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14 Initiatives for departmental change

This chapter provides descriptions of the classes of interventions – top down, bottom up, and idiosyncratic – that occur in academic departments attempting to bring about gender equality. We analyze the pros and cons of each of these types of intervention. Our proposal is to help administrators and policy analysts understand what kinds of interventions, given their limitations and advantages, bring about the best outcomes under different circumstances. Later in this chapter, we explain in detail how departments can use specific practices to change, develop, or enhance these interventions through task redesign, social networks, or university–industry relationships.

To study programs systematically, we delineated four groups of departments in each of the five target disciplines: biology, chemistry, physics, computer science and electrical engineering. The first group of departments had initiated programs whose stated objective was to be more inclusive of women. The other three groups were delineated on the basis of outcomes, as recorded by the National Research Council's (NRC) annual compilation of doctoral degrees granted. In each of the five fields for the decade-and-a-half up through 1990, we selected the ten departments that had graduated the highest proportion of female doctorates, the ten that had graduated the lowest, and the ten that showed the most improvement in women's graduation rate across that period. We then selected the two departments from each group that displayed the most consistent numbers and trends.

TYPES OF PROGRAMS FOR WOMEN IN SCIENCE

Programs are interventions from above and below that attempt to

repair the quality of women's educational experience, partially making up for significant deficits in the course of attaining the Ph.D. degree. Sometimes programs provide encouragement and advice, substituting for informal social venues in the department that exclude women. Other programs provide academic support, providing a parallel structure of study groups for women. Still others combine both characteristics, making available mentors to supplement gaps in the department's advisory system or counteract poor treatment of women by official academic advisors.

The basic root of all programs is the presence of a skilled individual to provide to women support, guidance and an independent perspective that compensates for the faculty's inability to do so. A discussion group leader described how

the women talk about their problems and the thing that comes up most often is "How am I going to have an academic career and have children? How am I going to do both?". They're being taught by the males in the department about this standard of excellence and how they're going to go out and be the cream of the crop. Well, they're quite aware of the amount of work that their advisors do. The other female [faculty] member in the department is not married, she has no children, works constantly and the women are quite aware of that. Are they going to be required to give up any thought of a family life [when] they don't want to?

A female graduate student said

Maybe it's particular to the sciences, but you get very closed in and you need someone to say, "I'm here" to make your path a little smoother. As a woman, if I knew there was somebody there I could talk to or would involve other students, that would change my perspective on the environment. I would feel that it was more of a community and more supportive. Even if I never took advantage of that service, I would know it was there.

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The failure of many departments to adequately mentor women,
whether arising from an unwillingness to take women seriously as
scientists, or to take into account their needs to balance work and
personal life, or both, has occasionally been redressed by initiatives
from women themselves or the university. Whether arising from the
'bottom up' or 'top down' several typical components can be identified
that substitute for formal advising or informal support structures, or
both. These include: a series of regular meetings with discussion topics
based on issues of graduate education; presentations of both student
and visiting scientists' research, including opportunities for feedback
and discussion; seminars to present research to peers; a counselor to
provide advice on the requirements of graduate education as well as
issues specific to the graduate experience for women; and the presence
of female professors who are balancing work and personal life as role
models.

The classic issues of 'systemic or piecemeal reform', changing
people to fit the system or changing the system to meet the needs of a
broader range of people are at issue. If the graduate education system
worked for women as it does for men there would be little need for
programs to make up the difference.

BOTTOM UP PROGRAMS

Understanding the origins of support schemes and how they develop
provides insights into departments' treatment of women. Some
programs stem from the ideas of graduate women and function initially
as social movements, relying on volunteers and the commitment of a
few dedicated persons. Such programs typically experience a crisis in
leadership succession when its founders graduate or leave the
department. It is at this point that independent funding must be raised,
professional staff hired and other necessary steps taken to
institutionalize the program. Programs that become dependent upon
volunteer labor are always in jeopardy and unlikely to survive, given

the strong demands on female graduate students and faculty to pursue their research and attend to other academic and non-academic responsibilities.

A department's willingness to accept responsibility for maintaining a student-initiated program is an obvious indicator of its stance toward women. Several female graduate students at the University of California at Berkeley initiated a 'Re-entry' program for women taking up computer science after a gap in their academic careers. The ability of the program founders to gain seed funding from the university administration and financial support from corporations in the region for fellowships greatly improved the chances of faculty acceptance. As it gained the sponsorship of the department, the effort was broadened to include minorities and provide services to other graduate women. Female graduate students in other hard science disciplines as well as other computer science departments in the region viewed the Berkeley support system, with a professional staff member to provide counseling and organize meetings, as a model for their departments. Even so small a gesture as the program director organizing an event in honor of women receiving their Ph.D. was noted from afar.

