

MODELS OF SUCCESS FOR BROADENING PARTICIPATION

Dr. Joseph Bordogna, Deputy Director of the National Science Foundation, opened up the panel on models of success for broadening participation.



Our panelists are charged with discussing successful models: efforts that work for expanding diversity of both faculty and students in science and engineering. Much has been discovered during the past several decades on what works and what does not. Our focus now is to accelerate the use of models that work.

I would like to quote a U.S. President whose tenure in office just preceded the Civil Rights Act. There is a critical word in this quote: the word “each.” This word signifies a focus on every single one of us. This President was John F. Kennedy, who said, “Let us think of education as a means of developing our greatest abilities because in each of us, there is a private hope and dream which, fulfilled, can be translated into benefit for everyone and greater strength to the nation.”

Dr. Bordogna then introduced Dr. Shirley Ann Jackson.

***Dr. Shirley Ann Jackson**, President of Rensselaer Polytechnic Institute, highlighted the importance of capacity development in an era where national security is challenged and global markets are becoming increasingly competitive. By drawing from her experiences as a government official, president of a research university, and as a part of corporate America, Dr. Jackson stressed the formative role that diversity has played in the progress of America and the role that diversity must continue to play in science and engineering if America is to remain at the forefront of the global economy. She speaks of an “underrepresented majority” and nine principles of exemplary programs to build science and engineering talent.*



I want to speak with you this morning from a three-part perspective developed really from the three phases of my own career: from my service in government, from my being president of a research university, and from my involvement in corporate America as a worker, a researcher, and being on corporate boards. In all of these experiences, I have found a constant reinforcement of the fact that scientists and engineers are critical to continued American innovation, global leadership and competitiveness.

I believe that Dr. Colwell has essentially made the case for why we are here. We are here today because our challenge is how our nation will continue to lead in an era when national security is challenged and when global competitiveness is on the table. When that occurs, it certainly requires that we focus on whether we have adequate scientific and engineering resources at hand. This is a kind of challenge our nation has faced before, certainly in World War II, in the Cold War, and of course, in the space race.

It is important for us to understand that the risks of inaction are great and that is why this discussion is necessary. We know that so far the United States has remained competitive, having the world's deepest technology base, the most highly productive workforce, the strongest research and development capabilities and the most competitive domestic market despite the recent recession. However, we are not the only game in town because other countries understand the importance of investing in national capacity in science, engineering and technology, especially human resources, and that investment has begun to pay off for those countries. We know that Taiwan, Korea, Ireland, Israel and India have emerged in the pivotal information sector, that Scandinavian countries

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have developed strengths in telecommunications, that Japan and especially China are investing heavily in science and technology and that collectively, India, China, Japan, South Korea and Taiwan have more than doubled their production of bachelors degrees in the natural sciences since 1975 and quadrupled bachelors degrees in engineering.⁷ Additionally, the threat to our preeminence is exacerbated by a kind of brain drain that many people have begun to talk about and which has been exacerbated by security concerns.

New policies, because of very real security concerns, are causing delays for students who want to come into this country to pursue careers in science and engineering.

You probably know that there are nearly 600,000 international graduate and undergraduate students involved in U.S. higher education institutions. You probably know that one-third of university research assistants are international students. You probably know that nearly one-third of U.S. doctoral degrees in science and engineering are awarded to international students. You probably know that at the NSF, about one-third of U.S. Nobel prize winners were born overseas. Now why am I telling you this? I am telling you this for two reasons. First of all, inherent in these statistics is that it is diversity; diversity of origin and diversity of background that has given strength to our scientific and engineering enterprise. However, we all know that new policies, because of very real security concerns, are causing delays for students who want to come into this country to pursue careers in science and engineering.

A recent survey showed that 53 percent of U.S. universities had students who missed last fall's semester because of delays. Rensselaer had 29 young men from Malaysia who could not show up for the first semester because of visa issues. In fact, security reviews of foreign students highlighted by the Department of Homeland Security rose from 2,500 just two years ago to 14,000 last year. Such visa problems may cause some students to abandon American institutions and to study in other countries. Purdue University, which has more international students or foreign students in science and engineering than any other public university, is reporting a 10 percent decline, and they are not alone.

I happen to believe that international students and workers have always been, and will continue to be, a source of strength for our science and technology enterprise because they are exceptionally talented, because of the high-end graduate education we provide them, and because of their desire to succeed and contribute to American life.

