

Expanding the Pipeline

CRA-W Takes its Show on the Road to Recruit for Graduate School

By Carla Schlatter Ellis

While faculty in computer science and engineering departments may be gratified by the attention that IT industry recruiters lavish on the undergraduates they have trained, the level of awareness among those undergrads about the full range of career options remains limited. Even in the recent economic downturn, recruiters have been descending on college campuses with stacks of pizza boxes, logo-bearing toys, gadgets to raffle off, and well-crafted messages about employment opportunities in their companies.

Meanwhile, alternatives involving graduate school and research careers that require advanced degrees suffer from the lack of effective recruiting campaigns. Traditionally it has been left to individual faculty members to encourage selected students to consider graduate school, but often that doesn't happen until the student initiates the conversation by expressing interest in getting a letter of recommendation. Even in the top research-oriented departments, the undergraduates may hold a number of misconceptions about the lives of the graduate students around them. In schools where there is little contact with graduate students, students tend to assume that graduate school will be a continuation of their undergraduate experience. There is a need to raise the level of understanding among undergraduates about the attractions of graduate study.

The under-representation of women in the fields of computer science and engineering is another familiar issue to readers of this column, with declining percentages at each higher level referred to as the "incredible shrinking pipeline." The lack of role models is often cited as a contributing factor. There are those rare occasions, such as the Grace Hopper Celebrations, where technical women congregate in significant numbers, and these events result in a very different and powerful experience for young women. Even the opportunity to meet and interact with four or five successful women computer scientists at one time may provide a glimpse of the fact that a community of women, and not just a few exceptional and isolated individuals, exists in the field.

In order to address both of these issues, the CRA-W/Lucent Distinguished Lecture Series and Graduate School Recruiting Program was created. The goal is to highlight the accomplishments and experiences

of successful women researchers from both academia and industry by bringing them to college campuses across the United States and Canada to talk directly to undergraduates. Each event features a research seminar given by a distinguished speaker, a panel discussion encouraging students to consider going on to graduate school, and a luncheon for women in the department and the eminent women researchers who are visiting.

The program was the brainchild of Margaret Wright, former director of Scientific Computing Research at Bell Labs and a strong promoter of graduate education. She proposed the program to Lucent's University Relations Office and secured initial funding; then she enlisted CRA's Committee on the Status of Women in Computing Research (CRA-W) to organize the events. Additional funding has been provided by the National Partnership for Advanced Computational Infrastructure (NPACI).

In the first year of the program (the 2000-01 academic year), 35 computer science or computer engineering departments responded to the call for applications to host an event. Twelve sites were chosen across North America: Carnegie Mellon University; Duke; Texas A&M; University of California-Berkeley; University of California-Irvine; University of Illinois-Urbana Champaign; University of Massachusetts-Amherst; University of Mississippi and Mississippi Valley State (an historically black college); University of Toronto; University of Virginia; and the University of Washington. The Distinguished Speakers were Mary Baker (Stanford), Jessica Hodgins (CMU), Barbara Liskov (MIT), Margaret Martonosi (Princeton), Kathryn McKinley (University of Massachusetts), Lori Pollock (University of Delaware), Margo Seltzer (Harvard), Valerie Taylor (Northwestern), and Katherine Yelick (University of California-Berkeley).

The panel discussions have been a key part of each event. Not only did Lucent Technologies provide funding, but also a commitment to participate. Women researchers from Bell Labs have served on each panel, offering an industry perspective on the value of a graduate education for a research career. These panels featured Raissa D'Souza, Juliana Freire,

Girija Narlikar, Joann Ordille, Serap Savari, Liddy Shriver, and Lisa Zhang, all from Bell Labs. Students have been surprised to hear someone from industry advocating graduate school and surprised to learn about the exciting work that one can do in industry (rather than just academia) with a Ph.D. degree.

Each panel also included two or three women graduate students relating their experiences and the view "from the trenches." The professors who have come as distinguished speakers also sit on the panel, contributing their insights into their own choice of an academic career and what the graduate admissions process looks like from the faculty perspective. While these panel discussions have been open to all undergraduate students at the host school, the fact that the panelists and the moderator have all been women has helped to encourage women students to attend.

The most important message we hope to convey through the panel discussions is that Ph.D. training offers the chance for a research career with a great deal of creative freedom. The panelists show their enthusiasm for research and the ability to define their own problems. The panelists also try to characterize how the graduate school experience differs from the classroom-based education most undergraduates receive. Graduate school at the Ph.D. level is described as an apprenticeship, and the relationship with one's advisor becomes a major focus.

Several of the panelists' stories about their own graduate school experiences highlight that there are many paths that can lead into a graduate program, and that uncertainty about precisely what one wants to do is OK. Questions from the audience tend to cover the more concrete issues such as what admissions committees look for in an application, advice on choosing which schools to apply to, and how graduate school is financed. One point that consistently comes up is the value of having some undergraduate research experience, both for the strength of the application and for determining whether graduate school is a good choice for the student.

At the end of each panel discussion, we asked audience members to fill out an exit survey to help us evaluate the success of the event. Estimates by the hosts indicate that more than 400 students attended the panels last year, and from 25 to 33 percent of the attendees were women. Approximately 30 percent of those attending the panels returned the surveys and rated the value of the program as an average of 3.1 out of 4. In survey questions trying to ascertain whether the panel had affected the choices students might

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make, about 40 percent of the responses indicated an increased likelihood that the student would consider going to graduate school. Of course, it would require follow-up to determine whether the program has actually had a long-term effect on the behavior of the attendees, and that has not yet been done.

The comments on the exit surveys were extremely positive. One Berkeley undergrad said: "This event has been very inspirational. I never thought of grad school as exciting before this talk!" A student from the University of Washington said: "It is very useful to have an opportunity to hear perspectives from research labs, grad students, and academia." It is clear from many of the comments that there is a desire on the part of undergraduates for more information about graduate programs, and that this program fills a serious need. Women students were especially enthusiastic about a panel composed entirely of women.

Plans for the current academic year (2001-02) are shaping up. This year 33 schools applied with incredibly strong proposals. The sites selected so far include Bryn Mawr and Swarthmore, Colorado State, Cornell, Florida International University (an Hispanic-serving institution), Georgia Institute of Technology, Princeton, Purdue, Tufts, University of British Columbia, University of California-Berkeley, and the University of California-Santa Cruz. In addition to geographic distribution of the selected sites, we have tried to

include some small liberal arts colleges in addition to big universities. Several of the sites have proposed coordinating with nearby colleges for their event. The list of distinguished speakers for the 2001-02 series will be available on the program's website (http://cra.org/Activities/craw/projects/dist_lect.html) as soon as it has been finalized.

Resources for Graduate School Recruiting

The panel discussion held last year at Illinois was videotaped and can be viewed from <http://www.cs.uiuc.edu/education/grad/forum.html>

CRA-W Graduate School Information brochure
<http://cra.org/Activities/craw/pubs.html>

Advice for undergraduates considering graduate school
<http://www.acm.org/crossroads/xrds3-4/gradschool.html>

How to succeed in graduate school
<http://www.acm.org/crossroads/xrds1-2/advice1.html>
<http://www.acm.org/crossroads/xrds1-3/advice2.html>

Choosing a PhD program in computer science
<http://www.acm.org/crossroads/xrds6-1/choosing.html>

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