

FUNDING MECHANISMS FOR SYSTEMIC CHANGE

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I'd like to start with a story, the story which led to the development of this panel presentation and discussion, and which will begin to explain why the topic of "Funding Mechanisms for Systemic Change" is instrumental in moving from analysis of a problem, in this case the underrepresentation of women in engineering, to effective action in solving it.

In 1990, a colleague at Dartmouth and I began to design a comprehensive program for encouraging women to pursue their interests in science and engineering. There were a number of catalytic influences which prompted this development, but one key catalyst was the new RFP (request for proposal) that the NSF (National Science Foundation) had just issued for their Career Access Model Projects for Women Program. As we began to shape our program plans in response to that RFP, we began the process of investing ourselves and our colleagues in change for the institution. As a result, even though the proposal was not funded that year, the momentum carried us through to enable us to develop a pilot program, test some of our strategies, and actively begin the process of developing additional resources.

Since that time, the program has grown to a point where it is affecting more than 800 students, directly involves nearly 150 science faculty members and scientists at Dartmouth, and has made its mark on the institutional landscape. We have more progress to make, and our external supporters, which include NSF and the Sloan Foundation, among others, have helped us significantly in shaping our program. Let me describe a couple of specific incidents.

In 1991, we received a \$100,000 grant from NSF to support the Women in Science Project. That grant was very influential for us, not only in terms of enabling the program, but in also in adding the needed stature and prestige to achieve *internal* recognition that our efforts were important. With \$100,000 in hand from the NSF for one year, we could then go to the president, provost, and other senior officers successfully to make the case for more permanent institutional budgetary investment in the core of the program. We had begun to secure true "institutional support" for our efforts.

But we wanted more. By this time, we had also realized we wanted to take a more aggressive role in systemic change—that is, in changing our common educational practices to make them more successful in addressing the retention of women in science and engineering. The “system” at our institutions particularly involves teaching, advising, and other academic interaction, and it most definitely involves the faculty as key opinion leaders and decision-makers. As a result, we proposed to the Sloan Foundation that as well as helping us with support for our retention strategies aimed at students, a grant could allow us to develop programs for faculty which would encourage them to re-consider teaching strategies, advising, and related activities with a better understanding of the needs of women students.

Enter Ted Greenwood (program officer of the Alfred P. Sloan Foundation), who also helped us structure a five-year grant, with deliberate requirements to encourage both institutional support and systemic change. I expect he will say more about some of these strategies, but let me just mention that in the process of working with Ted in developing the grant proposal, we were able to have a letter from our university president outlining the institution’s commitment to continue to fund its increasing share of the program not only for the duration of the grant, but into the future. Despite our president’s continued encouragement of our efforts to increase the numbers of women in science and engineering, and his support of our project, I believe this commitment would have been much more difficult to secure without an impending major grant from a very prestigious foundation.

What is the dynamic at work here? The 1990s present challenging times for those of us in higher education, particularly private higher education. The growth of the 1980s has come to a screeching halt. Like their corporate counterparts, campuses nationwide are “re-engineering,” including consolidating programs and cutting back staff. Even when there is recognition that the population being educated for the work force of the future is changing in its demographic characteristics, and that institutions may need to adjust the delivery of educational programs in response, it’s often difficult to identify and allocate the internal resources needed. Even the least cynical and most idealistic of us recognize that not only great ideas and sound vision, but also *resources*, drive decisions about programmatic development on our campuses. As Shirley Malcom has said, we need to remember the Golden Rule—“Them who has the gold, makes the rules.”

Because of this dynamic, external funders—corporations, foundations, individuals, and the federal agencies—can often be influential and instrumental in effecting needed change in the process of assisting colleges and universities financially. It is often up to program officers and the leaders of these organizations to recognize the opportunity for partnership in this arena, to be visionary about the future and the ways in which higher education will need to change to provide the best possible education for *all* our students in the future.

It is difficult to address systemic change in its entirety in the space of a few minutes, but since this panel is focused not only on funding and mechanisms, but also assumes an ultimate goal of systemic change, let me just briefly comment on that concept. Many efforts designed to encourage greater participation of women and minorities in science and engineering in education and in the workplace are primarily “band-aid” efforts which address the symptoms, but not the roots of the problem. Until we begin to restructure the organizations most involved—schools, universities, corporations, and other institutions—to change organizational culture, beliefs and behaviors, incentive and reward systems so that women can thrive and flourish, we will not be creating long-lasting change.¹

In contemplating institutional change in higher education, it is essential to involve the faculty, as well as others. The faculty has both the opportunity to create change, in policy and in the actual delivery of education, and also the ability to thwart and actively resist change. In other kinds of organizations, it may be key managers who have these opportunities. And it’s important to remember that most sensible professionals, including faculty members, “do not replace strongly-held views and behavior patterns in response to fiat or the latest vogue; instead, they respond to developing sentiment among respected colleagues, to incentives that reward serious efforts to explore new possibilities, and to the positive feedback that may come from trying out new ideas from time to time.”² I think we can expect that true systemic change will be slow; we need to be patient, but attentive, keeping the momentum going for the long haul.

The program officers here today have graciously agreed to take the time to suggest how they and their colleagues can further our visions for education, and to share their experiences with the related issues, opportunities, and challenges.

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¹Change is also required in other arenas, of course, such as social and family belief systems, communications media, and so forth, but most of us are primarily in positions to be able to influence educational organizations.

²Chapter 14, “Reforming Education,” in *Science for All Americans*, Washington: AAAS, 1989, p. 154.

