



Widening the Circle: Another Look at Women Graduate Students ¹

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At the sixth annual conference of the Association of American Universities (AAU), a major discussion was held on the presence of women in graduate school. Did the women create a problem for the university or the individual faculty members, and did the women contribute anything to graduate school? Should they be instructed together with men? How did the women who had graduated feel about the programs that they had attended?³ This conference was held in 1905. At that time graduate women among the AAU institutions constituted less than one fourth of the total graduate student population, including professional school students. Today, graduate women are still lagging behind their male counterparts. In this paper we will try to explain, both historically and empirically, the situation of women doctoral students and what problems keep them from parity with male students.

We will present practical suggestions for graduate deans on how to improve the present situation and how to truly welcome women into the circle of doctoral students.

In 1905, four of the fifteen AAU institutions admitted no women to graduate courses (The Catholic University, The University of Virginia, Johns Hopkins University, with the exception of its Medical School, and Princeton University). Women were admitted on an equal basis at Clark University, Cornell, Pennsylvania, Wisconsin, Chicago, Stanford, and California (Berkeley). The remaining four universities had some restrictions (e.g., did not admit women to study law, medicine, or technology). Stanford and Berkeley had the largest number of graduate women students at the turn of the century: women constituted 34% of the graduate student population at Stanford and 45% at the University of California, and they were, to a large extent, concentrated in the liberal arts.⁴

In order to have sufficient information to lead a discussion on this topic, Professor Albion W. Small, chair of the first Department of Sociology in the United States at the University of Chicago, conducted two surveys before the meeting. One survey was conducted among the 15 member institutions of the AAU.⁵ Each was asked to report on its actual experience with teaching, education, and, most important, training women together with men, for research and advanced professional work. The second survey was addressed to those women faculty at leading women's colleges who held doctoral degrees. It inquired about their experiences as doctoral students. Professor Small presented a paper, "Coinstruction in Graduate School," in which he reported the survey results.

Small differentiated between problems that individual faculty may have had with women and problems the university may have had from an "administrative or educational or scientific point of view."⁶

On the individual level, he found some "unchallenged prejudices" against women in graduate school. "Women are a nuisance in the laboratory. They can't even scratch a match for themselves. It is a bother to have them to look after."⁷ Or, "My experience has been that very few women have the mechanical skill required for successful laboratory manipulations."⁸ But he also encountered a few positive comments such as, "Some of my very best higher work has been done by women again and again."⁹ However, even the positive remarks were always followed by a limiting comment like, "Some years, the women have done all the best work ... but probably not up to the grade of my most distinguished men."¹⁰

When he analyzed the answers from an institutional viewpoint--and we could add, from a male institutional point of view--he found that no institutional problems appeared; furthermore, women were not "misusing their freedom"; and also, they did not "curtail the freedom of men."¹¹ The latter was obviously a major concern to men. He particularly tried to collect institutional answers from medical schools, because it was commonly believed that there were problems in educating women and men together. Even in these institutions no difficulties surfaced. On the contrary, medical school officers were pleased about the positive effect of women's presence on male students' classroom behavior.

Small had also sent the survey to the leading women's colleges. Presidents from these institutions

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responded to the survey with strong statements arguing that the most favorable conditions for women's undergraduate education were to be found in women's colleges, but that graduate work was best done in coeducational settings.

The responses received from the women doctoral recipients presented a quite different picture of their experiences as students. Graduate women, they said, were at a disadvantage because they had little intellectual contact with their instructors and the contact that they had was restricted to the lecture room. Men met often with their instructors and in a more informal way that permitted a freer discussion of their work.

Women also talked about the harsh academic climate, saying that although they were received for graduate work with reasonable courtesy, they never evoked the "academic type of enthusiasm"¹² men did. They emphatically rebutted the general presumption that women could not accomplish great feats. Rather, when attainments were practically equal, men's work was favored. It was only if women demonstrated superior capacities that they were recognized and honored. The reason for this presumption, said the women, was the common belief that male graduate students were more likely to devote themselves to genuine scholarly work, while few women would continue on an academic path. Therefore, investing in graduate women would yield a lower return.

They spoke about the pressure to perform. Because women were merely admitted to graduate school and not actively recruited as men were, they felt a double obligation to justify their presence by their achievements. This caused strained and feverish effort and had a negative effect on their academic work. However, the surveyed women hoped that this strain would cease when women were trained as undergraduates to become physically stronger, which they felt would help to develop greater self-esteem. Finally, in considering economic reasons, the surveyed women argued that because it would be a financial waste to duplicate libraries and laboratories to educate graduate women separately, research universities should offer graduate women equal rights and equal treatment so they could obtain the best instruction in advanced studies alongside male graduate students.

In spite of these limiting experiences, the women doctoral recipients who participated in the survey, like the presidents of women's colleges, were unanimous in recommending complete adoption of coinstruction at research universities.

Professor Small closed his presentation saying that at that time, no university and no professor had been found willing to conclude that coeducation had presented problems "beyond trifling matters of detail." He stated that the evidence pointed to the conclusion that difficulties had existed due to intolerance on the part of individual faculty. "Coeducational graduate schools are simply enjoying the proverbial blessedness of the country that has no history."¹³

He then offered his own conclusion. There was no need to worry about the presence of women in graduate school because as long as research is the program of graduate schools, women would not predominate.¹⁴ Statistics "lend strong color to the suspicion [that] the more genuine the work of investigation, the smaller the percentage of women who will care to undertake it."¹⁵ He explained his statement by saying, "relatively fewer women than men have the means and the taste and the fitness and the nerve combined to succeed in research."¹⁶ Besides, he explained,

"Right or wrong, wise or unwise, the public does not enthusiastically welcome women to professional or investigating positions. Women know that the market for their professional services is limited, and until there is a revolution in social standards they would be defying their fate if they should create a supply much in excess of the demand."¹⁷

Small ended with the following reflection:

"Experience does not confirm the fear that equal franchise of women in Graduate Schools would either unwoman women in

general, or compromise the freedom of men. It is, therefore, difficult either to admire the magnanimity or to respect the justice of adding arbitrary disabilities to the necessary obstacles that women must overcome in gaining full freedom of intellectual life."¹⁸

President Stanley Hall from Clark University, a well-known professor of psychology and the next presenter at the 1905 AAU meeting, had a slightly different perspective on graduate education for women that was colored by biological determinism, a popular belief at that time. Referring to Herbert Spencer's theory of "splendid individuation developed at the expense of genesis," he argued that the mental and nervous strain caused by academic work, reduces the reproductive powers of women.¹⁹ He claimed that women seeking doctorates were women with "little wifehood or motherhood left in their bodies or souls."²⁰ He argued that because women are by nature different from men, graduate education for women should be different than (but equal to) that of men. This "separate, but equal" point of view was shared by many Progressive Era educators including university professors.

President Hall's separate but equal standard was far less equal when it was applied to women. On the one hand, Hall supported "the opening of every higher university facility to the insignificant number of elite women who are fit and wish [graduate studies]."²¹ On the other hand he asserted that the few women who were mentally fit for graduate school did well only in fields that required intuition and patience and that women were incompetent in fields that required abstract thinking.

He formulated this theory from his own limited experience²² and the opinions of his colleagues, not from a systematic study. He explained that women did well in literature, the arts, education, experimental and comparative psychology, and child study. In the last three fields he felt that they excelled because women were conscientious record keepers, had more patience with details than young men, and had a great aptitude for work that required instinct. He found other benefits provided by the presence of women in graduate school. Having women in the classroom exercised a "subtle mental stimulus" on each sex, particularly on the women. Further he observed that graduate student wives whose husbands were in the same fields contributed substantially to their husbands' work, in rare cases even producing the best part of it.

Nevertheless, there were some fields in which women were incompetent: "pure philosophy, including metaphysics, epistemology, logic and the universe in general."²³ Hall believed that women were not able to formulate abstract thoughts, they were dependent, less critical, and less original than men. In his opinion, these defects made them ideal as research assistants:

"Although woman is usually so far less independent and has less originality, she often makes an ideal research assistant (which, a French physicist tells me, is really the relation of Madame and Monsieur Curie),"²⁴ and women were perfect compilers of literature.²⁵

Given these facts, he proposed that universities should develop new educational policies based on the idea that women were neither inferior to men nor identical, but by nature different from men. Therefore higher education should strive to make women more womanly and not unsex them.

"She is more conservative, less diverse from other members of her sex than men, less prone to deformity of body and to specialization of mental activity, less disposed to every vice save ruse and deception, and to every crime save infanticide. Her altruism and self-consciousness always incline her to overdo and to take out of her system more than it can bear."²⁶

His greatest concern in higher education for women, however, was the threat of race suicide. He observed that few college educated white women married, and if they did, then few had children. This concern grew out of a fear, also shared by Theodore Roosevelt, U.S. President from 1901 to 1909, that if native-born, college-bred women did not marry and produce a sufficient number of offspring, the chil-

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dren of immigrants would soon supplant old American stock.²⁷ Hall closed his talk with a warning, "Our higher education would soon depopulate the country if it became universal."²⁸

In spite of this historical bias, graduate education for women has become universal. Women are creative, conduct genuine research, receive Nobel Prizes, and are simultaneously wives and mothers. An increasing number hold appointments as deans and serve as university and college presidents. The "revolution in social standards" that Professor Small deemed necessary for the success of women in higher education has occurred.

