation even in fields where there are a significant number of senior women nationally, e.g. psychology and biology. In many departments the junior faculty are not convinced the university is actively attempting to correct this problem. Harvard's tenure policy clearly exacerbates the situation. The system of luring "stars" from other universities

for tenured appointments will cause underrepresentation of women for a long time because there is a very small senior pool from which to draw and there is decreased likelihood of getting women to move at that point in their careers. Hence the isolation women junior faculty experience and their inability to find colleagues “like them” presents a serious and difficult problem.

Our discussion below covers problems and solutions at both the departmental and university levels. To protect the confidentiality of the twelve women who participated in our study, comments and anecdotes which may have been relayed in the context of a particular department have been recast in a generic form.

### **3.1 Department Environment**

*Department environments play a central role in Harvard’s ability to recruit and retain faculty. Because the pool of women scientists at all levels is small, the effect of a hostile or unsupportive environment can be disastrous .*

Many nontenured women do not enjoy positive, collegial relationships with the senior members of their department. In the worst cases, junior faculty women feel exploited: they may have substandard laboratory and office facilities, be burdened with heavy teaching assignments and other departmental responsibilities, have no voice in department decisions, or any combination of these. In many cases, women perceive their situations to be worse than those of their male junior colleagues.

The professional isolation they have experienced within their own department has surprised and disappointed many of the junior faculty women with whom we met. In addressing this phenomenon, we should keep in mind that it is not unique to our current group of young women scientists. Previous studies concerned with the junior faculty experience, such as the Report on *Some Problems of Personnel in the Faculty of Arts and Science* in 1938, the *Dunlop Report*, and more recently the *Summary of the Jr. Faculty Questionnaire* (Whitla, 1985) all cite lack of professional integration within their own department as, “the most painful aspect of their life at Harvard” (Dunlop quoted by Whitla).

To some extent, the professional loneliness experienced by junior faculty members, especially those new to Harvard, seems a natural and probably unavoidable outcome of their transition from graduate student or postdoctoral fellow functioning within an established research group, to that of principal investigator. In the former context, intellectual and financial support as well as *esprit du corps* are givens. By contrast, the new PI usually begins life at Harvard without graduate students or postdocs. It is quite possible that no one else on this faculty is pursuing research in the same subfield. Furthermore, the rookie PI is faced with the daunting task of establishing a laboratory, and applying for public and private research funds. It is lonely at the top, and especially so when faculty colleagues, both junior and senior, are deeply engaged in their own teaching and research enterprises.

Because science departments typically are loose federations of independent research groups,

they do not naturally foster professional integration. The small number of women faculty, as well as women's typically greater discomfort with aggressive behavior and self-promotion, accentuate the negative affect of isolation on women.

Thus, the department leadership needs to take special initiatives to overcome the professional isolation of junior faculty, and senior faculty must aid in the professional development of their junior colleagues. One department has an advisory program that provides a good model: each junior faculty member has a designated senior faculty "mentor" who takes responsibility for him or her. Appointing a small committee of senior faculty to advise junior faculty offers advantages of greater visibility and increased collegiality within the department as well as providing a wider range of guidance and support. Senior faculty mentors can offer advice about sources of funding and preparation of grant applications, as well as the pleasures and perils of serving on particular departmental committees. Faculty mentors could highlight the work of junior colleagues at meetings; make referrals for speaking engagements, review articles, and consulting opportunities as well as research students and postdoctoral associates; and promote nominations for awards or other honors. As the time for consideration of the junior faculty member for tenure approaches, mentors can help prepare the candidate for Harvard's review process and, when appropriate, recommend him or her to other faculty search committees.

However, senior faculty members who serve as mentors must ensure that their junior colleagues remain independent scholars. From the junior faculty with whom we spoke, we learned that in some departments it is difficult for junior faculty to establish their own programs or obtain independent research funding; in others they are explicitly discouraged from doing so. Apparently, in certain fields junior faculty have traditionally served as lieutenants to senior colleagues. Although providing research support for junior faculty is useful as they start their university careers, in the long-term it is harmful for them not to have their own independent funding and research projects.

**Departments should provide senior faculty committees to advise junior faculty on scientific and career development and on departmental issues.**

Adequate laboratory space is crucial for junior faculty in the sciences. Several junior faculty reported that they get disproportionately less space and resources than senior faculty, regardless of their real needs. In the worst cases, junior faculty were not provided with sufficient laboratory and office space. By making resources depend on a junior faculty member's ability to negotiate or to make demands aggressively, the University imposes a special hardship on women, who are less likely to engage in aggressive behavior.

