

## UNIVERSITY APPROACHES TO AFFIRMATIVE ACTION

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The 1990–91 surveys of members of the American Astronomical Society, made under the direction of Frank Shu and independently by Jill Price, indicated widespread perception and experience of harassment and discrimination. The AAS Committee on the Status of Women in Astronomy followed up these surveys by sending letters to 350 North American astronomy institutions, in order to draw awareness to the types of problems encountered by individual respondents of the surveys. The CSWA letter requested information on the numbers of women faculty and students, and sought suggestions and comments on how individual departments deal with equitable treatment, mentoring, hiring and promotions, child care, and related issues. The total number of respondents was a disappointing 10%, but these institutions nevertheless provided some important comments which will be summarized here.

Table 1 lists the institutions which sent information on numbers of women in the departments. The corresponding percentages of women faculty, graduate students, and undergraduates are also given. A dash indicates no response or not applicable; a 0 has the total number of men in parentheses. Note that most departments have just 1 or 2 women, although of course the corresponding percentage varies.

Notes on individual departments:

**Laboratory for Astrophysics (Nat. Air and Space Museum):** Currently has 4 women Doctoral Fellowships and internship candidates. 50% of visiting fellows and interns have been female.

**Lunar and Planetary Observers:** Seven-person Board of Directors contains one woman. Membership 85–90% male. Staff: 1/26 female.

**NRAO:** Among all NRAO Ph.D. staff and astronomers: 1 woman, 76 men. Current Post-Docs: 0 women, 10 men.

**Ohio State:** Undergraduate astronomy: In 1989, 3 males and 0 females graduated; there were 20 male and 6 female majors—Gerald Newsom, Chair

**U.C. Irvine** (faculty indicates astronomy only): Undergraduate graduation rate: last year 5 women and 33 men graduated from this Dept. of Physics and Astronomy, with Bachelors.

**U.C. San Diego:** Two women faculty; also, there are 33 women physicists employed as faculty, post docs, researchers, and research assistants.

**U. New Mexico:** Represents entire Physics and Astronomy dept.

**U. Texas:** Only 1 woman tenured; 19 men tenured. Graduation Rate: 24 out of 32 men, 7 out of 8 women graduated with Ph.D. Undergrad. graduation rate: for student majors in 1987, 14/30 males and 9/17 females got Bachelors.

**Table 1: Female Percentages in Astronomy Departments**

Department	Faculty female	female/ total %	Grad Stud. female	female/ total %	Under-grad. female	female/ total %
Berkeley	1	<b>6</b>	6	<b>16</b>	5	<b>11</b>
Bowdoin Coll.	0 (5)	<b>0</b>	—	—	1	<b>13</b>
CalTech	1	<b>8</b>	7	<b>25</b>	2	<b>20</b>
CITA (Toronto)	0 (4)	<b>0</b>	—	—	—	—
Colorado	3	<b>15</b>	11	<b>25</b>	—	—
Cornell	1	<b>8</b>	5	<b>12</b>	—	—
Florida Tech.	0 (14)	<b>0</b>	4	<b>14</b>	26	<b>30</b>
Harvard	2	<b>5</b>	6	<b>25</b>	—	—
Irvine, U.C.	1	<b>25</b>	7	<b>8</b>	11	<b>15</b>
U. Kansas	1	<b>4</b>	—	—	—	—
UCLA	1	<b>8</b>	5	<b>24</b>	5	<b>42</b>
Lab. for Astroph Lunar / Planet.	0 (3)	<b>0</b>	—	—	—	—
Middlebury Col.	0 (7)	<b>0</b>	—	—	7	<b>78</b>
U. New Mexico	2	<b>7</b>	22	<b>21</b>	16	<b>18</b>
NRAO	1	<b>1</b>	—	—	—	—
Ohio State	2	<b>15</b>	5	<b>26</b>	2	<b>11</b>
U. Oklahoma	2	<b>8</b>	3	<b>16</b>	9	<b>31</b>
Princeton	2	<b>18</b>	5	<b>33</b>	2	<b>25</b>
Rhodes College	1.5	<b>23</b>	—	—	1	<b>5</b>
Rutgers	5	<b>9</b>	10	<b>9</b>	22	<b>19</b>
San Diego,U.C.	2	<b>22</b>	—	—	—	—
Dept. Terr. Mag.	1	<b>25</b>	—	—	—	—
U. Texas	3	<b>14</b>	8	<b>16</b>	10	<b>20</b>
U. Toledo	1	<b>5</b>	4	<b>14</b>	0 (3)	<b>0</b>
Vassar	1	<b>50</b>	—	—	4	<b>50</b>
U. Victoria	1	<b>4</b>	2	<b>8</b>	—	—
U. Washington	3	<b>16</b>	2	<b>9</b>	6	<b>43</b>
Williams	1	<b>50</b>	—	—	1	<b>25</b>
Wisconsin	1	<b>8</b>	6	<b>23</b>	15	<b>19</b>