Some 90 years later we have come a long way from a position that regarded most women unfit for "constant intellectual effort along one line," as President van Hise from the University of Wisconsin, a lively participant in the subsequent discussion of Hall's and Small's presentations, asserted at the 1905 meeting.²⁹ However, we still have a long way to go to achieve equal participation of women in all aspects of graduate education. Many of the women's responses to Professor Small's survey can still be heard echoing through the halls of modern campuses.

Women in Graduate Studies Today

We will first examine what we know empirically about the present situation of graduate women, what women in the middle 1990s say about their experience with graduate training for research and advanced professional work, and how these experiences compare to those reported in 1905. Where national data are not readily available, we will provide data from the University of California, Berkeley.

Second, we will recount current explanations of the reasons graduate women students, particularly women doctoral students, are still lagging behind their male counterparts in certain areas.

Third, we will make suggestions about what university administrators--particularly graduate deans--can do to support women doctoral students at the various stages of their studies.

What Do We Know About Women in U.S. Graduate Studies Today?

Women's Participation in Graduate Education.

Over the last 30 years the overall number of doctorates awarded in the U.S. has increased from 16,340 in 1965 to 41,610 in 1995 (the last year for which national data are available).³⁰ While the number of doctorates awarded to men peaked in 1973, declined during the mid 1970s, remained static through most of the 1980s, and began to increase toward the end of that decade, the number of women who earned doctorates increased steadily, from 1,760 in 1965 to 16,333 awarded in 1995. This represents an increase of over 800%. The number of men increased during the same period by only 73%. Women's representation among all Ph.D. recipients rose accordingly from 11% in 1965 to 39% in 1995. Excluding international students, the proportion of doctorates awarded to U.S. women increased from 25% in 1976 to 46% in 1995, near parity with the percentage of U.S. male doctoral recipients.

Women (domestic and international) increased their participation in all fields of study in the last 20 years. Between 1975 and 1995, the largest increase in the percentage of Ph.D.s earned by women occurred in education³¹ (from 31% to 64%), followed by increases in the social sciences (from 25% to 51%), in the life sciences (from 18% to 42%), in other professional fields such as architecture, social welfare, and public health (from 15% to 37%), the humanities (from 33% to 48%) and the physical sciences (from 8% to 22%). Though the smallest increase in the percentage of women earning Ph.D.'s occurred in engineering (from 0.2% to 12%), the overall change is dramatic.

Although in 1995 women doctorates studied a wider range of subjects than they used to 20 years ago, they were still concentrated in

education (25%) and the social sciences (21%). Men, on the other hand, were still concentrated in the physical sciences (21%) and engineering (21%). However, a higher proportion of women (20%) than men (18%) received degrees in life sciences.

Has the proportion of nonwhite women doctoral recipients increased? In 1995, 14% of U.S. doctorates awarded to women were awarded to Hispanic, African American, and Asian American women as compared to 9% in 1976.³² This is due to the considerable increase in Asian American and Hispanic women attending graduate school.

Although there is an increase in numbers of African American women doctoral recipients, the proportion of the total degrees awarded to them has remained the same (6%).

When women completed their doctoral studies in 1995,³³ they were about 1 year older than male doctoral recipients in those fields where women were concentrated: in education 44 versus 43 years; in the life sciences 33 versus 32 years. However, men and women were the same age in both social sciences and humanities, 34 and 35.4 years, respectively. In engineering and the physical sciences, where we still find a small proportion of women, they completed their degrees at a younger age than men did, 31 versus 32 years in engineering, and 30 versus 31 years in the physical sciences.

Time to Degree.

What do we know about the length of women's doctoral study? The overall time it takes men and women doctorates to complete their studies does not differ substantially. In 1995, women in engineering and physical sciences completed the doctorate slightly faster than their male counterparts (6.2 versus 6.4 median years in engineering and 6.7 versus 6.9 median years in physical sciences). In all other fields (life sciences, social sciences, humanities, and professional schools) women took, on the average, 3 months longer than men to complete the degree.

How many women parents are undertaking doctoral studies? In the 1990s more women who have responsibility for dependent care (children) go to graduate school than they did 25 years ago. Because a dependent is defined by the only national survey that records such information (the Survey of Earned Doctorates) as "someone receiving at least one-half of his or her [financial] support from the student,"³⁴ we can assume that for women these dependents are more likely to be children than a husband, parent, or grandparent. While in 1968 over 80% of men financially supported a dependent and only 23% of women did, in the 1990s the gap decreased considerably. Thirty-six percent of women shouldered the financial burden for dependents compared to 57% of men.³⁵ When one looks at the time it takes students with dependents to complete their studies, it is not surprising that these men and women took longer than their counterparts without dependents, and that, on the average, women with dependents took a longer time to complete the degree than did men with dependents.

Completion Rates.

What do we know about women completing their doctoral studies? Because of the decentralized nature of graduate education, no national data exist from which retention rates of doctoral students can be calculated. Each university keeps its own student records, and the extent and quality of these records vary greatly. Thus, any estimates of doctoral retention rates depend entirely on the degree of automation and the care with which student records are maintained. In the following section we will use our own Berkeley data for which we can provide accurate definitions and explanations of how we derived statistics on completion rates.

We used data from three cohorts of doctoral students who entered in the fall of 1981, 1982, and 1983, analyzing their completion rates 11 years after they entered graduate school. We found that about 80% of all self-designated doctoral students completed a graduate program, but not all who indicated the doctorate as their final goal actually completed the degree. Some graduated with a master's degree. Therefore, the

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doctoral completion rate is lower than the overall graduate degree completion rate. For the 1981-83 cohort we found that of the 78% who had completed a graduate program after 11 years of study, 18% had received master's degrees only, and 60% received doctorates. Seventeen percent left without a degree, and 5% were still "pending" (in this group, about half completed their degrees after year eleven).

Doctoral completion rates vary substantially across major fields of study. For the 1981-83 cohort, students in the biological and physical sciences had the highest completion rate (73%), followed by engineering (66%), the social sciences (53%), the professional schools (48%), and finally, the humanities (44%).

A smaller proportion of women than men received a degree because completion rates vary by gender. In an earlier 1975-77 cohort, for example, 44% of all women and 51% of all men completed the doctorate; in the 1981-83 cohort, these percentages had risen to 52% and 65%, respectively. This pattern was consistent across fields for all analyzed cohorts, prompting us to conduct individual interviews and focus groups with women students to find explanations for this consistent difference.

In addition to variations by fields of study, there were variations by citizenship status and race and ethnicity. International students, both men and women, consistently had the highest completion rates in all fields and in all cohorts.

The Current Situation of Graduate Women Students

Although today at Berkeley we see an increase in the number of women completing their doctorates, and although Berkeley annually awards the largest number of Ph.D.s to women in the United States (excluding doctorates awarded in education), we still notice a quite dramatic reduction in the participation rate of women from undergraduate to graduate studies and from graduate studies to faculty positions. At Berkeley for example, in 1994-95 in engineering, 18% of the undergraduate degrees went to women. However, women in the same field earned only 10% of all doctoral degrees and occupied only 5% of ladder faculty positions. How do we explain this drop-off? How does it relate to the situation of graduate women?

The literature offers an array of explanations for this drop-off and for why the educational experiences of women in graduate school differ from those of men. Here, we want only to name some of the institutional factors impeding graduate women's success.

Women's ability to succeed is affected by their representation in a group. The small numbers of women in some fields (below critical mass, which is defined as being at least 15% of the total population) result in isolation which, in turn, increases stress, impedes research progress, and can lead to abandonment of doctoral study or professional career. This applies both to graduate women and to women faculty. (Kanter, 1977; Wilson, CGS, March 1994). Organized change occurs only after women constitute a "critical mass" (Kanter, 1977).

A predominantly male faculty results in a lack of role models for women students, thus depriving women of the inspiration to advance and the assurance that they can succeed.

The "male locker-room network," from which women students are excluded, still exists. Women miss out on the informal mentoring inherent in this system and have weaker advancement and career opportunities because this internal communication channel provides many relevant pieces of career advice to male students.

In academia, scholarly reputation is evaluated as a function of age. Studies of eminent male scholars have shown that their major intellectual achievements have tended to come early in their lives (Lehman, 1965). But the stage of life during which a man's successful academic career is traditionally developed coincides with a woman's prime child-bearing years. Inadequate child care facilities, the difficulties inherent in part-time study, and an academic career system that is modeled after the "clockwork of male careers" make it difficult for women to contin-

ue their studies and to achieve and advance in faculty positions (Hochschild, 1975).

The existing criteria for excellence and achievement in academic science coincide with men's behavior, not women's (Wilson, 1993). Some studies have shown that, on the average, women tend to approach their scientific careers differently from men--including laboratory management and choice of research topics.³⁶ Women tend to be less competitive and to place less importance on professional recognition than men. In general, women look at their work in terms of what is needed to solve a problem, rather than what is needed to produce a quantity of work or to feel successful. In fact, several studies have found that female scientists publish only half to three quarters as many papers as male scientists.³⁷ While women publish less often than men, their papers are cited at a higher rate³⁸. One interpretation of these results is that women tend to take more seriously the internal requirement to turn out very thorough articles rather than just turning out a lot of articles. For academic scientists, the very language and goals of science need to be restructured to include women's values and contributions full (Wilson, 1993).