I like to speak of what I call the underrepresented majority. We talk about underrepresented minorities or people of color and women but if you add it up today, these groups are the majority. As a result, we have to ask a realistic question of whether or not we can continue to succeed as a nation if we do not face these facts as a nation. I think as important as anything else that may come out of workshops like this one is a mindset that makes us understand that we are talking about an underrepresented majority.

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This issue will be a key component of my focus as president of AAAS. I serve with several other government, quasi-government, and private sector efforts to address the issues that we are talking about today. One of them is called “BEST,” Building Engineering and Science Talent,⁸ which was formed under the aegis of the Council on Competitiveness, driven by Congresswoman Eddie Bernice Johnson and former Congresswoman Constance Morella, with financial support from the National Science Foundation. I am also active on the Committee for Economic Development,⁹ which brings together corporate executives and major university presidents, and the Government-University-Industry Research Roundtable.¹⁰

In my remarks today, I want to draw heavily upon what BEST has been doing. I have been pleased in this effort to work with a number of people in this room. I had the privilege of serving as co-chair of the Blue Ribbon Panel on Higher Education and BEST will soon release a report to Congress outlining programs which, in its analysis, produce results based on a three-year national evaluation. This report will detail exemplary programs that can be replicated, transferred and scaled. Interestingly, all these programs share four key elements. One is specific evidence of effectiveness over at least a decade. The second is excellence and equity. A third is institutionalization and replication. The fourth is planning and execution that exceeded expectations. I will not detail every program and I will refer you instead to the BEST report,¹¹ which is slated to go to Congress this fall. But I can provide you with nine key principles and requirements for success that were distilled from the exemplary programs.

The first principle is the need to establish a vision and overall strategy and this requires institutional leadership: leadership which supports a broad commitment among administration and senior faculty to shared values, goals and programs that increase participation among the targeted population and among all students. A key example of the institutional leadership is at the

University of Maryland, Baltimore County, whose Meyerhoff Scholars Program¹² has gotten exemplary performance out of underrepresented minorities, particularly males. Having initially focused on financial support for African American males, the program has now expanded into a comprehensive research-oriented institutional program for all students while maintaining the focus on developing exemplary scholars among underrepresented groups.

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A second key principle is that one cannot achieve a goal by just picking or stopping at one point in time: the pipeline has to be developed. This requires targeted recruitment and faculty from underrepresented groups. Exemplary programs, by their nature establish, sustain and improve a feeder system across the educational spectrum. This obviously demands exceptional and sustained institutional investment and commitment as well as active participation by those who graduated from such programs. An example of this, which has been around for a long time is the National Consortium for Graduate Degrees for Minorities in Science and Engineering.¹³ Because it operates as a talent scout, an information clearinghouse and a matchmaker connecting talented minority Bachelor of Science recipients in science and engineering with graduate programs, this program has been successful for over a decade.

A third key principle is that we have to break down old habits and, in the process, improve teaching. Achieving this principle requires engaged faculty: faculty who view positive student outcomes and all student outcomes as a critical measure of their performance and are rewarded accordingly. Although other things are still important, they do not replace an ongoing commitment to developing student talent. A national program, Preparing Future Faculty,¹⁴ exists under the aegis of the Council of Graduate Schools.¹⁵ It involves faculty preparation among 43 doctoral granting institutions and more than 250 partner institutions. The goal is to improve the quality of undergraduate teaching and education as well as raising the level of teaching in elementary and secondary schools. That is the kind of engagement of faculty we are talking about.

The fourth principle is that we have to meet the students where they are: we have to give them personal attention. Programs that are structured this way see the value of personal attention at every stage of higher education and are committed to meeting students' individual learning needs, which includes mentoring and tutoring. Two examples quoted by BEST are the Wise RP Program¹⁶ at the

University of Michigan and the Lore-El Program at the Stevens Institute of Technology.¹⁷ These are residential programs that build faculty-student interaction both in and out of the classroom into learning experiences that address the whole person's needs. This is an approach that many institutions are beginning to emulate.

The fifth principle is that it takes a village comprised of intergenerational support and peer support that enables students of diverse backgrounds, levels, and interests to interact with each other routinely and intensely. This key element enables undergraduates, graduate students, postdoctoral fellows and junior faculty to provide mutual support, guidance and advice for each other, creating an atmosphere of family responsibility. An example is the Louis Stokes Alliance for Minority Participation,⁴ particularly at Texas A&M University. They promoted Summer Bridge¹⁸ experiences assisting with the transition to college and undergraduate research using faculty in science and engineering to enhance the student transfer rate and improved academic advising. This program doubled the number of baccalaureate degrees awarded to underrepresented minority students. It proved that teamwork, cooperation and collaboration across the educational spectrum and linkages with community colleges, two-year colleges, is an important aspect of success.