**U. Toledo:** Numbers reflect graduating astronomy majors only. “a very small percentage of the female undergraduate students graduate . . . most female undergraduates change their major from physics to another major, often a different science.” —Marlene Russell, Dept. Secretary

**U. Washington:** Since 1989, Undergraduate degrees granted: 10 women, 6 men. Since 1968, 3 of 54 (6%) Ph.D. degrees were awarded to women.

**Wisconsin:** Between 1982–1986, 15/80 undergraduates were female, and 7/44 bachelor’s degrees were to women.

Martha Hazen provided letters from a similar survey made by the CSWA in 1972 under the direction of Roberta Humphreys. We thought it would be interesting to compare the 20-year differences, but since only 8 institutions were in both surveys, the results offer little insight into general trends. These departments generally increased the

total number of women by 1, as shown in Table 2, but data are not available to show the corresponding percentage increases. In any case, the numbers of women remain very low.

**Table 2: Schools from 1972 Survey that Responded in 1992**

school	women faculty (1972)	% women	graduate women in last 10 yr	% women
UCSan Diego	2		19	
Harvard	2	9.4%	9	9%
New Mexico	0		1	5%
Ohio State		19% total	7	
U. Texas	2	20%	5	4%
Vassar	0 (1)		—	
Washington	1		2	
Wisconsin	1		10	

Because women students often cite the advantages of women mentors, we sought a correlation between the percentages of women students and faculty. The results for the graduate students are shown in Figure 1. There is no clear-cut correlation due to the small number statistics, but a hint of a positive trend is present. There is even less of a correlation for undergraduate students, as expected.

**FIGURE 1**

The thoughtful comments from the chairs of departments (many of whom were male) revealed something of the kind of efforts and psychology that characterize modern-thinking departments, along with their struggle to improve. Many chairs acknowledged and recognized the gravity of the deficiency of women at all levels in their departments. Many expressed quantitative concerns about the successive reduction in percentage of women from undergrad to graduate students to faculty. However, not a single chair mentioned that some discrimination in admissions or hiring might occur in their department, and only two chairs acknowledged that subtle “environmental” issues might play a role in discouraging young scientists. By contrast, one respondent passed out the survey to the students, and found that a “cumulative discouragement” characterized the feeling of many female students.

The mere fact that some departments are evidently trying to improve constitutes a hopeful sign. However, there seemed to be no correlation between the thoughtfulness of the department chair and the success in recruiting/retaining women graduate students and faculty.

The detailed comments from chairs fall into the following categories, which will be discussed in turn as ways to improve women's opportunities:

1. Encourage respect through awareness
2. Have active policies on female recruitment
3. Let non-tenure track appointees apply as PI's to grants
4. Assist with two-career families and child care
5. Have female departmental advisors and role models
6. Have special funds for women students
7. Recruit women into astronomy early in their college careers
8. Form women's science groups or lunch gatherings
9. Have women as speakers and as members of committees

The following comments are excerpts from the survey responses.