What Can University Administrators Do During the Various Stages of Our Doctoral Programs to Support Women Students?

Graduate deans can encourage the institution to bring more women into graduate school, particularly in the physical sciences and engineering. We can work toward parity in the percentage of women and men who complete graduate school. We can make sure that we assist women in obtaining professional employment.

1. At the Beginning: Admission and Orientation

Let us begin with the admission process, which the graduate school can monitor. At Berkeley, as a monitoring device, we have created a women's index by dividing the women's admission rate by the men's admission rate. If an equal proportion of qualified women and men have been admitted from comparable applicant pools, the index should be one. Generally, it's above one. However, in cases where the index is considerably lower than one, we contact the department in the following fall semester and request an explanation of their admission decisions.

We all know how important the initial orientation is--the welcome to the department and its particular programs. From the many interviews we have conducted with women and men at Berkeley over the years, we have learned that certain welcoming remarks, unfortunately very commonly used, can have a negative effect on women. Some department chairs start the orientation by telling the incoming students, "You are brilliant people. We have chosen the cream of the crop. You should be planning to graduate in 3 or 4 years, at the most." Many women (and some men) tend to feel, "Everyone else who is here is brilliant, I am not. They made a mistake admitting me." The well-intended welcome results in women feeling inferior and uncertain about their ability to succeed from the very first day in the program. It would be more helpful to tell students, "We chose every one of you because we wanted you in our program. We have a structured program with lots of assistance from graduate advisers to help all of you achieve your degree goal." While one might encourage students to complete in 3 or 4 years, one might also indicate the realistic range of time needed for recent Ph.D.s to complete their program.

2. Collegial Learning Environment

Lately we have come to understand more and more about the importance of the learning environment for the success of our graduate students. Not only can a chilly classroom climate have a negative effect on learning, but if a department is "chilly," women in particular have difficulties valuing themselves and persevering confidently in their studies.³⁹ Overall, we found in our exit questionnaire at Berkeley that women doctoral students were more dissatisfied with the departmen-

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tal advising and guidance than men were.

Many women tend to internalize the department's lack of attention and caring as personal failure, interpreting it to mean that they do not deserve to keep going, that they have done something wrong, or that they must not be good enough. As one woman student in biology said,

"I feel like I've been pretty successful in my graduate career here, by objective standards. I've done good work; I've gotten my papers published; I've gotten grants; I've gotten teaching awards; I've gotten awards for giving talks at meetings. And I feel like nobody would notice if I decided tomorrow not to finish my thesis. Nobody takes the time to notice. That is the sort of departmental culture that I think takes a pretty heavy toll on the women."

Most male doctoral students, conversely, are more confident of their place in the academic system and seem to adjust better to a department's climate of benign neglect. Their greater sense of entitlement and confidence propels many of them more smoothly through graduate school.

3. Transparent Rules and Procedures

Because we know from our interviews that a good proportion of graduate women still feel less entitled to a graduate education and tend to internalize the lack of departmental attention, it is important that departments establish transparent procedures and systems of regular feedback. For example, public posting of selection criteria and hiring procedures for research assistant and teaching assistant positions reduces anxiety and the fear of academic incompetence among graduate women students. We found that where clear procedures and regular feedback exist, women advance more easily and experience greater academic confidence.

This is particularly true for the qualifying examination. Some 28% of our successful women doctoral candidates in the humanities reported that they experienced the qualifying exam as too stressful compared to 18% of the men.⁴⁰ The oral examinations in the humanities tend to be less structured than in other fields, and not knowing what to expect seems to be particularly stressful for women. At Berkeley, we provided graduate students in our humanities departments with examples of other departmental strategies for helping students prepare for and survive the examination, such as holding "mock orals" (a well-established practice in science departments) or offering question and answer workshops with faculty on "how to take your orals."

4. Countering Isolation and Fostering Integration

Several studies on doctoral education, including our own Berkeley studies, reveal that one of the most severe problems among graduate students, particularly graduate women students in the sciences, is isolation (Brainard, 1991; Nerad & Stewart, 1991; Etzkowitz et al., 1992). Isolation generates negative consequences, such as depletion of self-confidence and exclusion from access to informal sources of professional information. We and others find that isolation is a reason women frequently cite for leaving graduate school. In contrast, success in graduate school depends upon being integrated into one's intellectual community. All fields, but particularly the sciences, must provide ample opportunities for formal and informal contact and conversation.

Although there are more graduate women in natural science and engineering fields today, most commonly they become dispersed among an increasing number of specialties and research groups that have little interaction with one another. This dispersal continues to have the unintended effect of marginalizing women.

We need to impress upon our department chairs the importance of helping to create or sustain a student network, beginning with the students' first day of graduate school. Peer support systems, such as the "big sibling" programs used in some of Berkeley's graduate departments, or weekly women's breakfasts or dinners (Easing the way, 1992) can help build in support systems that integrate women immediately into the department and its culture. Acknowledging the importance of

female role models for moral and professional support, we need to continue our affirmative action hiring efforts and consider establishing incentives for departments that hire more women faculty. Some people have even suggested that the NSF cut off grant funding to universities that do not have a minimum number of female faculty in science and engineering departments (Etzkowitz, 1994). When women students have the opportunity to interact with female peers and mentors who have experienced similar pressures, life-experiences, and responses, the tendency for self-blame, exclusion, and isolation is reduced.

We have learned, however, that providing the appropriate way to support women students requires sensitivity. We need to acknowledge the unique experiences of women, yet not belittle them by offering "special events," which may be interpreted as subtle hints that women need extra help. Our current approach is to support existing graduate women's groups while at the same time offering many community events and addressing issues of departmental climate, family, career, and child care resources as community life issues and not as women's issues.

5. Workshops on Sexual Harassment

Sexual harassment has received enormous media attention during recent years. Most campuses have a strong policy prohibiting sexual harassment and have established complaint resolution procedures. However, we have noticed that a significant number of students and faculty are confused about what behavior constitutes sexual harassment. Offering workshops that specifically identify sexually harassing behavior can ease the relationship between faculty and students and improve the departmental climate.

6. Improving Graduate Student Services

Comparing university structures and experiences, we have found that, on many campuses, student services emphasize service to undergraduate students. Student committees tend to forget that graduate students use services such as health care, counseling, family housing, child care, and the library often and for a longer period of time. Ample and easily available campus child care facilities may help to reduce time-to-degree for all graduate student parents, but particularly for graduate women students with children. We need to make sure that the concerns of our married graduate students, and particularly of our women students with children, are represented in the appropriate campus administrative committees.

7. Relationship with the Dissertation Supervisor

Mentoring has been widely discussed lately.⁴¹ Interestingly, in these discussions it is often assumed that in disciplines where students work in teams and in laboratories and where students are research assistants to their main adviser, mentoring takes place much more successfully than it does in less formally structured disciplines, such as the humanities. This assumption is questionable. In our doctoral exit survey students are asked, "As you look back over your doctoral studies, how satisfied have you been with the professional relationship with your dissertation supervisor?" Less than 14% of the women in all fields were dissatisfied with their dissertation supervisors. However, in the physical sciences, 21% of the women were dissatisfied with their dissertation supervisors. In the humanities and social sciences only 12% and 13% were dissatisfied.

The doctoral survey also contains a control question: "If you were to start your graduate program again, would you select: (a) The same university? (b) The same field of specialization? (c) The same dissertation chair?" In response, an even larger proportion of both men and women in the sciences indicated dissatisfaction with their dissertation chairs. Thirty-seven percent of all women in the sciences answered that they would change dissertation supervisors (26% of the men would do so). Interestingly, in the humanities only 13% and 14% of women and men, respectively, would choose another dissertation supervisor.

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In addition, we have met with women students in the various science departments and interviewed women students who left without completing their doctoral programs, presenting the general results of the exit questionnaire and soliciting their explanations and ideas for improving the supervisor/student relationship. Here are some of our findings.

The lack of consistent feedback and positive encouragement from the supervisor seemed to affect women and men students differently. Women students stated repeatedly, "It is demoralizing that a lot of academic business is conducted in [such] a way that we are supposed to be happy with the absence of negative feedback." We found that where regular feedback and encouragement was lacking, women students began doubting their intellectual capabilities. Men students, in contrast, responded to the lack of feedback with disappointment, but remained sure of their intellectual capabilities. In this respect, the experience of women today recalls that of women graduate students in 1905.

Further, in environments traditionally dominated by men, a work ethos has evolved in which admitting doubts about one's own progress and seeking support is considered inappropriate. Women students tend more often to voice self-doubts than men students do, however, not all male faculty understand the cultural origins of these doubts; nor have they developed the interpersonal skills appropriate to communicate effectively with women students in such situations.

8. The Job Search

Our faculty supervisors and graduate advisers need to be reminded that it is their duty to meet with their students to discuss the student's career prospects. (Graduate adviser's handbook, 1996-1998) From our exit questionnaire we learned that in all fields, except the humanities, a smaller proportion of women than men is satisfied with faculty effort to assist them in finding professional employment.

We have a responsibility to encourage our campus career planning and placement centers to offer workshops on the academic job search, including workshops on writing a c.v. and letters of application, preparing for the on-campus interview, and interviewing at national conferences.