The sixth principle is very important. Do not make students work at McDonald's and expect them to succeed. In other words, one has to have comprehensive financial assistance, meaning financial packages which combine merit and need-based support and which include scholarships, loans and grants. The institutional programs which BEST found to be exemplary worked to provide financial aid packages that enable students to avoid part-time work which was unrelated to course study which then begins to make academics the total focus of the students' life.

The seventh principle is that if you want researchers, then you have to let the students do research early. Exemplary programs cited by BEST extend research experience beyond the classroom including summer internships and other research opportunities which connect students to the world of work, provide mentoring and lay out career options. An example is the Partnership for Minority Advancement in Biomolecular Sciences,¹⁹ PMABS, which is a consortium of historically minority serving institutions and the research university at University of North Carolina at Chapel Hill. PMABS involves comprehensive, complementary programs that span the years from secondary science education through post-

graduate study and involves faculty development, infrastructure revitalization, curriculum modernization, technology adoption, and collaborations for student development.

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The eighth principle is to recognize that where you are at any given point is not the end of the story. Bridging to the next level is a key principle. Too few educational institutions acknowledge that they are really part of an educational workforce continuum and most institutions act as if the action is only where they are. The best ones build relationships with corporations, build relationships for the students with research organizations and help students to develop the personal skills and the work habits that enable them to transition into the workplace. And that's what graduate study was for me. It was a natural extension. It was not a decision point that was fraught with worry at a given point in time.

An example of bridging is the UCLA Center for Excellence in Engineering and Diversity,²⁰ which draws support from both higher education and industry while monitoring student progress from one milestone to the next. The program focuses on the development, recruitment, retention and graduation of underrepresented engineering students and includes a pre-college program for parents, public school teacher training, as well as support for graduate students.

The ninth principle is predicated in a question: "Did you achieve what you set out to achieve?" If not, good intentions do not matter. This means that assessment is important. In fact, the assessment benchmarks should be used to design the program in the first place. If you have to evaluate a program, and a program has been put together without any thought to the endpoint, then it's a lot harder to measure achievable goals. An example is the Gateway Coalition,²¹ which began at Drexel University and now encompasses nine universities. It shows continuous progress on student retention, GPA, and completion of the engineering baccalaureate. The program has driven change throughout the engineering curriculum, development of student skill and leadership presentation, organization and management and in the faculty culture.

Now I could not end if I did not do my own personal advertising and tell you the lessons we have learned. We do believe we have to develop the pipeline. The GEAR UP Program,²² which was originally funded with a grant from the U.S. Department of Education in 1999, leads a coalition of institutions that adopt

seventh grade classes. It helps to prepare low-income students from six school districts for college, the six lowest income districts in the capital region of New York, by offering after school, weekend and summer learning programs at Rensselaer and other area colleges. It includes a residential program for these low-income students in the summertime. It also provides financial education and financial planning services for their parents, beginning in the tenth grade.

The GEAR UP participants now number 900 students entering their junior high school year. They have been with the program since the 7th grade. A second program is called Bridge, a residential summer program for entering underrepresented minority students. They receive academic credit in the university for an introduction to engineering course that gives them a head start. A third program is for talented rising seniors. We also have programs that are targeted to middle school teachers, including one that's specifically focused on achievement in mathematics, science and engineering.

The last program that I will tell you about is the Women at Rensselaer Mentor Program.²³ It is a peer-mentoring program that is designed to assist freshmen and transfer students, make a smooth transition into university. First year women students are paired with an upper class woman in the same or related subject to help that student avoid pitfalls, consider multiple options or solutions to problems, and make choices for success. Now we are extending that to having the graduate students be the mentors for the upper class women and so on. In spite of some institutions' retrenching because of worries about the outcome of the University of Michigan cases, we are actually going the other way. We're going to start a six-week residential program not unlike those that a number of campuses have had for a number of years.

As I look back at what I have just described in terms of what BEST has found works for developing a sustainable and diverse student body there are lessons in it for faculty development. However, I want to leave the discussion of this topic for Shirley Tilghman. Based on my experiences, I believe that if we really are serious about developing all the talent available, we need a firm national commitment as well as a comprehensive national plan even as we work off the models highlighted by and the principles developed by groups like BEST.

If we really are serious about developing all the talent available, we need a firm national commitment as well as a comprehensive national plan.