An important type of bottom up program that we typically observed is one that has the characteristics of a social movement. Some of the most successful programs that encourage women to persist and attain Ph.D. degrees are informal in their structure and encourage affiliation among the female graduate students, faculty, and outside role models, with discussion around issues of mutual concern even when there is an invited speaker. A female staff member took it upon herself to organize a series of informal dinners: 'It was really in response to women coming to me with problems and it was obvious from their discussions with me that they were feeling very isolated. There are only 10% women in the department and once a woman gets to a research group, it's more common than not that she is in a group with no other women. At the meetings all of a sudden someone will say, "you mean it's not me!" and there's comfort in knowing that they're not responsible for either attitudes on the part of their co-workers or on the part of their

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supervisor.' Such informal exchange demonstrates the universality of seemingly individual experiences and keeps issues from being perceived as personal deficits. By objectifying a negative experience and its subjective consequences, the way is opened for problem solving.

Succession of leadership is a crucial factor in the continuity of a successful program, especially grass-roots programs based on graduate student leadership. A history of mutual support and achievement can help fend off a negative reaction to a program and provide a culture which is handed down to succeeding members. Program meetings walk a fine line between women feeling free to express their feelings and share their experiences, many of which involve negative treatment by male faculty and students, without degenerating into 'man bashing' and a progression of 'one upping' horror stories that become the sole focus of discussion. By keeping the focus on specific problems of graduate education and how to address them, gatherings can be prevented from deteriorating into sessions for mere negative venting of anger, without offering a positive recourse.

In the face of an often fierce competitive and confrontational stance by males that is experienced as overwhelming and deflating, women valued opportunities to present their research in a non-confrontational, supportive environment. In practice presentations, in front of women only, technical questions were not experienced as threatening. Within this safe place women developed the skills and confidence to present before a larger group outside the university. A female graduate student said, 'When I gave my presentation, the most difficult question I was asked was by a first year woman in the group. She was very sharp . . . I don't know if that question had come from a man that I would have been able to handle it as well. I was able to tell myself, "Well, you know this." Later, I then presented a paper in Washington D.C., and it went well. I got favorable comments. I just needed a little practice.' Opportunities to develop professional consciousness, build self-confidence, and counter hopelessness are especially important for those women who are the most vulnerable and at risk of dropping out.

There is a need to expand the opportunity for women to articulate their research in familiar settings, settings that are familiar in the way in which they exchange information among themselves and present ideas. This familiar setting may be different from men's but it allows them a chance to incubate ideas and gain skills and confidence that then help them in a broader range of settings, particularly those in which male-dominated behaviors are most characteristic. On this point, a female graduate student said, 'I would like to see the women have an opportunity to just get together and talk about their research. I know other women have said that the guys in their group just get together and chat about what they're doing. And [the women] have felt that they have missed out on being helped because they're not part of it.' A talk by a visiting female scientist provided an opportunity: 'Everyone gave a little tidbit of their research and I was just sweating bullets waiting for my turn. She had a lot of good questions . . . I discovered I really knew what I was talking about!' A nurturing environment is desired: 'When you're done with your paper there's someone asking you, "How did it go? How was your presentation?" You feel a sense of belonging. That someone cares about you. This is very important.' The creation of such informal venues for scientific training helps female students consolidate a professional identity within a hostile or indifferent environment.

In summary, bottom up interventions are flexible, low cost, and allow for local monitoring at the departmental level. They effect change without the help of administrators and can be customized to meet the different moods and conditions that exist in the department. Moreover, they do not burden universities with new financial costs related to special scholarships or rule enforcement. Consequently, we have found that a strategy for the success of bottom up programs explores how resources can be gained from support outside the department or university. This is a more entrepreneurial way in which to solve the problem. As the Berkeley faculty showed, it can be extremely successful in funding a re-entry program by going to donors outside the department who are interested in bringing more women

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into the department. Moreover, this kind of effort can help mitigate the
 problems of succession and raises the legitimacy of programs and their
 success by receiving validation and support by the 'market'.