Top university administrators, particularly graduate deans, must also recognize the new situation with regard to postdoctoral positions. With the tightened employment market, academic job seekers in the sciences are prolonging the period of postdoctoral employment, often accepting two or even three different postdoctoral appointments at different locations before settling into a more permanent position. Since women's participation in the life sciences and physical sciences has more than doubled during the last 20 years, the number of women seeking postdoctoral appointments has consequently increased as well. Given that a larger percentage of our women doctorates have professional spouses than our men doctoral recipients, we are concerned that these women are less able to move two or three times in a period of 4 or 5 years. We know that it is not easy for either a man or a woman to combine family and career, but is this newly emerging postdoctoral employment pattern one more factor contributing to the women's decreased participation rate as they move from fresh Ph.D. toward faculty status?

Finally, we need to prepare our married student couples to devise strategies for coping with the challenge of finding two professional positions in the same location (The graduate, 1991).

Conclusion

In 1905 the women Ph.D.s said that they were at a disadvantage having little intellectual contact with their faculty outside the lecture hall. They spoke about the fact that they didn't elicit the "academic type of enthusiasm" men did, and had to demonstrate superior attainments in order to be appreciated. In the mid 1990s, women still encounter a "chilly" academic climate. Although many of the negative attitudes and

gross obstacles to achievement articulated in the 1905 discussion may have been eliminated, women still endure an academic climate that is often less than supportive and sometimes subtly discriminatory.

We have widened the circle, increasing the number of doctorates awarded to women in all fields, but we still have a long way to go to enlarge the expectations, further reject the stereotypes, and overcome the culturally ingrained practices that inadvertently exclude women from full participation and success in graduate school and professional careers. Top university administrators can play a central role in leading their institutions toward appropriate support of women graduate students at the various stages of the doctoral program, so that true parity of intellectual opportunity will be realized.

NOTES

¹This article is based on an AGS presidential lecture delivered by Joseph Cerny, September 23, 1994, in Minnesota.

²We want to thank Debra Sands Miller and Jean Six for their excellent editorial support.

³The Association of American Universities Journal of Proceedings and Addresses of the Sixth Annual Conference

⁴This large number of graduate women in Berkeley and Stanford can be explained to a significant degree by the state requirement for a fifth year of university study to become a high school teacher. Statistics on how many women completed the doctoral degree are hard to come by, but we assume, because of the high school teacher 1-year requirement, that the percentage who successfully completed their doctorates was much lower than the total percentage of graduate women.

⁵Membership of the Association of American Universities in 1905: University of California, Berkeley; Catholic University of America; The University of Chicago; Clark University; Columbia University; Cornell University; Harvard University; The Johns Hopkins University; The Leland Stanford Junior University; University of Michigan; University of Pennsylvania; Princeton University; University of Virginia; University of Wisconsin; and Yale University.

⁶Small, 35.

⁷Small, 36.

⁸Small, 36.

⁹Small, 36.

¹⁰Small, 36.

¹¹He did point to a danger not threatened by the presence of women alone: "It is the danger of surrendering the graduate purpose of training for investigation to the ambition for numbers."

¹²Small, 12.

¹³Small, 41.

¹⁴Small, 41.

¹⁵Small, 41.

¹⁶Small, 41.

¹⁷Small, 41-42.

¹⁸Small, 42.

¹⁹Small, 42.

²⁰Small, 42.

²¹Small, 42.

²²His experience consisted of working with one or two women per year for 15 years.

²³Small, 43.

²⁴Madame Curie received her first Nobel Prize for Physics in 1903. She shared this award with Henri Becquerel and Pierre Curie. In 1911 she alone received the Nobel Prize for Chemistry. Her husband Pierre Curie died in 1906.

Widening the Circle

Continued from page 6

²⁵Small, 44.

²⁶Small, 45.

²⁷Maresi Nerad. (1999). Women's place: the academic kitchen. Albany: State University of New York Press.

²⁸Small, 46.

²⁹Discussion on paper, "Coinstruction in Graduate Schools." in the Association of American Universities Journal of Proceeding and Addresses of the Sixth Annual Conference, 46-51

³⁰National Research Council. Summary Report 1995, 73.

³¹The only field where women outnumbered men.

³²National data on ethnicity and race of doctoral recipients were only available beginning in 1976 from the National Research Council's Survey of Earned Doctorates.

³³Women and men spend 7.2 median registered years to receive a doctoral degree (women 7.3 and men 7.0 years).

³⁴Questionnaire of the "Survey of Earned Doctorates," question number eleven, administered by the National Research Council in Washington, D.C.

³⁵These 1992 figures are the latest that are available.

³⁶Marcia Barinaga. (1993) "Is There a Female Style in Science?" 390

³⁷Ibid., 386.

³⁸Ibid., 390.

³⁹See Maresi Nerad. (1992). Using Time, Money, and Human Resources Efficiently and Effectively in the Case of Women Graduate Students.

⁴⁰Results from our University of California at Berkeley Doctoral Students' Exit Survey.

⁴¹See Maresi Nerad. (1996) Mentoring auf den zweiten Blick--einige provokative Thesen. in: Vorausdenken, Querdenken, Nachdenken (Thinking Ahead, Thinking Against the Stream, Reflecting). In Sigrid Metz-Gockel and Angelica Wetterer, (Eds.) Frankfurt, Germany: Campus, 1996; and (1995) "University of California, Berkeley: Beyond Traditional Roles of Mentoring," in N. A Gaffney (Ed.). Conversation About Mentoring: Trends and Models. Council of Graduate Schools, Washington, D.C., 18-27.

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Data Sources

Forty Percent of the System: The Contribution of DMOS Institutions to Diversity in Science and Engineering Graduate Education

by
Peter D. Syverson
Vice President for Research and
Information Services

--Reprinted by permission from *Making Strides*, Volume 1, Number 2, a publication of the American Association for the Advancement of Science, July 1999. See information about this new newsletter on page 15.

Introduction

In the world of U.S. higher education, considerable attention is paid to the major research universities classified in the Carnegie system as Research I and Research II. These 125 research-intensive institutions enroll more than one half million graduate students, grant 79% of all doctoral degrees and 83% of doctoral degrees in science and engineering. Faculty at research-intensive institutions are at the top of the academic food chain, and a tenure-track position at a Carnegie research institution is the ultimate goal of many Ph.D. students.

Studies of these institutions form the basis for much of what we know about graduate education. For instance, the AAAS study *Losing Ground* focused on 93 major research universities. The Bowen and Rudenstine study *In Pursuit of the Ph.D.* built its findings on the experiences of doctoral students at just 10 research institutions. And the *Ten Years Later* study of the careers of Ph.D. recipients is using 61 research-intensive universities as the basis for its sample.

However, there are many other institutions

in the graduate-education system. These institutions also have an important role to play in preparing-and employing-the next generation of scientists and engineers. In fact, there are more than 800 institutions in 7 other Carnegie categories that are involved in the graduate education enterprise. These include the Carnegie Doctorate-Granting and Master's (Comprehensive) institutions and universities with special missions classified as "Other Specialized." In addition, there are a number of colleges classified as Baccalaureate I and II that offer graduate programs.

DMOS (Doctorate, Master's, and Other Specialized) institutions enroll 56% of all graduate students and annually grant more than 230,000 master's degrees and 9,000 doctoral degrees. Moreover, they are the employers of many doctorate recipients from all levels of institutions, including those from research-intensive campuses. Estimates are that most doctorate recipients from Research I institutions find faculty positions in non-Research I institutions. According to the American Mathematical Society, more than one half of all new Ph.D.s in mathematics find faculty jobs in nonresearch intensive institutions.

DMOS are also a highly diverse group of institutions, ranging from doctoral institutions to small regionals to medical schools. In addition, this group includes most of the Historically Black and Hispanic Serving institutions with graduate programs.

This article will examine the contribution of the DMOS institutions to graduate education in science and engineering, focusing on ethnic

groups underrepresented in science and engineering—American Indian, African American, and Hispanic. Data will be drawn primarily from the CGS/GRE Survey of Graduate Enrollment, a survey of the 685 institutions that are either members of the Council of Graduate Schools or one of its regional affiliates. The survey population includes all 125 research-intensive institutions and 560 of the DMOS institutions.

National Context

The nation's universities

are in the midst of a sea change in graduate enrollment. The late 1980s and early 1990s were years of steady growth throughout graduate education, with annual growth rates of 2% and increasing enrollments across the disciplines. In the mid 1990s graduate enrollment plateaued, with growth in some fields and decline in others. In 1995, an extremely attractive job market for bachelor's-degree recipients spurred the beginning of a decrease in graduate enrollment, which continued through 1997 (see Figure 1). According to the National Science Foundation (NSF), science and engineering graduate enrollment peaked in 1993 and had declined by 6% by 1997. Enrollment decreases have been especially pronounced in mathematics, engineering, and the physical sciences.