**The University must provide reasonable space for junior faculty; departments must be careful about the promises for space made when appointments are negotiated and must ensure before making such promises that the University can honor them.**

The ability to attract strong graduate students to the research group is essential to the success of junior faculty in the sciences. Although some junior faculty reported no problems in recruiting students, many of these faculty had brought graduate students with them. A number of factors

conspire to make recruitment of strong graduate students a problem for non-tenured faculty. Several junior faculty reported problems initially because of lack of their own research funds; later in their terms at Harvard, they expect their temporary status to make students reluctant to join their research groups. Recruiting good graduate students at Harvard is difficult if there are no senior faculty in an area because of the well-known temporary status of junior faculty here. However, if there are strong senior faculty, they typically get the best students. Again, serious efforts by senior faculty mentors can offset some of the difficulty in attracting good graduate students to the groups of junior faculty. Some departments provide mechanisms for distributing graduate students among laboratories and giving them exposure, either through lab rotations or through research presentations at departmental retreats, to the research of all faculty. More respect and support for junior faculty might well attract more graduate students to the department, and make it more likely that they would choose to work with a junior faculty member. Furthermore, such enhanced collegiality might inspire in students a more positive view of an academic career.

Teaching and other departmental responsibilities are important components of an academic career. However, the load placed on some junior faculty with whom we met presented clear impediments to their progress. Although some departments assign reduced teaching loads to their junior faculty for the first year or two in acknowledgement of the effort needed to set up a lab or research enterprise, other departments offer no teaching relief. Some impose unusually heavy loads by asking junior faculty to teach large or introductory courses.

The Committee was surprised to learn that in certain departments, women were assigned traditionally female responsibilities. For example, women were often asked to do more entertaining of outside speakers or prospective faculty than were their male colleagues. In certain departments, women are also more likely to be asked to serve as advisers or to accept extra committee responsibilities. These tasks can and should be shared equally among women and men.

In some departments, thesis and departmental committees as well as advisees are assigned without consulting the junior faculty member. Although only in some cases did women perceive that the work load imposed on them was greater than that assigned to their male colleagues, in most cases they found it more difficult if not impossible to be relieved. The small number of women faculty often leads to greater pressure on them to accept committee responsibilities and women appear to have more difficulty declining such assignments or getting compensatory relief in other areas. A good model for the management of departmental duties may be found in a department that as a matter of policy does not require any first-year faculty members to teach, and keeps to a minimum the committee assignments for all new faculty.

**As a general policy, departmental responsibilities for junior faculty should be minimized, and particular assignments correlated with faculty interests, not gender. Whenever possible, the first two years' teaching assignments should be light for junior faculty who require a major time commitment to establish research laboratories and programs. When junior faculty are asked to take on extraordinary committee or teaching responsibilities, they should be compensated by reductions elsewhere whenever possible, and their contribution openly ac-**

**knowledged. Junior faculty members should be consulted about their departmental responsibilities; they also should be able to decline, when appropriate, without fear of consequences.**

There is widespread concern that junior faculty are not consulted on or even informed of major decisions. For example, some junior faculty reported learning of potential senior appointments through sources outside the University. In one case, graduate students were invited to have lunch with candidates for a senior appointment, and were consulted about the appointment, but the junior faculty were excluded from these discussions. Such a blatant lack of collegiality leads junior faculty to conclude that they are outsiders and likely to remain so. Some are impelled to seek appointments elsewhere; others conclude that they would probably decline tenure offers from Harvard. **Junior faculty should not only be informed of major decisions, but whenever appropriate, take part in them.**

Women junior faculty perceive that in subtle and not-so-subtle ways they function at a distinct disadvantage compared with their male colleagues in their department simply because of their gender. This is in part related to the insider/outsider phenomenon. The dearth of women on science faculties here makes departmental decisions, politics, and attitudes necessarily male-dominated. As outsiders, women often feel powerless and frustrated in their efforts to attract attention to issues they consider important. For example, some junior women report that their male colleagues either show no interest in or openly disapprove of research fields which include a significant number of female investigators.

Several junior faculty who have experience in departments with more women report a much more positive atmosphere in those cases. The mere presence of one senior female colleague can defuse much of the stress related to outsider status. One junior woman remarked that the appearance of a second woman on the faculty not only decreased her counseling load but also led to a better atmosphere in the department overall. Attitudes toward pregnancy, maternity care, and child care responsibilities seem especially to improve when a department includes several women faculty, including at the senior level. At best, these issues are typically ignored by senior male faculty.

We also heard that in some departments the presence of a woman on the graduate admissions committee seems to make a difference in the admission and recruitment into the graduate program. Female candidates who had been overlooked were admitted only after the woman insisted their folders be discussed.

**All faculty, men and women, must take responsibility for recruiting more women graduate students and faculty to science departments.**

## **3.2 FAS Environment**

*Junior faculty women expressed discouragement with the current climate in FAS toward the hiring of more women faculty in science. Efforts to recruit and to develop junior women faculty in*

*academic science seem to lack leadership and commitment.*

Despite the recent flurry of activity surrounding the Verba Committee report and the appointment of an Associate Dean for Affirmative Action, junior faculty women are not convinced that the Harvard faculty will include significantly more women scientists in the near future. The perception is that diversifying the science faculty is not of the highest priority.

The junior faculty hiring process deserves closer scrutiny to be certain that all departments understand the need to comply with both the spirit and the letter of our affirmative action policies. Several faculty expressed concern that affirmative action issues were not always taken seriously and, in some cases, were addressed only after appointment decisions were made. Few departments seem actively to seek to identify women candidates; rather, they tend merely to react to applications. It also appears that FAS has not been maintaining complete information on unsuccessful offers of junior appointments. It would be useful not only to have these data, but also to ask for feedback from candidates who refused our offer. We might learn a great deal by following up our appointment offers with the distribution of a survey or simple query to determine why a candidate accepted or refused our offer. Among other things, this practice would give the message to the larger academic community that Harvard cares about its junior faculty appointments.