## 1. ENCOURAGE RESPECT THROUGH AWARENESS

**Bowdoin College** commented that "The Physics Dept. faculty are very aware of gender issues. From my observations, women students are treated fairly and are strongly encouraged to pursue science. The college has a child care center. And certainly degrading posters of women would NEVER be tolerated anywhere on campus."

Mike Jura, Chair at **UCLA**, stated "Unfortunately, in my experience, there are problems regarding fair treatment of women. It is also true that the history of these problems is difficult for all involved and sometimes gets into personnel decisions which are very sensitive. . . . I would suggest that an essential way to improve the status of women is for people to be sensitive to and aware of the difficulties. It is at best difficult and probably usually counterproductive to use various words like "sexism." Also, many people will not recognize the implication of their own behavior (I assume I must include myself in this category.)"

**Univ. New Mexico** and **Washington** have detailed grievance procedures for cases of perceived discrimination. **Univ. of Wisconsin** has a published set of rules and definitions regarding: (a) sexual harassment, (b) grievance procedures, (c) network of 'sexual harassment contact persons,' (d) statement on "Consensual Relationships" designed to avert improper behavior by those in positions of power

P.A. Vanden Bout at **NRAO** stated "I agree with the CSWA that discrimination often is carried out unconsciously. While NRAO has no policy mandating that hires include a specific percentage of women, we have taken steps to enlarge the pool of women applicants and provide reminders in the hiring process that encourage their serious consideration." NRAO sent to all employees on Nov. 13 1991, a memo detailing its policy on sexual harassment. It outlined the passage in the Civil Rights Act of 1991, including specification of a definition of harassment and availability of reprisal-free grievance possibilities.

At the **Univ. of Texas**, "There is a collective determination to be fair. However, these efforts are unguided by any rules laid down at the department level."; similarly, at

**Ohio State Univ.**, "...the astronomy chairs have made it clear that all people in the department are to be treated with respect. I realize this sounds like a very qualitative statement; there are detailed examples I could recite..."; "We have not had any cases that I am aware of where discrimination was reported; hence no grievance procedure has been established."

**Rhodes College** acknowledges that discrimination is a problem area: "Little has been done toward promoting fair social treatment of women students; rather, the atmosphere has been intimidating for such students. We hope that the addition of a new woman faculty member full-time will improve this situation. The lack of a female role model has hindered (we believe) encouragement of women to continue in physics/astronomy track. Further, intimidation and inadequate attention to this area has not encouraged several well-qualified women students to continue in physics/astronomy."

**Rutgers** thought matters were well under control, and merely reported that "I have to check on the posters in the machine shop" (regarding degrading posters in the workplace).

## 2. HAVE ACTIVE POLICY ON FEMALE RECRUITMENT

**CITA (U. Toronto)** has an "Employment Equity Policy":

1. Advertisements should include a phrase such as the following: "The University of Toronto encourages both women and men to apply for position."
2. Special efforts should be made to draw the position to the attention of potential applicants of that sex which is a minority in the department.
3. In appointing search committees, members of both sexes should be included wherever reasonably possible.
4. In addition to the normal documentation accompanying recommendations to [the chairperson's] Office, the following should be included:
  - (a) a statistical summary of applicants and of interviewees showing numbers of males and females in each case.
  - (b) the C.V. of the most qualified individual of the opposite sex from the candidates selected.

At **Cornell Univ.**, "...we make special efforts to attract and encourage (women) and other under-represented groups... to hire undergraduate women in research internships during the summers and part-time during the academic year. We vigorously recruit women into our graduate program, give a slight preference in admissions, and give a significant preference in fellowship awards," noted chair P. Gierasch.

Cornell has a "Southern Tier Dual Career Network" established by provosts of area colleges and universities, with representation from major area corporations and businesses, seeking to facilitate the employment of accompanying partners of faculty and staff in academic, research and administrative positions. "In recognition that we must work cooperatively to recruit and retain key faculty and staff, the Network assists its members in referring candidates for consideration for employment."