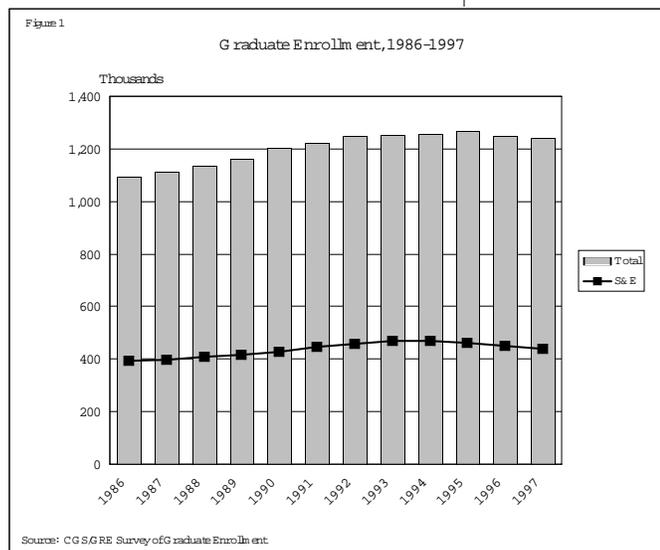
At the same time, enrollment of women and minority-group members remained steady or increased. In science and engineering, the number of women, African Americans, Hispanics, and Native Americans enrolled in graduate science and engineering programs increased through 1997. Asian enrollment in science peaked in 1994 and has declined slightly since then.

Graduate enrollment at DMOS institutions has followed a different path, reaching a plateau in the last few years but not beginning the decrease seen in the national data. Like the national trends, science and engineering enrollment at DMOS institutions peaked in 1994 and decreased by 5% from 1994 to 1997.

Science and Engineering Graduate Students at DMOS Institutions

With these national trends in mind, we turn to the contribution of DMOS institutions to graduate enrollment and diversity in science and engineering. As shown in Table 1, Research I and II institutions enroll 44% of all graduate students and 59% in science and engineering. Doctoral institutions contribute about one fifth of graduate enrollment, and the Master's-granting institutions account for 31% of the total population of graduate students and 17% of science and engineering students. Specialized institutions, consisting primarily of freestanding medical, health sciences, and engineering schools, contribute another 7%. In total, DMOS institutions enroll 56% of graduate students in all fields (see Table 1). These institutions also enroll 41% in science and engineering (see Figure 2).

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Well beyond enrolling 41% of science graduate students, DMOS institutions enroll a disproportionate fraction of women and minority graduate students. According to Table 2, DMOS institutions enroll 47% of women pursuing graduate degrees in science and engineering. For underrepresented minority groups the percentages are considerably higher. While accounting for 41% of science and engineering graduate enrollment, DMOS institutions enroll 47% of American Indian and 57% of African American and Hispanic gradu-

White graduate enrollment increased by 17% over the same period.

While minority enrollment in all fields grew substantially over the 11-year period, several fields stood out as areas of particularly rapid growth. African American enrollment in engineering grew at a 14% annual rate, Hispanic enrollment in health science fields increased by 12% per year and health and social sciences increased by 11% per year for Asian Americans.

Moreover, the rapid increase in enrollment has resulted in increases in the % share that minority groups are of total DMOS science

and engineering graduate enrollment. In 1986, African American students accounted for 4% of all DMOS S&E enrollment; by 1997 they were 7% of the total. Similar increases were experienced by other minority groups, with the Hispanic share growing from 4 to 7%, the Asian share from 6 to 8% and the American

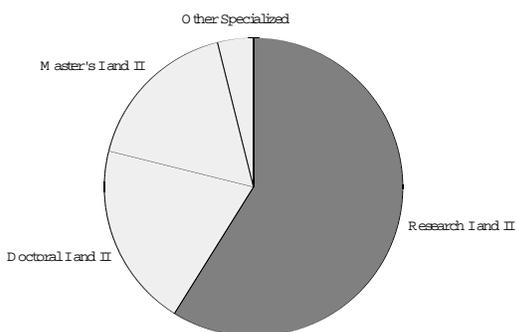
Indian percentage rising as well. There has been much concern about minority student interest in graduate education in the post-Proposition 209/post-Hopwood era. For example, the Losing Ground report found decreases in first-year enrollment in some research-intensive institutions. However, evidence from a sample of DMOS institutions responding to the CGS/GRE Survey of Graduate Enrollment survey indicates a different situation. While overall first-year enrollment in S&E fields did decrease from 1996 to 1997, first-year enrollment for members of most minority groups rose modestly. Although there was no change in American Indian first-year enrollment, first-year enrollment in S&E fields rose by 2% for Asians and African Americans and by 4% for the Hispanic group.

Summary and Discussion

In Greek demos means "the people," and is the root for English words such as democracy and demographics. DMOS institutions reflect the populist meaning of the Greek word, for these institutions are clearly "of the people." They are a widely diverse group of universities including many Historically Black and Hispanic Serving institutions. They form the center of graduate education in the United States, serving as the local institution where many Americans go to pursue graduate degrees. Moreover, they make a substantial contribution to graduate education and research, enrolling the majority of graduate students in all fields and more than two fifths of students in science and engineering. As well as being institutionally diverse, DMOS institutions enroll a disproportionate share of women and members of U.S. minority groups. While enrolling 41% of all students in science and engineering, they enroll 47% of

Figure 2

Science and engineering enrollment by Carnegie category, 1997



Source: CGS/GRE Survey of Graduate Enrollment

ate students.

One reason for this is the presence of Historically Black and Hispanic Serving institutions and regional systems such as the California State and CUNY systems that serve minority communities. There are 24 Historically Black institutions participating in the CGS/GRE survey and 19 in the DMOS category offer graduate programs in science and engineering. These 19 institutions account for 36% of African American science and engineering graduate enrollment at DMOS institutions.

In contrast, 75% of international students enroll at Research I or Research II universities. This is not surprising, considering that international students at the graduate level tend to enroll in full-time doctoral programs in science and engineering.

Minority Enrollment Trends at DMOS Institutions

Displayed in Table 3 are data on changes in science and engineering enrollment at DMOS institutions over the 1986 to 1997 period. During those 11 years, graduate S&E enrollment for minority-group members increased markedly, rising by an average annual % change of between 6 and 8%. These large annual % changes resulted in more than a doubling of enrollment for African Americans, American Indians, and Hispanics. Asian American enrollment in S&E fields increased a total of 81% over the 1986 to 1997 period. In contrast,

Indian percentage rising as well.

Recent decreases in graduate enrollment have raised questions about whether enrollment for underrepresented groups will continue on its upward trajectory. The 1996 to 1997 % change figures in Table 3 shed some light on that issue. As previously noted, graduate enrollment at DMOS institutions appears to have reached a plateau, but has yet to decline. The Enrollment Survey data indicates a more unsettled situation is underway, with some groups increasing and others decreasing. In the last year, African

American enrollment rose by 2% and Hispanic by 4%. In contrast, Asian and American Indian S&E enrollment both decreased by 5% from 1996 to 1997.

First-Year Enrollment at DMOS Institutions

While trends in total enrollment provide a measure of the direction of the entire pool of enrolled students, first-year enrollment may be used as an early indicator of future trends.

Table 1

Graduate enrollment by Carnegie Category, 1997

	Total Enrollment	Percent	Science and Engineering	Percent
Total	1,241,356		438,986	
Research I and II	550,291	44%	260,202	59%
Doctoral I and II	260,959	21%	86,547	20%
Master's I and II*	379,476	31%	73,652	17%
Other Specialized	50,630	4%	18,585	4%

* Includes 17 Baccalaureate I and II institutions offering graduate programs in science and engineering. Source: CGS/GRE Survey of Graduate Enrollment

the women, 57% of the African American and Hispanic graduate students, and 47% of the American Indian students.

Data presented here indicate that S&E graduate enrollment of minority-group members at DMOS institutions has increased substantially over the past 11 years. Moreover, the share that minority students are of graduate enrollment has increased as well. There is evi-

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dence of a slow-down in that growth trend, however, as the current attractive job market siphons off potential graduate students. While it is difficult to predict where enrollment is heading, first-year enrollment trends at DMOS institutions indicate a slowdown in growth and a leveling-off in the future.

The contributions of DMOS institutions go well beyond the numbers of graduate students that they enroll. For many students-especially first-generation college graduates-a master's degree program at a DMOS institution is an opportunity to "try out" advanced study and research in science. It is at these regional institutions where students find that they are good at science, that they enjoy the challenge, and want to pursue it further.

This means that the master's degree in science and engineering at a DMOS institution can serve a quite different role than a master's degree at a major research institution. Rather than being a consolation prize in a doctoral program, the master's degree is a sound step along the road to a career in science or to the doctorate. The diverse graduate student population at DMOS institutions should be

Table 2

S&E enrollment share of research-intensive and DMOS institutions, 1997

	Research-Intensive	DMOS
Total Enrollment	59%	41%
Men	65%	35%
Women	53%	47%
U.S. Citizens and Permanent Residents	55%	45%
African American*	43%	57%
American Indian	53%	47%
Asian	58%	42%
Hispanic/Latino	43%	57%
White	57%	43%
Non-U.S. temporary residents	75%	25%

* The DMOS category includes 19 Historically Black institutions that are responsible for 36% of African American S&E graduate enrollment in this category.
Source: CGS/GRE Survey of Graduate Enrollment

considered fertile ground for corporate hiring and for research universities seeking to recruit high-quality students for doctoral programs.

Notes

¹DMOS institutions are Doctoral, Master's, and Other Specialized institutions as classified in the Carnegie Classification system. For purposes of this analysis, the category also includes Baccalaureate institutions that have

graduate programs in science and engineering fields.