Interest and activity in affirmative action at Harvard has surged from time to time, beginning with the appointment of the first Committee on the Status of Women in the Faculty of Arts and Sciences two decades ago. What has not taken place in the past and is needed now, is a sustained effort to recruit and retain more women on the faculty. The appointment of the Associate Dean for Affirmative Action offers the opportunity for new commitment and follow-through. The Standing Committee on Women urges the Dean of the Faculty to show strong leadership in keeping affirmative action in the forefront of the FAS agenda for the 1990's.

**The junior faculty appointment process should be revised to ensure that each search process is reviewed before an offer is extended. The University must take a more active role in ensuring that science departments make serious efforts to attract and retain women on their faculties, and must devote resources to improving the environment for women on its faculty.**

There are many other straightforward steps that we can take immediately; some involve visiting appointments, others entail more serious efforts to identify and track the best young women scientists.

The Dean's offer to fund appointments of women and minority visiting faculty members deserves greater attention and response from science departments. Because there are few senior women in many fields, visiting appointments provide one way of acquainting graduate students with successful women in their fields. Department faculty should make efforts to integrate visitors into the department. Such Visiting Professorships might be funded in part through the NSF Visiting Professorships program or in coordination with the Society of Fellows or the Bunting Institute. However, it is crucial that visiting appointments not be used primarily as a way for a department to test whether a candidate would be a suitable permanent appointment, nor be used as a substitute for efforts in appointing women to the faculty.

Departments should also make an effort to identify qualified women when appointing visiting lecturers. Typically they do not. For example, one science department has hired visitors to teach undergraduate courses in each of the last four years but none of these visitors has been a woman, although the field includes many women. We recognize that it would be unfortunate if women were considered only for temporary lectureships. However, this fact does not entail their being overlooked entirely for such positions.

**It is the responsibility of the Dean, through the Associate Dean for Affirmative Action, to be certain that departments make serious efforts to identify female candidates for Visiting Professorships and lectureships and to encourage aggressively such appointments in the future.**

Another step we could take is to collect and discuss at one faculty meeting each year relevant data on the composition of the Ph.D. pool and the demographics of this and other comparable faculties. Various data related to many fields of science seem to exist in the hands of professional societies across this country. It would be useful to collect this information systematically and to discuss it with the chairmen of specific science and mathematics departments.

Harvard could also play a greater leadership role in our national effort to recruit talented women and minorities to the ranks of junior faculty. For example, we could collect from graduate deans of comparable research institutions information about promising women and minority graduate students, compile these data, and redistribute the information to our own department chairmen and all other participating universities. Perhaps departments or individual investigators could raise funds for postdoctoral fellowships for promising women and minorities we encounter in our scouting process.

## 4 Critical Mass

Achieving critical mass by hiring more women faculty in the sciences should be a high priority for the university. We explicitly emphasize the need for the university to set critical mass, not the hiring of a few “role models,” as its goal. This goal will only be satisfied when the number of women in a department is sufficient for students to perceive it as quite normal for women to be in the field and when the idiosyncrasies of individual women faculty matter no more than those of individual male faculty. In many cases to achieve this goal the climate in some departments will need to change to overcome problems discussed elsewhere in this report. Women students and faculty will not have equal opportunities for participation in the sciences until such a critical mass is achieved.

A large number of the women graduate students we interviewed had the impression that it was virtually impossible to combine an academic position in the sciences at a leading research university with marriage and children. All pointed to the lack of examples of women at Harvard who are successfully combining research with childrearing. Many graduate students, especially

in the mathematical and physical sciences, also said that they had decided to pursue industrial rather than academic careers, because they perceived industry as more flexible with respect to working hours and child care arrangements. Whether or not this perception is true, it is clear that the pipeline of qualified women interested in accepting faculty positions is drying up in graduate school. To successfully attract these women, Harvard will have to respond to the issues discussed in Section 6.

## 5 Harassment

The Faculty of Arts and Sciences has established a policy on sexual harassment and unprofessional conduct, established procedures for the resolution of complaints, and identified investigative officers for sexual harassment for undergraduate students, graduate students, faculty, and staff. As a result, overt sexism is less pervasive than previously. Even so, the Committee in its meetings with women in the science departments found several egregious instances of harassment, including sexual harassment and gender-specific academic harassment. Improvements are still needed in the ways in which grievances are treated, in particular in providing women graduate students with more support in bringing grievances forward and pursuing a satisfactory solution (see Section 2.1). Furthermore, attention needs to be paid to the problem of gender discrimination in the classroom (see Section 2.1).

Subtle forms of harassment are more likely to arise in departments in which the numbers of women are small. In such cases, women may be treated as outsiders. In addition, the negative attitude of many faculty toward family commitments creates particular problems for women. The solution to the problems that result lies in creating an environment in which it is understood that a multiplicity of styles are equally valid and should be accommodated.