Bottom up programs also have weaknesses. These informal
 interventions do not respond well to successions of key persons
 because it is hard to recruit someone who is willing to donate a
 comparable amount of energy in order to keep the ball rolling.
 Another difficulty is that they have few budgeted resources and thus
 cannot create wider-scale changes that need things like research
 funding, bringing in visiting faculty or setting up special programs and
 research tracks for women faculty. Thus, they are effective at having
 speedy responses but can be fragile when, inevitably, key people
 depart.

TOP DOWN PROGRAMS

Other programs are initiated from above: by departments, centers,
 university administrations and outside sources such as government
 research funding agencies and corporations. The programs that we
 identified ranged from a token yearly dinner, regular informal lunches,
 scheduled meetings mixing scientific presentations and discussions
 of women's issues, orchestrated mentoring initiatives, to an
 independently funded and professionally staffed organization. At the
 University of Washington, administrative staff were given the
 following mandate by their director: 'A program must be run by
 educators and social scientists because women professors [in the
 natural science and engineering] don't want to be identified with this
 kind of program. They want to be known for their research.' To support
 this initiative, a 'Student Steering Committee' composed of fifteen
 undergraduate and graduate students identified as their priorities
 isolation, competition, low self-confidence, child-bearing and child-
 rearing, and lack of role models. Together with the director and
 assistant director, both with backgrounds in the social sciences, they
 organized four projects to address these issues: tutoring, peer
 mentoring, professional mentoring, and a support group. Objectives

were stated, brochures designed and printed, 'marketing strategies' developed, and events scheduled and evaluation forms created.

Some of the 'programs' were found not to be especially targeted at graduate women. For example, even though much of its content was provided by feminist consultants on gender issues in organizations, a program at an NSF-sponsored center in the physical sciences was primarily directed at men. A female participant in the discussion groups and retreats said, 'I didn't feel I could raise issues that were important to me.' The program mainly helped to broaden male participants' career goals beyond attaining faculty positions in an elite department. In other cases, even when programs did effectively target women students, they did not necessarily work as anticipated. For example, one initiative, a residence hall for undergraduate women interested in scientific careers, employed graduate women as mentors. By requiring an extensive commitment from the mentors, the program actually impeded their graduate studies. As a result, the mentors' workloads were subsequently reduced. Another program also utilized graduate women to mentor undergraduates. As a result of interviews conducted as part of this study, the program began to focus attention on the needs of graduate women, as well. Heretofore, the implicit assumption had been that a woman, having made it into a Ph.D. program, could take care of herself.

The AT&T program, an exemplar of what could be undertaken, provided stipends, a summer research position and an industrial mentor. The commitment of the program founders to demonstrating success led them to take unusual steps to insure that the 'cream of the crop' women selected for the program and its well funded fellowships, were not deterred by obstacles in their path. When an academic advisor refused to support a dissertation topic, permission was obtained to have the woman complete her research at then AT&T Bell labs. When problems with an advisor arose, AT&T mentors would pay an informal visit to discuss the issue as an ancillary part of a campus visit. More important than the money, the AT&T program placed the prestige and power of a highly respected industrial laboratory on the side of female

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graduate students, providing an often essential counterbalance to overcome negative experiences in their department. Unfortunately, as corporate resources for women and minority programs have declined in recent years, the former AT&T programs (now Lucent) are less well supported than in their early years.

While top down approaches offer many benefits in bringing about change in departments, they appear under-utilized. An initiative to assist female students that merely provides an outlet for women to discuss their problems or lacks administration is inadequate. Top down approaches provide a formalized means for bringing about change. Without issues being formulated and struggles made for change, a mechanism for resolving problems is lacking. A program cannot be successful without advocacy for change as was demonstrated at one university where problems were aired but not resolved. A female administrative assistant to the department chair served as a sounding board for female students, providing a place to 'vent'. The result was that students reported problems anonymously, fearing reprisals because they viewed her as powerless.

The conditions for successful program implementation were: support from above; a designated director who is not on faculty; adequate budget; help in fundraising; faculty involvement; continuous evaluation and student involvement in design and implementation. In the strongest formal program that we identified, the Director and Assistant Director played a strong advocacy role from an independent base outside the science departments. Both women made themselves available to students and had exceptional counseling and leadership skills. There was a general consensus that the qualities required of a program leader were those of a clinical social worker, rather than a scientist, although a minority questioned whether a non-scientist could understand the special issues of academic science. However, on one campus, effective group meetings were initiated for women scientists by the Student Counseling Center in response to individual requests, all reflecting similar difficulties in one hard science department.