²The Carnegie Classification includes all colleges and universities in the U.S. that are degree-granting and accredited by an agency recognized by the U.S. Secretary of Education. For detailed definitions of Carnegie categories, please visit <<http://www.carnegiefoundation.org/cihe/cihe-dc.htm>>.

³The Ten Years Later study is an ongoing research study at the University of California, Berkeley. The Co-Principal Investigators of this study are Drs. Maresi Nerad and Joseph Cerny.

⁴Data on minorities refer to U.S. citizen and permanent resident minority graduate students only.

⁵It is important to note that these percentage change figures are based on small starting enrollment figures, so that a 5% increase may represent an increase of less than 500 students. Nevertheless, the strength and direction of the upward trend is important to recognize.

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Table 3

Graduate science and engineering enrollment in DMOS institutions, 1986-1997 (U.S. Citizens and permanent residents only)

	1997	% Change 1996 to 1997	Average Annual % Change 1986 to 1997
African American			
Total	11,247	2%	8%
Biological Sciences	1,028	3%	8%
Engineering	1,000	-4%	14%
Health Sciences	2,619	1%	7%
Physical Sciences	2,100	-3%	6%
Social Sciences	4,500	5%	9%
American Indian			
Total	896	-5%	7%
Biological Sciences	97	6%	9%
Engineering	91	-9%	8%
Health Sciences	244	-3%	5%
Physical Sciences	134	-23%	6%
Social Sciences	330	-3%	9%
Asian			
Total	10,535	-5%	6%
Biological Sciences	1,140	-9%	10%
Engineering	2,409	-11%	2%
Health Sciences	1,789	1%	11%
Physical Sciences	3,801	-2%	6%
Social Sciences	1,396	-4%	11%
Hispanic/Latino			
Total	8,459	4%	8%
Biological Sciences	956	5%	6%
Engineering	1,204	4%	10%
Health Sciences	1,468	9%	12%
Physical Sciences	1,373	2%	5%
Social Sciences	3,458	3%	9%
White			
Total	105,308	-4%	2%
Biological Sciences	11,419	-4%	2%
Engineering	11,623	-8%	-1%
Health Sciences	32,314	0%	5%
Physical Sciences	18,745	-4%	-1%
Social Sciences	31,207	-5%	2%

Source: CGS/GRE Survey of Graduate Enrollment

The Emerging PFF Curriculum

by Allyson Polsky, PFF Doctoral Intern, and Ric Weibl, PFF Program Manager

Since 1994, the Preparing Future Faculty program (PFF) has provided graduate students with mentoring and faculty support, professional development resources, and exposure to contemporary and emerging issues in higher education. Taking full advantage of inter-institutional partnerships among research, comprehensive, liberal arts, and community college institutions, PFF doctoral students engage in a myriad of guided experiences in preparation for roles and responsibilities as future faculty.

Graduate deans have been following these developments, but only now is it possible to discuss the actual content of PFF curricula. Although the curricula vary from place to place, several commonalities are becoming apparent.

The PFF curriculum is offered in formal, credit-bearing courses, some of which are offered by a single department for its students and others, offered to students from different departments by the graduate school or faculty development center. Some content is taught through workshops or noncredit seminars. Still other learning comes from structured relationships with faculty mentors and continuing conversations about teaching, disciplinary, institutional, and other matters. And just like any other kind of education, much learning comes from discussion with graduate student peers, both within the department and in other departments.

An analysis of the content of credit-bearing courses, workshops, and seminar series reveals five general emphases. Topics typically addressed in PFF courses, seminars, and workshops include:

- ❖ Career options at institutions with different educational missions (i.e., large research university, small liberal arts college, and community college to assist in determining personal and institutional fit);
- ❖ Faculty roles and responsibilities (i.e., teaching, research, and service expectations at various institutions, introduction to academic structure and governance, integrating professional responsibilities);
- ❖ Trends and issues in higher education (i.e., working with diverse student populations, distance learning, use of multimedia and new instructional technologies, forging and sustaining institutional/community collaboration);
- ❖ Preparation of the professional development portfolio and negotiating the job market (i.e., job search strategies, preparation of dossier, interview and campus visit preparation skills, salary and benefit negotiation skills, institutional support); and
- ❖ Continuing professional development (i.e., developing professional communication and group dynamics skills, goal setting).

For example, Arizona State University's "GRD 791 Preparing Future

Faculty" provides doctoral students with a general overview and contextual knowledge of the professoriate. General observations of professional life at various types of institutions, career options and paths in higher education, faculty roles and responsibilities at different institutions, academic structure and governance and trends in higher education are explored through lecture, panel discussion, question and answer sessions, and personal reflection.

Similarly, "GRDSCH 630: Teaching and Learning in Higher Education," offered at the University of Washington, is a discussion of issues and topics related to developing as a teacher in higher education settings. Class sessions revolve around the development of a teaching portfolio, tools and resources for teaching (both interdisciplinary and discipline-specific), and current issues and questions faced by people who teach at colleges and universities.

Courses like University of Minnesota's "GRAD 8200: Professional Communication Skills" are designed to provide doctoral students with communication skills and techniques as well as information for professionals seeking careers in higher education and other professional areas. Topics include giving professional presentations, small group dynamics, dealing with status differences affecting leadership, and interpersonal interaction (e.g., job interview skills, student advising, and conflict resolution).

Discipline-specific courses such as, "THEO 390 Teaching Theology at the College Level," offered at Marquette University, explore effective means of teaching religious knowledge in the liberal arts setting and address teaching models and learning styles, design of lesson plans, syllabi, conducting student discussions, and testing methods.

"Each PFF colloquium examined important issues related to the development of a professional teaching career in the 1990s. . . .

Such diversity of topics helped uncover the varied aspects of professional responsibility: the teaching, research, and service functions required of all faculty members at any given institution." --1997-1998 Northwestern University PFF Participant, Department of Performance Studies

PFF courses are enriched by hands-on experiences in multiple institutional settings. Faculty members from partner institutions are involved in many of these courses, and often they are taught on the campuses of partner institutions. These factors affect the ways that discussions of the professional are framed. For example, it is one thing to consider issues of teaching chemistry at the University of Minnesota, and quite a different matter at Metropolitan State University, an upper division campus focused on working adults, and still different at Macalester College, a national liberal arts college, or at Minneapolis Community College. The point is that the different missions of the institutions, the different student bodies, and the role of faculty significantly modify how one thinks of professional issues and faculty-institution relationships. Faculty from partner institutions also mentor doctoral students, making a real difference in the professional growth of their younger colleagues.

For more information about PFF programs, or courses offered at specific institutions, visit the PFF Web site at <<http://www.preparing-faculty.org>> or contact PFF at: <pff@aacu.nw.dc.us>.

Member News

Joyce E. Jentoft is now vice provost and dean of graduate studies at Case Western Reserve University

Melody K. Baker is associate dean, Research and Graduate Studies at Kent State University

Marjorie Gordon, assistant dean at the University of Georgia has retired from the graduate school.

David S. Cohen is now dean of the Pace University School of Law, replacing **Richard Ottinger**.

William B. Harris replaces **Katherine Bruce** as associate dean of the Graduate School at University of North Carolina at Wilmington

Position Notice

Director of the Office of Graduate Admissions

The University of Georgia Graduate School invites applications for the position of Director of the Office of Graduate Admissions. This office is charged with duties pertaining to all phases of application and admission of students to all graduate programs offered by the University. To apply, send cover letter and resume that includes the names, addresses, and telephone numbers for three references to: Graduate School c/o Director of Graduate Admissions Search The University of Georgia 514 Boyd Graduate Studies Research Center Athens, GA 30602-7401

Latest CGS Enrollment Report Now Available

Graduate Enrollment and Degrees: 1986-1997, CGS' latest statistical report detailing graduate enrollment trends and single-year figures among more than 630 Master's and Ph.D.-Granting institutions nationwide, has just been published. The report is available in PDF format on the CGS web site. Go to <http://www.cgsnet.org/vcr/ged97.pdf>. For a hard copy, please call the CGS office at (202) 223-3791.

NIH Notes

The August 10 edition of the *NIH Record*, the biweekly newsletter for employees of NIH, reports that NIH has shelved plans to establish a degree-granting graduate school. The *Record* is available on the web at <http://www.nih.gov/news/NIH-Record/archives.htm>.

The NIH has added a superb new video presentation to its web site that gives an overview of the NIH's creation, development, and current operations. The video is a production of the NIH Office of Communication and Public Liaison and the NIH Visitors Center. The video is available in a variety of formats based on the speed of your web connection. It is available at <http://www.nih.gov/welcome/video/>.

In other NIH web developments, the National Library of Medicine, <http://www.nlm.nih.gov/>, and the National Institute on Deafness and Other Communication Disorders, <http://www.nih.gov/nidcd/>, recently launched redesigned web sites.

Position Notice

PRESIDENT
COUNCIL OF GRADUATE SCHOOLS
WASHINGTON, D.C.



Nominations and applications are being sought for the position of President of the Council of Graduate Schools (CGS). The President serves as full-time chief executive officer of the Council, whose 435 member institutions confer 99 percent of the doctoral degrees and nearly 80 percent of the master's degrees annually in the United States. The President reports to the Board of Directors, serves as an *ex officio* member of the board, and is responsible for the organization's fiscal and administrative affairs. S/He represents CGS among the other higher education associations and at national and international meetings; is principal spokesperson for CGS with appropriate federal, state, and private organizations; and recommends to the Board of Directors for its approval policies for the general direction and operation of CGS.