## 6 Family Issues

A variety of family-related issues were raised in our discussions with women graduate students and junior faculty. Chief among these was the problem of combining an active academic career, where long hours are often necessary or expected, with the bearing and raising of children. The specific concerns generally fell into three major areas, which are discussed below: child care, pregnancy and maternity leave, and department scheduling.

### 6.1 Child Care

Both graduate students and faculty pointed to the pressing need for affordable and flexible child care in the Boston area. This seems to be one of the most critical factors in the recruitment and retention of women at Harvard. Because child care is increasingly an issue that also affects men in

the University community, any steps that are taken to improve the child care situation at Harvard will have a positive impact on all recruitment efforts. The Committee recognizes the enormous costs associated with increasing the University's commitment to providing child care options to its faculty, staff, and students. Nonetheless, we believe that guaranteeing child care at a reasonable cost should be a high priority for the University and would improve Harvard's ability to recruit women and men at all levels.

Harvard currently subsidizes the operation of eight child care centers that are open to faculty, staff, and the Cambridge community; despite the University subsidy, monthly rates for full-time care are still in the \$600-900 range, and some of the centers require parental involvement of several hours a week. As a result of this high cost, very few graduate students or junior faculty can take advantage of Harvard child care. Until recently, the extremely limited space in these centers also presented a problem; it is likely that should the centers become more affordable there will again be a problem with insufficient space.

**We strongly recommend that Harvard find ways to increase the availability of child care and to lower its cost.** As examples, we cite two local businesses that have developed what appear to be outstanding child care options for children of their employees: Stride Rite and Lotus Development Corporation. Stride Rite has been offering on-site child care to its employees since 1971 and now operates several centers. The most innovative of these is an intergenerational day-care center that provides care for children and elders in the same facility. All of the Stride Rite centers are partnerships between Stride Rite, local government agencies, and the parents, and child care fees are based on the employee's salary (approximately 14% of gross income, compared to fees at Harvard's centers that currently can reach approximately 28% of gross income for an assistant professor with an infant in child care). Stride Rite has also established a partnership with Wheelock College to serve as a teacher-training and research site for students and faculty. Lotus Development Corporation recently opened a child care center to serve children of its employees; for those employees with annual incomes of less than \$50,000, Lotus picks up an average of one third of the cost of child care at the center. In addition, Lotus pays partial expenses incurred by parents who use other child care options. Other area businesses have recognized the enormous loss of employee productivity associated with child care crises and have begun providing in-home emergency daycare as a corporate benefit; an example of an organization providing this service is Parents in a Pinch, Inc., which offers a corporate services program to Boston-area employers.

**We urge the University to work with the Office of Human Resources to develop new child care options for faculty and students; such options could include the following:**

- Guaranteeing a certain percentage of the spaces to junior faculty and graduate student offspring
- Creating a sliding fee scale to help graduate students and junior faculty afford University child care
- Creating more child care spaces on campus

- Providing vouchers to parents who choose to use other child care options
- Providing salary subsidies to junior faculty (analogous to those provided for mortgages)
- Providing several days per year of emergency daycare as a faculty benefit (e.g. either at the University Health Services or through a private agency)

Many faculty currently make use of the Flexible Spending benefits option to help defray child care costs; the child care bill currently before the U.S. Congress may well eliminate this option, however. We urge the University to act to revise the available benefits packages to offset the financial effects that this action would have on junior faculty, as well as to explore other benefits packages that would make child care more affordable for those in the University community. We wish to stress again that availability and affordability of child care are critical issues in the recruitment and retention of junior faculty and will surely play a role in University efforts to increase the number of women faculty in the sciences.

## **6.2 Pregnancy and Parental Leave**

The issues of pregnancy and parental leave affect both graduate students and faculty. Women at both levels expressed concern that they are perceived as less serious about their careers than their male colleagues if they choose to have children. Many women at both levels stated that they had deliberately postponed childbearing, in part as a result of this perception.

Graduate students involved with laboratory bench work have particular concerns about physical and chemical hazards during pregnancy, and about the possibility that they might be asked by their advisors to stay out of the lab during pregnancy as a result of these potential hazards. Students in areas that involve fieldwork were also concerned about being excluded from particular research groups as a result of pregnancy. Harvard should develop a clear-cut funding policy for students who forgo laboratory or field research during pregnancy. There should also be additional time added to the thesis clock for students who become pregnant or take time off for early childrearing while here.

Recent proposals for changing the maternity and parental leave policy will be a welcome improvement for junior faculty. We particularly applaud the flexibility of the new policy, which permits a choice among eight weeks of paid disability leave, one semester of paid full teaching relief, or two semesters of paid half-time teaching relief following the birth or adoption of a child. We further support the policy granting junior faculty members who are primary caregivers an appointment extension of up to one year per child (two years maximum) if they wish to make use of it. This is a significant improvement over the old policy that granted such extensions only to those who had taken an unpaid leave for childrearing purposes; in general, unpaid leave is not an option for junior faculty dealing with the high cost of living in the Boston area.

We applaud the University for making these changes in policy, and encourage search committees and faculty chairs to make information on these policies available to all prospective faculty

members as a matter of routine. We believe that a well-publicized maternity and parental leave policy will greatly enhance Harvard's ability to recruit both women and men to the faculty, particularly at the junior level.