Perhaps the most important element for systematic and long-term success of a program intervention of any type is support from above. As one program founder put it, 'I started [the program] because of what I saw and because there was a positive enough atmosphere. [The chair] thought it was a good idea. Without him I wouldn't have done it. He funded it the first year.' Without such support, women may be denigrated for participating in a program. Indeed, expectation of criticism from the men in a department deter many women from participating. On the other hand, support from above creates a legitimized and safe space in which female graduate students and faculty can initiate their own projects for change. As a female scientist explained the situation: 'We were able to start the group because of the positive environment.' Speaking of an influential professor who served as the department ombudsman, a fifth-year student describing his vigorous advocacy and personal interest in women's graduate careers explained it simply: 'You must have leadership from above . . . what you really need are tenured people with guts.'

In summary, the top down intervention has the benefits of creating an incentive structure that promotes faculty to make changes by providing research funding, special tracks for women's development and special programs in funding to bring women into the department. In this way, faculty members see an economic incentive to change their behavior and one that can benefit the department more widely. The top down approach also has the benefit of legitimating the change and creating enforceable rules for persons who resist change. Top down interventions are, however, difficult to implement because of their financial and political costs. Finally, on a less tangible dimension, top down interventions force universities to admit a problem. Consequently, the added visibility of creating a top down intervention and the costs of monitoring and managing the politics often create generic barriers to their creation and success.

One way that these kinds of problems can be overcome is for administrators to go to outside agencies and organizations that rely on the university for the creation of scientists. The early AT&T program

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is an exemplar of this kind of activity. Not only does going to a prominent and successful scientific company like AT&T bring legitimacy to the change effort, it also tends to assuage the risk of admitting a problem because a company that relies on top-notch science has endorsed it financially and publicly. Thus, a way to make top down approaches more effective is to create networks to powerful and resource-rich organizations that can provide tangible and intangible resources to the university for supporting the programs.

IDIOSYNCRATIC PROGRAMS

Idiosyncratic interventions are neither informal bottom up interventions that rely on the teamwork of individuals nor top down approaches in which administrators bring to bear their formalized power. Rather, they occur when a single individual within the department attempts to make some localized changes or to fill a gap in the present system for the treatment of women.

As a novel strategy, a few departments seeking to achieve gender equity and upward mobility have adopted a strategy of attracting highly qualified women. In such a case it was reported that the new leadership of a department ' . . . had just gone through a revolution together, had thrown out the previous director.' There was a feeling of camaraderie and an understanding of women's issues in the department and its 'culture of inclusion' became a marketing tool to attract the best female students.

Occasionally, university administrations take direct measures, for example to encourage these kinds of strides by offering to make positions available if women or minority faculty members can be recruited. At other times, these steps have encouraged departments to hire their first female faculty member, but usually, these types of interventions rely on individuals acting on their own initiative and resources. 'We had a graduate program director who took this issue up as a personal cause,' said one interviewee who reported that it was most important to be stringent on sexual harassment so that everyone knew it was morally and legally wrong, officially and unofficially. Nearing

the end of her tenure the dean regretted not having set in motion more programmatic innovations to institutionalize her personal commitment.

In another instance, a graduate student in psychology was hired for a half-time position to initiate a program and was later given a full-time staff position. The Dean purposely chose the program director from outside of the department and provided her own physical space, telephone, computer, copier, fax and graduate students as staff members, using money from the teaching assistant budget. A 'Gender Equity Task Force' was established to provide a framework for the program, with the expectation that it will be expanded to additional departments.

Often, female administrators become substitute advisors who help women graduate students negotiate political and resource constraints. One said: 'This is not a formal role that I play within the department. The students have a lot of contact with me; they've probably learned word of mouth that I can be trusted [because] I have no direct power or control. I am basically a facilitator so they don't have to worry that I'm going to cancel their RA [research assistantship].' Female administrators sometimes save women from giving up the pursuit of a doctoral degree and the chairperson can identify them as the department's 'program,' without making a commitment of resources.