Qualifications

The candidate should have demonstrated successful experience as a graduate dean and as a visionary leader with knowledge of all aspects of graduate education, including the role of research. The Board expects the successful candidate will lead the organization in enhancing project funding, broadening partnerships, and expanding the public relations capacity of CGS.

Details

The appointment is to be effective July 1, 2000, although in special circumstances this date may be flexible. Salary terms will be competitive. Applications will be accepted until the position is filled. However, for full consideration, nominations or letters expressing interest in the position should be received by October 1, 1999. Letters of interest with curriculum vitae or nominations should be submitted to:

CGS Presidential Search Committee
Leonard K. Peters, Chair
Vice Provost, Research and Dean, Graduate School
Research and Graduate Studies
301 Burruss Hall
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061-0244 Phone: (540) 231-6077

CGS is committed to an inclusive graduate community and to diversity in its staff. CGS is an affirmative action/equal opportunity employer.

FELLOWSHIPS

The **James Madison Memorial Fellowship Foundation**, a federally endowed program designed to strengthen instruction about the Constitution in the nation's schools, awards fellowships for graduate study of the framing and history of the US Constitution to outstanding in-service secondary school teachers of American history, American government, and social studies in grades 7-12 and to outstanding college seniors and college graduates who intend to become secondary school teachers of the same subjects. At least one fellowship is awarded annually through nationwide competition to a

recipient in each state, the District of Columbia, the Commonwealth of Puerto Rico, and taken together, the other territories.

Fellows are required to teach American history, American government, or social studies in secondary schools for not less than one year for each full year of study for which assistance was received under a fellowship. Candidates apply directly. Teachers must have taught or be teaching full time to qualify for a fellowship. Fellowships carry a maximum stipend of \$24,000 over the period of study (up to 2 years full time for prospective teachers,

up to 5 years part time for in-service teachers) to cover the costs of tuition, fees, books, room, and board. Fellows must enroll in graduate programs leading to a master's degree in history, political science, or education at accredited universities of their choice. Participation in an accredited four-week summer institute on the principles, framing, ratification, and implementation of the Constitution and Bill of Rights is required of all Fellows normally during the summer following their first year of study under fellowships.

The deadline for applications for the 2000 competition is March 1, 2000. For additional information contact James Madison Fellowship Program, PO Box 4030, Iowa City, Iowa 52243-4030 Phone: 1-800-525-6928 Fax: (319) 337-1204 Internet e-mail: Recogprog@act.org URL: <http://www.jamesmadison.com>

SURFING THE WEB AT CGS

by

Greg Beyerlein, Assistant to the Director

As many readers know, CGS is on the web at <<http://www.cgsnet.org>>. We have provided a great deal of information related to our various departments, and we have also linked our site to all of our member institutions, affiliates, and organizations with similar interests.

However, what many of you may not know is that our site is being redesigned. The original site will still be accessible until the new site is online. The unveiling date is slated for sometime in early fall. We have partnered with an out-of-house Internet Service Provider (ISP) ResultsDirect.com. The new design will create a unified, professional, yet friendly site for all to use.

Although we are radically redesigning our site, all of your favorite pages will still be accessible. In fact, they will become more accessible and user friendly. We are implementing navigational tools so that the "surfer" will be able to go from one page to another without getting lost in cyberspace.

In addition, we are also working on transferring many of our current online publications such as *Communicator* from HTML script to PDF format. This will greatly reduce the size of the individual pages, no more scrolling down line after line, and enable "surfers" to download the file to read and re-read at their leisure. This reduces the time that one has to stay online, which is of concern for colleagues logging-on from home or long distance. An additional benefit of transferring the documents from HTML script to PDF format is that everyone is guaranteed to receive the exact same image; regardless of operating system (Windows 3.x, 95, NT, Unix, Mac.) To read PDF formatted files, you will need to have Adobe Acrobat Reader installed on your computer. This program can be downloaded for free at <<http://www.adobe.com/prodindex/acrobat/readstep.html>>.

Links --

On our "Of Interest to Students" page, please find the following new link to the National Black Graduate Student Association, Inc. <<http://www.nbgas.org>>.

Some of our member institutions have asked CGS to add links to their individual programs. Although we cannot accommodate online, I will gladly provide this information in *Communicator*. Contact me at <gbeyerlein@cgs.nche.edu>.

FELLOWSHIPS

Continued from page 12

Postdoctoral fellowships for U.S. scientists or engineers to undertake research at British universities or research institutes are available under the **Marshall Sherfield Fellowship Program**. These fellowships are available for up to one year starting during the academic year 2000-2001 and are administered by the Marshall Aid Commemoration Commission in conjunction with the Marshall Scholarship Program. Fellowships will cover: a laboratory fee or research support grant; arrival allowance, grants for books, equipment, research/local travel and the cost of written work/report preparation; living and housing allowances; return USA-UK airfare; and allowance for accompanying spouse and children.

Awardees are expected to engage in a meaningful collaboration with a university or institute group of their choice whose research is complementary to their area of expertise. Preference will be given to candidates who combine high academic ability with an outgoing personality and good communication skills. Fellows will be expected to play an active part in the life of their chosen British university or research institute.

To qualify, candidates should:

- ⌘ be citizens of, and normally resident in, the USA; and
- ⌘ hold a doctorate in a science or an engi-

neering subject by the time they take up their Fellowship.

More information on the Fellowships and on application procedures and forms is available from <www.acu.ac.uk/marshall/sherfield.html>.

The closing date for applications is October 12, 1999. Short-listed candidates will be interviewed at the British Embassy, Washington, DC, in early December. Awards will be announced shortly thereafter.

The Judicial Fellows Commission invites application for the **200-2001 Judicial Fellows Program**. The Program, established in 1973 and patterned after the White House and Congressional Fellowships, seeks outstanding individuals from a variety of disciplinary backgrounds who are interested in the administration of justice and who show promise of making a contribution to the judiciary. Up to four Fellows will be chosen to spend a calendar year, beginning in late August or early September 2000, in Washington, DC, at the Supreme Court, the Federal Judicial Center, the Administrative Office of the United States Courts, or the United States Sentencing Commission. Candidates must be familiar with the federal judicial system, have at least one postgraduate degree and 2 or more years of successful professional experience. Fellowship stipends are based on salaries for comparable government work and on

individual salary histories but will not exceed the GS 15, step 3 level, presently \$83,762.

Information is available upon request from Vanessa M. Yarnall, administrative director, Judicial Fellows Program, Supreme Court of the United States, Room 5, Washington, DC 20543. Phone: (202) 479-3415. The application deadline is November 5, 1999.

Nebraska Stipend Study Available:

The University of Nebraska has just released the 1997-98 edition of the National Survey of Graduate Assistant Stipends, Graduate Fellowships, and Postdoctoral Fellowships. The report contains stipend data from over 3,700 departments at 110 universities across the country. The report is the most comprehensive source for peer data on graduate TA and RA stipends. Copies of the report are available from the Office of the Dean of Graduate Studies at the University of Nebraska, phone (402) 472-0878, e-mail ccorts1@unl.edu. In addition, the survey data file is available in ASCII delimited format.

***I'm Going to Graduate
On Time
No Matter How Long It Takes***

Legislative Update

by Thomas J. Linney, Jr.

Vice President and Director of Government and Association Relations

August Recess Here

- Tax Bills and Appropriations Remain for Fall Resolution
- Inconsistencies Abound,
- Compromise Not Yet Visible.

August heat, a drought, and continuing difficulties over priorities make the summer of 1999 a simmering patch of heated disagreement among House, Senate, and White House leadership groups. As the Potomac's flow decreases, editorial cartoons suggested turning off the air conditioning and keeping everyone inside until compromise is reached. Except for minor power failures, this strategy has not yet been employed. As Congress leaves Washington for the traditional August recess, it appears that most major decisions will be put off until September. It also appears as if a large Continuing Resolution, with elements of tax legislation and additional emergency spending will move toward passage as Congress returns. Can this be accomplished before the beginning of FY2000 on October 1? CGS and the nation will not know until September 30 gets closer. Pundits suggest three possible outcomes: a grand compromise, a government shutdown, or a modest middle-through adjustment in spending caps for FY 2000, with real fireworks reserved for next year since the 2000 election is pending.

Appropriations Move, Then Stall

Major action in July has been concerned with appropriation and taxes. Committees and subcommittees have approached mark-up only to cancel or reschedule several times. The existing spending caps give the appropriations subcommittees little room to move (support for caps continues as announced by both the White House and the Congress in the budget resolutions adopted by House and Senate). Those subcommittees that have met to mark up have either cut major programs below current levels, added proposed emergency spending (not subject to spending caps), "borrowed budget authority" from subcommittees and bills not yet marked up (most notably the Labor-HHS-ED bill) or cancelled mark-up sessions in the hope that a continuing resolution will provide more favorable treatment.