### **6.3 Department Scheduling**

An additional issue that was raised by women with children was a tendency at both the departmental and University levels to schedule seminars, colloquia, and faculty meetings during late afternoon or evening hours. For parents with small children in daycare or school, attendance at these events is extremely difficult and often impossible. This has the potential of severely limiting the professional development of women, cutting them off from contact with visiting speakers and from the political life of the University. It also affects those male faculty members who share in child care.

Although we recognize that the scheduling of classes may leave few alternatives, we recommend that departments be more sensitive to this issue, recognize that many faculty members now live with personal constraints that necessarily limit their hours of availability to the University, and try to develop alternatives.

## **7 Recommendations**

Some problems entailed by admitting a more diverse population to the faculty are not amenable to direct administrative action. They require the faculty individually and corporately to reconsider its expectations for graduate students and colleagues, and the demands placed upon them. However, a number of specific changes at both the department and the FAS level would significantly improve the environment for women in the sciences at Harvard. Responsibility for some of these changes rests with the Dean of FAS or the Dean of GSAS, but accountability for others rests with departments or individual faculty.

Because the focus of our committee this year has been on women in the sciences, our recommendations are cast specifically in terms of this population. However, many of the proposals will positively affect not only women in the sciences, but graduate students and faculty more generally: men as well as women on the faculty, senior women as well as junior women, male graduate students as well as female graduate students. Several of the recommendations are relevant to the humanities and social sciences as well. Many, either directly or indirectly, will yield changes that are beneficial for undergraduate students. Although in implementing some recommendations consideration of the broader population to which they apply may be useful, it is nevertheless crucial that the special needs of women scientists not be lost.

## **7.1 Actions at the FAS Level**

### **Oversight and Assignment of Responsibility for Gender-related Problems:**

*The Dean of FAS* should, either through additional high-level appointments or by assigning responsibility to existing offices, ensure that the following functions are carried out and that the identity of the individuals responsible for each is widely publicized in the university community:<sup>1</sup>

1. educate departments about gender discrimination;
2. provide information for students and faculty who encounter gender discrimination of any kind;
3. monitor the environment for and status of women in the science departments;
4. support departments in providing settings and events within the department that will help overcome the isolation of women; the Dean should make funds available to encourage faculty participation in establishing such settings and events.

*The Dean of GSAS* should, either through making additional appointments, or by assigning responsibility to existing offices, ensure that the following functions are carried out and that the identity of the individuals responsible for each is widely publicized in the university community:

1. provide an adviser, separate from the adjudication process, to assist any graduate student who encounters gender discrimination in deciding how to proceed and negotiating the ensuing process;
2. organize events at which graduate student women who are isolated in their departments, labs, or research groups can meet each other and share problems, approaches, and solutions.<sup>2</sup>

**Training of Teaching Fellows:** GSAS, through the departments, should require that all teaching fellows in science courses participate in Danforth Center training programs for teaching fellows that include a workshop on gender issues in the classroom.<sup>3</sup> In particular, the typically small numbers of women in science courses and prevailing societal/cultural norms with respect to women

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<sup>1</sup>Some members of the Committee believed that these functions could best be realized by the appointment of an ombudsperson. Many graduate students and junior faculty thought it was essential to have a single person outside the department structure to whom they could turn for advice. Although the Committee did not agree on this approach, it did agree that the present system is not sufficient. We also agreed that the title of "ombudsperson" was less important than having a mandate for conflict resolution and education.

<sup>2</sup>The Dean of Student Affairs in GSAS sponsored several such meetings in 1989-90. However, it is important here, as elsewhere, that special attention be paid to the problems of women in science.

<sup>3</sup>The Committee recognizes that the Danforth Center has created training programs and is attempting to provide them to all teaching fellows. We support this effort and believe it is essential that a workshop on gender issues be included in any teacher-training programs. Furthermore, the Committee emphasizes the need for special attention to be paid to science courses and to the problems of encouraging (and not discouraging) women in pursuing scientific studies.

in science must be taken into account in developing these courses. A refresher course should be required for teaching fellows who have not participated within the preceding three years.

**Maternity and Parental Leave:** GSAS should provide a clear policy for maternity and parental leave for graduate students and publicize it. The FAS statement on Maternity, Parental, and Personal Leave Policies for faculty provides a good model.

**Safety:** GSAS should coordinate with the Parking Office to provide free parking at night in lots as close as possible to labs (but not using named parking spaces) for any student who has a safety concern. This parking could be regulated by requiring registration with the parking office.

**Child Care:** FAS should develop a plan to provide child care subsidies for faculty. A variety of options should be investigated, including additional on-campus child care and vouchers for child care elsewhere.

## 7.2 Actions at the Departmental Level

Many of the following recommendations are, as noted above, not gender-specific. However, as discussed in the body of the report, isolation as well as lack of institutional and collegial support are typically more detrimental to women than men and hence these recommendations are crucial to retaining and encouraging women specifically.