Providing informal support for female Ph.D. students was an overload on these female administrators' work responsibilities, lacking in official status and recognition. An administrator said, 'It's frustrating because I don't have the power to do much about any of this . . .'. Nevertheless, a female graduate student said: 'One of the people here who really softens the blows is —. I'm not exactly sure what her position is. She'll say, "Oh, you need another week on your thesis." It's very important to have her here.' Another said, 'One thing that — [graduate student administrator] told me when I got here was don't have your academic advisor be your thesis advisor. Have at least two people.' With two faculty members to rely upon, if something goes wrong or is lacking from one, there is at least some possibility of

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recourse. Since the normal workings of the Ph.D. training system place individual students in a virtually 'feudal' relationship of dependency upon their professor, female departmental administrators and secretaries, in providing an underground support structure for graduate women, mitigate some of the failings of the system.

In summary, idiosyncratic changes are the most fragile because they rely completely on an individual who is acting out of a personal cause and taking an individual leadership position but without resources. Moreover, much of their knowledge and understanding of how to improve the system is not imbedded in any institutional framework but is simply information that they have on hand and that is kept only with them so that when they leave so does their knowledge. Conversely, where these kinds of programs can be successful is when the efforts of the individual become visible to other powerful individuals in the organization who then see the idiosyncratic changes as a model for changes in other programs.

STRATEGY FOR DEPARTMENTAL REFORM

A chair's leadership can influence departmental culture and climate. In some instances, however, department values and attitudes are controlled by a cadre of prominent senior male scientists whose capacity to bring money into the department overrules the status of the chair. When the values of those in power are discordant with the values of women faculty, tensions are inevitable. A 'Don't Ask, Don't Tell' dynamic can develop in which some women faculty inadvertently collude with the indifference of those in authority. After publicly being the object of overt bias by male colleagues, one lone woman chemist asserted, 'The chair is probably not aware. I don't like to bother people about things that are probably not all that important.' She went on to add, however, that in fact she is 'sure he is aware that some of the senior faculty don't say the nicest things about me or to me.' Attitudes of community and collaboration, as well as biased attitudes against female faculty members, emanate from the top down.

There is no specific point where change takes place through increase

in number alone except in a very few areas, primarily in the biological sciences, where the significant number is 50% or parity. In a few traditionally female fields, women have attained majority status in some departments and achieved positions of power. When equality is reached, it usually indicates a change in power relations as well, but this can also occur at a much lower numerical level. Whether change originates bottom up or top down, intervention from above is the most salient factor to making it last. It is not necessary for reform to be initiated by the leadership of a department or the university, but it has to be supported by them to endure.

Through the improved quality of life for those women who have gravitated to relational departments, when the structure strives to support all its members, participants are freed to do optimal work. This final model, relatively free of tension, appears to demonstrate the potential for a new social organization of science. It requires energy from those who have departmental power, particularly the chair. It is vulnerable to power groups within the structure who seek to maintain the status quo. However, when a critical mass of like-minded women and male faculty feel sufficiently safe to wrestle with issues around gender, family concerns, the tenure clock, and the many obstacles which have affected the entry into science of females (and sometimes males), the scientific endeavor is only strengthened.

CONCLUSION: INTERACTIONS AMONG PROGRAM TYPES AND DEPARTMENT CHANGE

We found that informal programs, while valuable, could be extremely vulnerable to subtle and overt prejudicial attitudes without the support of department leadership. Those informal grass-roots programs which not only survived but flourished did so because of positive influence from above which then set the tone within the department. In this way a domino effect was created in which strong leadership among students and faculty members could safely emerge and creatively develop a grass-roots program in which other students and faculty members would then feel free to participate. Thus the stage

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power relations as well, but
tical level. Whether change
tion from above is the most
necessary for reform to be
: or the university, but it has

or those women who have
en the structure strives to
ed to do optimal work. This
ppears to demonstrate the
science. It requires energy
, particularly the chair. It is
icture who seek to maintain
nass of like-minded women
wrestle with issues around
k, and the many obstacles
: of females (and sometimes
ngthened.

LONG PROGRAM

.E
aluable, could be extremely
cial attitudes without the
lose informal grass-roots
ourished did so because of
en set the tone within the
vas created in which strong
embers could safely emerge
am in which other students
o participate. Thus the stage

appears to be set from the top down by enabling a sufficient reduction
in stigma to allow for programs to develop and expand.

The issues faced by women in science in the United States are
mirrored in the experience of their colleagues in other countries.
Nevertheless, significant differences, both positive and negative, can
be identified among scientific institutions globally in their treatment
of women. This variance reinforces our conclusion that organizational
and cultural factors depress or improve the number, status, and
achievement of women in science.