Appropriations have never been easy, but this year brings a new level of frustration to what in the best of years is a difficult process. Nearly everyone expects the caps to be readjusted in some future compromise, but when,

where, and by whom is still elusive. Each side has advocates that lack a working majority on most issues, and thus continue to grind upon caps, revenues, and emergencies as incomplete elements of a future compromise. Of late, several members have noted that doing nothing actually would lower the federal deficit, and thus might be a useful outcome. However, the spending caps are even lower for FY2000, which will make the task more difficult the longer Congress waits to make adjustments. The White House has indicated support for a limited tax cut and has proposed retiring some percentage of the national debt, thus lowering interest costs, one of the largest elements in any annual year appropriation.

A Tax Bill Passes, Veto Promised

Tax committees have moved a large tax bill in both the House and Senate. As the summer recess began House-Senate Conference is being completed, aided by similar totals in both House and Senate versions at \$792 billion. The White House has promised a veto, although it indicated an interest in some of the provisions at a level closer to \$300 billion over some fixed number of years. At present all tax bills as passed assume continuation of current spending caps, for 10 years, which yields room for very large tax reductions, and some space for funding other federal priorities, usually expressed as saving social security or Medicare, a well established briar patch for the unwary. Leaving spending caps in place will also require increasingly large cuts in both domestic and defense spending, which few serious students of the federal government expect to happen. As the recess begins, the Congress is left with a kind of musical chairs in process, the music playing, but with multiple chairs about to disappear. The tax bill as passed cannot be carried out without large reductions in federal spending. Appropriations cannot move forward without large reductions in federal spending or increases in spending levels allowed, which will reduce the projected surplus and thus some and perhaps all of the projected tax reductions. Several appropriations committees have already added new "emergency provisions" to several spending bills for the FY 2000 Census, farm relief, veterans health care, and more Balkans relief, among other items, all without addressing cuts below current year spending in NSF, NASA, and NIH. Multiple Solomons may be needed to work out this compromise. Multiple members and their leadership are looking hard for solutions. Keep in mind that all this difficulty for FY 2000 follows \$15 billion in "emergency" spending that was added to FY 1999 spending levels. An estimated \$30 billion will

be needed to stay roughly at the levels being called for by all appropriations subcommittees. The projected non-Social Security surplus for FY2000 is around \$14 billion. Future growth in federal spending must also be allowed for if any or all of the potential fixes for Social Security and Medicare are put into place. This set of problems may assume mythic proportions before the fiscal year ends. As the August recess began some leadership members indicated that using all surplus funds before final appropriations bills were completed was a deliberate strategy to force the White House to close down the government or use funds designated for Social Security and Medicare. It remains to be seen how successful this strategy may be, but it argues for further confrontation when Congress returns from recess.

Is a Compromise Possible?

Compromise is still possible, but all sides will have to lower the level of rhetoric and expectation, and since all those strategies may have the elections of next year as target, it might not get done. September should bring some further steps toward resolution, or short term extensions of FY99 spending levels until more detailed compromises emerge. If the tax bill is passed and then vetoed, as current expectations suggest, September decisions will become more difficult as the FY2000 budget resolution allowed for one tax bill and one vote on tax provisions, that could in addition include procedural changes. As positions get more rigid, it will be more difficult to get a 60-vote majority in the Senate and a working majority in the House to move the spending caps and change budget and tax rules as adopted in previous years. Any postponement in final votes on the tax bill could indicate that serious negotiations have begun. A veto, however, will be a clear signal that many more days and weeks of hard bargaining are still ahead.

Issues Ahead

The following issues have potential impact on campus:

FOIA-A110 Proposed Regulations

The Office of Management and Budget (OMB) has published further revisions to the proposed new regulations on access to data funded by the federal government through the Freedom of Information Act (FOIA). (Federal Register 8/11/99 Vol. 64, Number 154, pages 43786-43791) At the time of printing, the *Federal Register* database was being reindexed and the following web site for these new regs was inaccessible:

<http://www.access.gpo.gov/su_docs/fedreg/a990811c.html>. By the time readers get

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Legislative Update

Continued from page 14

Communicator, the location might be working. A quick reading suggests that many of the concerns expressed over the past 6 months have been addressed, for example, on patient records and unpublished data. A new 30-day comment period will expire on September 10, 1999. Opponents view this issue as regulatory reform and are well organized. Universities and colleges have been advised to generate many comments to make clear the importance of these issues on campus. Research used for the development of federal regulations is the main target of these proposals. Business and industry groups desire more access, especially to challenge regulations that will affect current products or services. The new proposal sets some economic thresholds to the regulations, designed to fence off small scale research, but these recommendations may not prevail, and campuses should be prepared to implement the regulations as originally published. The larger sponsored research portfolio a campus maintains the more potential impact these new regulations may have. This may be the last opportunity to effect revisions to these regulations, which will almost certainly go into effect and have an impact on every campus.

Congressional Contacts Needed

Appropriations will most likely be late this year, and that may delay scheduled competitions for federal fellowships and research grants. Current projections would mean

reductions in the size of most federal research accounts and student aid programs. Contacts with the Congress should be encouraged to sustain support for existing programs and to develop support for program increases, such as graduate fellowships, that have been reduced in recent years. Contact with the White House is also encouraged as whatever levels are to emerge from the process of final bargaining on spending levels for FY 2000 will likely be influenced by the expressions of support in the next month. Here again, the opportunity to impact the process will last perhaps another 6 weeks. Congressional contacts are most important over this time period.

Tax Bill Has Education Provisions

The tax bill has a number provisions favorable to higher education. The R&D tax credit, extension of the Student Loan Interest deduction, Section 127, Employer Provided Education Assistance, are all in the final bill as Conference ends, although once again graduate courses are excluded from section 127 in a 2-year extension. New provisions would also allow limited rollovers from IRAs to charitable institutions after age 70, which is thought to be a new area for future gifts to institutions. The recently enacted Education IRA is also to be expanded, with possible additional eligibility for K-12 education. Some or all of these provisions may end up in a tax packaged assembled for this year, if compromise is reached. Campuses should have a good idea of their priorities, and communicate them in the next few weeks as the dealmaking

for 1999 is concluded.

All of these provisions may not make it through the bargaining process, however, tax provisions have a way of returning to future bills, and thus are worth a look at potential impact, even as the current bill may face a veto or scale back should it become law. August should bring the end of summer and the renewal of a new school year. Congress will be at home until after Labor Day, so contact with legislators' local offices to express campus priorities and the importance of funding education and research efforts for the future should be encouraged. It would also be an excellent time to invite members of Congress to campus to increase the general level of understanding and knowledge of graduate education and research.

One Last Item: Reminder

The Graduate Assistance in Areas of National Need (GAANN) program has applications out with a closing date for applications for new awards of October 4, 1999. Applications are available at

<<http://www.ed.gov/legislation/FedRegister/announcements/1999-3/070899e.html>>. The *Federal Register* of July 8, 1999, carried the official announcement and can be found on the web at <http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=1999_register&docid=99-17245-filed.pdf>. Awards go to departments at institutions in the areas specified, last for 3 years, and provide flexible funding to assist students in selected fields, with an institutional match required. Good Luck to all.

Upcoming Meetings and Calls

The Institute for Emerging Women Leaders in Higher Education

Sponsored by the NAWE: Advancing Women in Higher Education

November 6-10, 1999, and
June 24-28, 2000

The Inn & Conference Center
College Park, MD

Phone: (202) 659-9330 Fax: (202) 457-0946
URL: <http://www.nawe.org>

Deadlines: September 13 and May 1

Balancing the Belmont: Human Subjects and Future Research

Sponsored by the Office for Protection from Research Risks, National Institutes of Health and the Food and Drug Administration
September 15-17, 1999

Ypsilanti marriott Hotel
Ypsilanti, Michigan

Registration Contact: April Adams, Wayne State University, (313) 577-5601

Future workshop information available from OPRR Darlene Marie Ross at (301) 435-5648 or <dr20a@nih.gov>.

Call for Papers

13th Annual International Conference on Women in Higher Education

Sponsored by the NAWE: Advancing Women in Higher Education

January 8-11, 2000

Hotel Inter-Continental
New Orleans, Louisiana

Submission Deadline: September 30, 1999

Contact Diane Calhoun-French, Ph.D. at
dcf@piglet.jcc.uky.edu or Lynn M. Gangone,

Ed.D., at lgangone@nawe.org
URL: <http://www.nawe.org>

Making Strides

Making Strides is a quarterly research newsletter published by the American Association for the Advancement of Science, Directorate for Education and Human Resources Programs. Its purpose is to share information about minority graduate education in the fields of science, mathematics, and engineering. To view *Making Strides* electronically, visit <<http://ehrweb.aaas.org/mge/>>. If you prefer a print copy, a \$20 subscription for 1 year is requested. Contact Ginny Van Horne, AAAS, 1200 New York Avenue NW, Washington, DC 20005 for additional information.

See page 8 of this *Communicator* for a reprint of Peter Syverson's recent article in the new newsletter.

The *Communicator* is published 10 times a year and is distributed by the Council of Graduate Schools as a regular member service. Subscriptions for nonmembers are available for \$30 per year.

The *Communicator* encourages and welcomes members to submit articles of interest for inclusion in the newsletter. Current research, hot topics in graduate education, new legislation, and other pertinent information are desired. All manuscripts will be reviewed by a small group of graduate deans and scheduled for publication at the editor's discretion. Articles will be edited to conform to style and format needed. Inquiries and comments may be directed to the editor by phone at (202) 223-3791 or by e-mail at jhamblin@cgs.nche.edu. All rights reserved.

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