### 7.2.1 Junior Faculty

**Appointments:** *The Dean of FAS* should ensure that

1. at the beginning of a search, departments provide a list of activities they will undertake to identify and recruit women candidates; the Dean for Affirmative Action should review these lists, and could provide departments with suggestions that have proved useful in previous years or for other departments;
2. before any candidates are invited for interviews or the department otherwise narrows the field to a small group, the short list and the dossiers of the top women candidates not on the list are reviewed by the Dean for Affirmative Action to insure that efforts have been undertaken to identify and seriously consider strong women candidates;
3. before an offer is made, the dossiers of the top women candidates are brought forward and a substantive discussion provided of why the department prefers another candidate.

*Department chairs* (not administrators) should be responsible for ensuring that the following policies pertain:

**Appointments:** Records are kept of all junior appointment searches that include information about gender and subfield so that departments can identify trends across appointments.

**Career Advice:** Provide an individual or small committee of senior faculty to advise each junior faculty member on professional development, including scientific, career, and departmental issues. These senior faculty should also refer professional invitations and consulting opportunities to the junior faculty, and aid in their learning the ropes of proposal writing and grantsmanship.

**Departmental resources:** Allocate resources — including laboratory space, secretarial support, and computational support — for junior faculty so that they can be productive as scholars and members of the department. Resources should be equitably distributed and monitored for changing circumstances. This responsibility pertains when recruiting and negotiating new contracts as well as for members of the current faculty.

**Teaching responsibilities:** New junior faculty who require a major time commitment to establish research laboratories and programs should be relieved of teaching responsibilities in their first year (except, possibly, seminars in their area of research) so that they can get labs set up and research underway.

**Committees and other non-teaching responsibilities:** In general, in assigning committee and other departmental responsibilities, junior faculty should be asked to do less, not more, for the department and the University. Junior faculty should not be asked to chair any burdensome committees.

**Departmental decision-making and information dissemination:** Junior faculty are colleagues. To the greatest extent possible, they should be included in departmental decision making, should be advised of decisions that are made about new senior appointments, and should be kept informed of decisions in which they may not participate.

## 7.2.2 Graduate Students

**Graduate admissions:** *The Dean of GSAS* should institute procedures that ensure that the folders of women applicants are considered carefully. Such procedures should include GSAS receiving the full folders of the top twenty percent of the women candidates who are not offered admission and support along with a substantive discussion of why they are being denied.

*The director of graduate studies or the department chair* should be responsible for ensuring the following:

**Graduate admissions:** Instituting procedures that insure that the folders of women are considered carefully. Work with GSAS to develop strategies for increasing the yield of women offered admission.

**Integration Activities:** Provide activities that encourage interactions among students across laboratories and subareas and that integrate new students into departments. Department colloquia can help, but are not sufficient; they are more useful if graduate students choose and host some of the speakers.

**Graduate Student Organizations:** Encourage the development of graduate student organizations and their participation in recruiting, integrating, and advising new graduate students.

**Information dissemination:** Disseminate information about funding, conferences, and other activities important for professional development; e.g. provide a department handbook; this could be organized by the graduate students.

**Communication with faculty:** Provide mechanisms for graduate students to communicate their needs and concerns as a group with the faculty; e.g. representatives of the graduate student organization meet with the department chair or attend graduate committee meetings.

**Record of progress:** Each graduate student participates in an evaluation of his or her progress on a regular basis at least once a year and a written record of this evaluation should be maintained in the student's folder. Many strategies might be adopted. For example, graduate students could provide brief written reports on their activities during the year, and the research committee add written comments on progress based on these reports.

## **A Questions for Graduate Student and Junior Faculty Meetings**

### **A.1 Questions for Meetings with Graduate Students**

1. How did you select your adviser? Did you know with whom you wanted to work before you arrived? Are you working with that person? Did anyone discourage you from working with any faculty member? Why?
2. Do you believe that you are able to participate as fully in seminars, lab discussions, etc., as your male colleagues?
3. If relevant to your field: Do you believe that you have had equal opportunities to do fieldwork as your male colleagues? If not, what are some of the reasons for the differences?
4. Do you work in the lab at night? Does this raise any safety concerns for you?
5. Is there much informal interaction among students in your department? Among students and faculty? With whom do you discuss “roadblocks” you run into in your research?
6. Have you been encouraged to present papers at relevant meetings to the same extent as your male colleagues? How many papers have you presented?
7. How often do you get invited to join a lunch or dinner for a colloquium speaker or other visitor to the department?
8. Does your adviser ever ask you to review papers for him/her?
9. What proportion of your financial support comes from teaching? research? your own funds? Do you believe your situation with respect to financial support differs significantly from the departmental average?
10. Have you ever experienced any behavior in your department or at Harvard in general that you would consider sexual harassment (e.g. unwanted sexual attention)? Was the situation resolved satisfactorily? Was the process satisfactory?
11. Have you ever experienced any behavior in your department or at Harvard in general that you would consider emotional or academic harassment (e.g. discouraging comments, unreasonable grades)? Was the situation resolved satisfactorily?
12. Do you see yourself going on in an academic or industry career related to your field of graduate studies? If no, why not? Is there anything that would specifically encourage you to stay in your field? If you are considering only industry, what would have to happen for you to consider academia?