**Univ. Victoria** institutes a "Male-Female Equity/Recruitment Plan": By diligent application of the procedures outlined in this document, the Department of Physics and Astronomy aims to have a male-female distribution of new faculty which will match that of the source populations from which new faculty candidates are drawn. The primary

criterion in the selection of new faculty will continue to be academic excellence. *If one sex is demonstrably under-represented in the Department and if two or more of the leading candidates for a position are judged to be of equal quality, one of whom is of the under-represented sex, then the position will be offered to that candidate.*

**NRAO** policy is such that “First, the site directors are to contact one or more of the women who are members of various Observatory committees to seek suggestions of women who may be encouraged to apply and to then contact these potential women applicants. Second, if possible, selection committees should include a woman. Finally, the Personnel Manager and I continue to remind the site directors of the need to hire more women on the professional staff.” Vanden Bout continues, “We have a long way to go in this area. . . .I believe there is a threshold effect—if we had one or two women astronomers at major NRAO sites it would be easier to attract a larger applicant pool. The same applies to postdoctoral positions.”

**Assoc. Lunar and Planetary Observers** has a membership of 550: 85–90% male. Staff: 1/26 female. Board of Dir.: 1/7 female. “We perceive this gender imbalance to be a problem, both in that it is undoubtedly depriving many women of the pleasure and challenge of observing of the objects of our solar system, and also because we are always in need of more observers for our programs. Perhaps there are some discrimination factors in common between professional and amateur astronomy. Thus, we would be very interested in receiving the results of your study when they become available.”

### 3. LET NON-TENURE TRACK APPOINTEES APPLY AS PIs TO GRANTS

**At the U. of Wisconsin**, postdoctoral researchers are permitted to be PI on grant proposals. This issue has been of concern to junior men and women alike at other institutions, which would do well to follow Wisconsin’s example.

### 4. ASSIST WITH TWO-CAREER FAMILIES AND CHILD CARE

**At Washington**, Hodge noted “In the past three years, we have had two promising female students leave our program in mid-stream to follow their husbands to postdoctoral appointments. In neither case was the spouse an astronomer, so there could be no question of our taking extraordinary efforts to make a postdoctoral position ourselves . . . we have had far better success at (male) minority recruitment and retention: over the past 6 years, we have had three Hispanic, one black, and one Native American graduate student. . . .” Washington currently has 3 women professors in astronomy, two full prof. Two women profs have spouses who also have faculty appointments.

**Cornell** supports the Ithaca Community Child Care Center located on university land and accommodating 120 infants and children. **At Washington** child care is also available. The **Dept. of Terrest. Magnetism** does not make child care available, although there is a voluntary program that allows for the cost of child care to be deducted from taxable income, according to Maxine Singer.

**NRAO** realized that “Another contributing factor to the difficulty of recruiting women to our staff is the growing prevalence of two-career marriages combined with NRAO’s concentration of activity at remote sites. Socorro, New Mexico, and Green

Bank, West Virginia . . . the sites where staff growth might be expected, are too small to easily incorporate new two-career professionals. While this is a factor for male as well as female recruits, it is a more frequent issue for women NRAO would like to hire . . . The issue of day care has not come up at NRAO. Day care is generally available in Charlottesville, Socorro, and Tucson, and demand by NRAO employees, men and women alike, seems to be satisfied by these local facilities.”

The situation is more difficult at **Ohio State**, **Rhodes College**, and **Rutgers**, where little or no child care is available.

## 5. HAVE FEMALE DEPARTMENTAL ADVISORS AND ROLE MODELS

At the **Univ. of Kansas**, Barbara Twarog is advisor to the student physics club, affording perhaps the broadest possible influence on the social treatment of women in the department. At **Washington** and **Univ. of Texas**, lower and upper division advisors are women. **Ohio State** noted that “With only one female presently on the faculty, the presence of female role models is obviously less than we would like.” (Note: recently there was a new female addition to the faculty.)