13. How many years did you expect to devote to the Ph.D. degree when you entered Harvard? What is your current assessment of the time it will take to complete the degree? What do you think your adviser expects?
14. If you are nearing completion of your degree: Has your advisor helped you to locate job opportunities and actively supported you in your job search?
15. Would you encourage a female colleague at another institution to come to Harvard? Why? A male colleague? What do you think it would take to convince her (him) to come?
16. Do you believe that your experiences in your department have been significantly different from those of your male colleagues? If so, in what ways?
17. What specific suggestions do you have that would improve the quality of life for women students in your department?
18. When did you decide to become a scientist? What influenced this decision? Did your family play a role in your decision?
19. How did you choose your undergraduate major? Did you experience any difficulties being a women concentrator in a scientific field? Did anyone encourage you to be a scientist? Discourage you? Did you do research? Were there many women in your courses?
20. Do you ever meet with the undergraduate concentrators in your department?

Several questions related to family matters are on the next pages. They have been separated so that those who are willing to do so may turn in written answers to them at the meeting.

## **Questions Regarding Family Issues**

Part A of this questionnaire is for graduate students who have children, or expect to soon; Part B is for those who do not.

### **Part A. For those who have children:**

1. Do you think that your advisor and other faculty approve of your having children?
2. How do you provide for care for your children when you are working?
3. Are you satisfied with the cost and quality of childcare available?
4. Do you think that having children is more of a burden for women compared to men in an academic environment?
5. Were you at Harvard when your children were born?  Yes  No  
Did you take a maternity leave?  Yes  No
6. How do you think being a mother will affect your career opportunities in the future? Please state your career goals and the factors that went into setting those goals.
7. Please comment on the following alternatives for faculty with children. Specifically, state whether the availability of any of the options would increase the probability that you would accept a faculty position. Please explain the basis of your answer and comment as to whether these options should be available for both men and women with children?
  - (a) Reduced teaching/advising load for parents with preschool children.
  - (b) Optional extension of the Assistant and/or Associate Professor appointments for 1-2 years for parents, i.e. deferral of the tenure decision.
  - (c) Increase in the duration of maternity leave for new parents. (Please state a desirable length of time and comment as to whether research would be carried on during these times.)
  - (d) University childcare available to all faculty members.
8. Comment on areas that the University can become involved in to improve the quality of life for women with children.

### **Part B. For those who do *not* have children:**

1. Please comment on the factors that you think are important when considering child bearing.
2. Have you made a decision *not* to have children based on career considerations?  Yes  No
3. If yes, have you decided never to have children or are you deferring child-bearing until a more opportune time.  Never  Deferring for \_\_\_\_ years.
4. Please outline the primary considerations in your decision.

## A.2 Questions for Meetings with Junior Faculty

1. How much do you interact with senior faculty in your department (any scientific collaboration? informal discussions?)? Do you believe that your opinions are sought and valued by your male faculty colleagues? Do you believe that your research is respected within your department?
2. Have you been as successful as you think you should be in recruiting graduate students and (if relevant in your field) postdoctoral fellows into your research program? Is the distribution of men and women in your research group the same as that for your male colleagues? Do you think your gender affects the decisions of graduate students or postdocs about joining the research group?
3. Are you satisfied with the level of research funding you have been able to obtain? From whom do you get advice about strategies for obtaining funding and sources of funding? Do you think you get as many leads or contacts as your male colleagues?
4. If you need advice about where to publish, from whom do you get it?
5. How many conferences have you attended this year (or a typical year as a junior faculty member)? Is this more or fewer than your (male) colleagues?
6. What is your teaching load (number of courses and course size)? How does it compare with the load for other faculty in your department? How are decisions made about which courses you teach?
7. Is your committee load or participation in departmental decisions different from that of your male colleagues? Would you like to be more or less involved in departmental affairs?
8. What percentage of your time do you estimate is spent counseling students (e.g. giving personal advice, handling crises, giving academic advice to students who are not your own)? Do you spend more time on this sort of activity than your (male) colleagues? If so, are there specific problems that you are repeatedly asked to address by the students? If yes, what might be done to change this? Is it a problem for you?
9. Do you believe that your department has made an honest effort to identify and attract qualified women candidates for faculty positions?
10. If you were offered tenure at Harvard, would you be likely to stay here? If so, why? If not, why not? Please be as specific as possible.
11. Would you encourage a female colleague at another institution to come to Harvard? Why? A male colleague? What do you think it would take to convince her (him) to come?

12. If you have served on the faculty at any other institution before coming to Harvard, please comment on your perceptions of how women were accepted in your department there as compared to here.
13. If you have had a child while at Harvard, what arrangements did you make for maternity leave? How difficult was it to make them? Were they satisfactory to you and to your department? Were your male colleagues understanding of the extra demands on you time?  
[N.B. Additional questions related to family matters are on the next page. They have been separated so that those who are willing to do so may turn in written answers to them at the lunch.]
14. If you believe there is any attitude of gender discrimination at Harvard, either overt or subtle, please describe some specific instances.
15. Was your experience as a graduate student or postdoctoral fellow different from that of your male colleagues (at the time)? Did you get as much encouragement as they did to pursue an academic career? As much assistance in finding a position?
16. What (or who) has been of most help to you in pursuing an academic and scientific career? What role has your family played in your career choice?