On the question regarding the presence of female scientific role models, the **U. Oklahoma** response was, “Yes!” Their faculty consists of 2 females, 24 males. Similarly, despite small numbers of women, **Rutgers** reported “I think we are in good shape with female scientific role models.” (faculty: 5 women, 52 men).

## 6. HAVE SPECIAL FUNDS FOR WOMEN STUDENTS

**U.C. Irvine** similarly notes that their “Department supports women and minority graduate students by means of Graduate and Professional Opportunity Program (GPOP) fellowships and Chancellor’s Opportunity Fellowships. Both of these sources of funding are available to foster the post-baccalaureate academic advancement of women and minority students.”

## 7. RECRUIT WOMEN INTO ASTRONOMY EARLY IN THEIR COLLEGE CAREERS

The **Univ. New Mexico** reported that “We are coming to realize that women are removed from the student pool well before they get to the university not to mention being available for faculty positions. Our graduation statistics are very high. In the past 5 years, only one female graduate student has left the program by a method other than graduation and that was to transfer to EE.”

Twarog at **Univ. Kansas** sent the questionnaire to graduate students, and drew a different response than department chairs often gave. Responses reveal that “the cumulative discouragement projected to students is a great problem, and one that may affect female students particularly. One (student) respondent commented that she had felt discouraged in her early years, but eventually decided that one didn’t need to be a genius to study physics. We are doing a rather poor job in this area.”

**NRAO** recognizes that “Our summer student program is largely undergraduate now, due to funding policies. Women are represented in the applicant pool in relatively good numbers, 20–30 percent. Offers made to women are roughly the same percentage. Acceptances are somewhat lower than for men. This could be small statistics effects,

but I worry that the prospects of a summer spent with a heavily male-dominated organization might be a discouraging factor for some women when faced with an actual offer.”

**Univ. Toledo** notes that women undergraduates apparently change their majors out of physics.

At **U. Washington**, 6/15 graduate-student admissions offers were to women, but only one accepted. Hodge reports, “part of the problem is greatly increased national awareness of the issue, leading to exceptionally vigorous recruiting of well-qualified women: of the five women who declined our offers last year, three went to Berkeley, Princeton, and Harvard on full fellowships. Thus although our University has been generous in providing us with recruitment tools, the same is also true at many other prestigious departments, and as a result, demand for the best female entering students has outrun supply. The only long term solution here is to interest more young women in astronomy before, or early in, their undergraduate days.”

## 8. FORM WOMEN’S SCIENCE GROUPS OR LUNCH GATHERINGS

**Bowdoin College** has an active group ‘Men and Women in Science’ in which students and Biology Department faculty look at gender issues in science. They meet every 2 or 3 weeks to discuss reading or hear from a guest speaker. The **University of Wisconsin** reported the success of a Brown-Bag lunch for women graduate students, post-docs, and faculty once per month.

## 9. HAVE WOMEN AS SPEAKERS AND AS MEMBERS OF COMMITTEES

Often these categories are poorly represented by women, but at least 2 respondents are trying to make a difference:

Paul Vanden Bout reported that at NRAO last year 19 percent of the colloquium speakers in Charlottesville and 10 percent in Socorro were women. NRAO is encouraged by the percentage of women involved with committees and telescope usage. (This is in contrast with their staff, which has only 1 woman out of 77 Ph.D. scientists.)

NRAO COMMITTEES—Female representation:

Visiting Committee	1/10
Users Committee	6/28
VLBA Advisory Comm.	1/9
GBT Advisory Comm.	1/9

NRAO TELESCOPE ALLOCATION:

Telescope time allocated to women	12 %
Women users of NRAO facilities	10 %
Women members of AAS	12.5
Success rate (Hours scheduled per hour requested)	
for women proposers	70 %
Success rate for male proposers	71 %

Greg Shields reported that at the **Univ. of Texas** there is an endowed “Tinsley Visiting Professorship” for men and women, but 3/5 have been women.

To help improve the situation of women, the AAS CSWA this fall plans to start a voluntary women’s list of potential speakers and committee members, arranged by astronomical specialty, which will be made available to interested parties.

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