## **Questions Regarding Family Issues**

### **Part I. For those who have children:**

1. Do you think that your colleagues approve of your having children? Do you think women with children are viewed differently than their male analogs?
2. How do you provide for care for your children when you are working?
3. Are you satisfied with the cost and quality of childcare available?
4. Do you think that having children is more of a burden for women versus men in an academic environment?
5. Were you at Harvard when your children were born? Did you take a maternity leave?
6. Please comment on the following alternatives for faculty with children. Specifically, state whether you would consider exercising any of these options and explain the basis of your answer. Should these options be available for both men and women with children?
  - (a) Reduced teaching/advising load for parents with preschool-aged children.
  - (b) Extension of the Assistant and/or Associate Professor appointment for 1-2 years for parents.
  - (c) Increase in the duration of maternity leave for new parents. (Please state a desirable length of time and comment as to whether research would be carried on during these times.)
  - (d) University childcare available to all faculty members.

Comment on areas that the University can become involved in to improve the quality of life for women with children.

### **Part II. For those who do not have children:**

Please comment on the factors that you think are important when considering child bearing.

1. Have you made a decision *not* to have children based on career considerations?  Yes  No
2. If yes, have you decided never to have children or are you deferring child-bearing until a more opportune time.  Never  Deferring for \_\_\_\_ years.
3. Please outline the primary considerations in your decision.

## B Graduate Enrollments in Science Departments

Department	M	F	Traveling Scholars
DAS	108	27	0
Astronomy	17	5	0
Biochemistry and Mol. Bio.	45	28	0
CDB	22	20	0
OEB	41	21	6
Biophysics	33	3	0
Chemical Physics	4	0	0
Chemistry	143	32	1
Earth and Plan. Sci.	28	8	1
Mathematics	53	7	0
Physics	112	15	11
Statistics	13	2	0
TOTAL	619	168	19

Table 1: GSAS: Registered Students in the Natural Sciences, November 1990

Department	Mean Years		Median		Range	#PhDs	
	M	F	M	F		F	hspace.25in
DAS	5.365	5.875	5.0	6.0	2-11	4-8	hspace.25in178
Astronomy	5.400	5.500	6.0	6.0	2-8	3-7	hspace.25in 35
Biochemistry and Mol. Bio.	6.810	6.900	7.0	7.0	5-10	5-11	hspace.25in 58
CDB	6.500	6.955	6.5	7.0	4-10	4-11	hspace.25in 40
OEB	6.346	6.074	6.0	6.0	3-10	4-10	hspace.25in 52
Biology	6.538	6.111	7.0	6.0	4-8	5-8	hspace.25in 13
Biophysics	6.750	6.818	7.0	7.0	2-10	5-9	hspace.25in 32
Chemical Physics	6.931	7.000	7.0	7.0	4-10	5-9	hspace.25in 29
Chemistry	5.819	6.043	6.0	6.0	1-14	4-8	hspace.25in171
Earth and Plan. Sci.	6.040	5.667	6.0	6.0	4-11	5-6	hspace.25in 25
Geology	6.381	6.111	6.0	6.0	4-10	5-7	hspace.25in 21
Mathematics	4.869	5.500	5.0	5.5	1-12	4-7	hspace.25in 84
Physics	5.644	5.077	5.0	5.0	2-12	4-8	hspace.25in146
Statistics	5.824	6.200	5.0	7.0	3-11	4-9	hspace.25in 17
							5

Table 2: GSAS: Years to Complete the Ph.D. in Science Departments, 1981-1990

Department	Students	Female Pop.	Female WD	% WD/P	Male Pop.	Male WD	% WD/P
DAS	286	46	4	8.70%	240	17	7.08%
Astronomy	40	5	1	20.00%	35	2	5.71%
Biochemistry	96	31	5	16.13%	65	6	9.23%
Biophysics	57	11	0	0.00%	46	4	8.70%
Biology/CDB	98	46	1	2.17%	52	2	3.85%
Biology/OEB	105	33	1	3.03%	72	2	2.78%
Chemistry	276	48	7	14.58%	228	23	10.09%
EPS	69	13	2	15.38%	56	3	5.36%
Mathematics	104	8	4	50.00%	96	6	6.25%
Physics	235	22	0	0.00%	213	12	5.63%
Statistics	38	7	1	14.29%	31	1	3.23%
TOTAL	1404	270	26	9.63%	1134	78	6.88%
Anthropology	181	79	7	8.86%	102	8	7.84%
Psychology	105	58	15	25.86%	47	12	25.53%

Table 3: GSAS: Withdrawal by Gender, Natural Sciences, 1985-86 through 1989-90

**Biological Sciences**

Year	Men	Women
1990	50%	45%
1989	38%	22%
1988	41%	52%
1987	57%	31%

**Physical Sciences**

Year	Men	Women
1990	49%	46%
1989	46%	39%
1988	50%	47%
1987	55%	33%

Table 4: GSAS: Yields for Science Departments in Aggregate 1987-90

Table 5: GSAS: Yields for Men and Women Granted Admission to Ph.D. Programs in the Natural Sciences