⁷ National Science Foundation. "Graduate Education Reform in Europe, Asia, and the Americas and International Mobility of Scientists and Engineers: Proceedings of a NSF Workshop," <http://www.nsf.gov/sbe/srs/nsf00318/summary.htm>

⁸ Council on Competitiveness. World Class Workforce. The BEST Initiative, <http://www.compete.org/wd/best.asp>

⁹ Committee for Economic Development, <http://www.ced.org/>

¹⁰ The National Academies. Government-University-Industry Research Roundtable, <http://www7.nationalacademies.org/guirr/index.html>

¹¹ Building Engineering and Science Talent. Publications and Presentations, <http://www.bestworkforce.org/publications.htm>

¹² University of Maryland, Baltimore County. Meyerhoff Graduate Fellows Program, <http://www.umbc.edu/meyerhoff/Graduate/>

¹³ National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc., http://was.nd.edu/gem/gemwebapp/gem_00_000.htm

¹⁴ Preparing Future Faculty, <http://www.preparing-faculty.org/>

¹⁵ Council of Graduate Schools, <http://www.cgsnet.org/>

¹⁶ Women in Science and Engineering Residential Program, http://www.undergraduate.research.umich.edu/WISE_RP.html

¹⁷ Stevens Institute of Technology. The Lore-El Center for Women in Engineering and Science, <http://attila.stevens-tech.edu/lore-el/>

¹⁸ University of California Berkeley. Summer Bridge, <http://summerbridge.berkeley.edu/>

¹⁹ Partnership for Minority Advancement in Biomolecular Sciences, <http://www.unc.edu/pmabs/>

²⁰ UCLA Center for Excellence in Engineering and Diversity, <http://www.ceed.ucla.edu/main.htm>

²¹ Gateway Engineering Education Coalition, <http://www.gatewaycoalition.org/>

²² U.S. Department of Education. Gaining Early Awareness and Readiness for Undergraduate Programs, <http://www.ed.gov/programs/gearup/index.html>

²³ Women at Rensselaer Mentor Program, <http://www.eng.rpi.edu/wmp/>

***Dr. Shirley Tilghman**, President of Princeton University, emphasized programs that have been successful in recruiting a diverse population into science and engineering. Whereas Dr. Jackson concentrated on recruiting students, Dr. Tilghman focused on recruiting faculty. Through an interesting encounter with M.D./Ph.D. students at Johns Hopkins, Dr. Tilghman illuminated the importance of opening doors for women to move from Ph.D. programs into faculty positions at colleges and universities.*



I will be able to be brief for the reason that I agree with almost everything that Shirley Jackson said about what are the important components of undergraduate programs that succeed in attracting underrepresented minorities and women into science and engineering. The Meyerhoff Program,¹² at the University of Maryland, Baltimore County, is one of the finest examples of a success story but by no means the only one. The characteristics that successful programs have in common are among the things that Shirley Jackson outlined in her set of BEST's nine principles.

One that strikes me as especially important is an intense engagement with students as individuals. In successful programs, undergraduates are often rapidly integrated into research laboratories, where they are able to have very individual experiences. Such programs take faculty who are committed to the program and to the individuals in their laboratories. Successful programs create “vertically integrated” communities, composed of undergraduates, graduate students, postdoctoral fellows and faculty. This collegiality is one of the most attractive aspects of an academic life in science and introducing undergraduates early to what it means to be part of a community of scholars is critically important.

Carnegie Mellon developed a very successful program to increase the participation of women in computer science.²⁴

This program began by trying to understand why the participation of women in computer science had been declining with time, not increasing. The faculty knew that adolescent boys who are future computer science majors can often be found in their bedrooms, the lights out, the curtains closed, playing on their computers. Yet it is the rare thirteen-year-old girl who would be engaged in such activity. As a result, by the time those teenagers reach university, they have had different experiences and acquired different computer skills that make it difficult to put them into the same classroom.

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With this in mind, Carnegie Mellon developed two tracks into the computer science major: one for students who had been programming in C since the age of thirteen, the other for those who had no previous experience but wanted to study computer science. These two tracks eventually merge, and the net result is that the percentage of women graduates in computer science has soared at CMU. The clear lesson from this program is the importance of recognizing and adjusting to your student constituency. If colleges and universities always accept the ground conditions as given, they are unlikely to make significant progress in enhancing the participation of women and minorities.

Dr. Jackson and I agreed that I would focus on strategies for increasing participation of women and minorities within the faculty in science and engineering. I want to begin with what for all intents and purposes looks like the great success story in academia: the very dramatic increase in the number of women in the biological sciences. At the Ph.D. level in the biological sciences, we are now close to parity; yet a precipitous drop persists in the percentage of women who, after postdoctoral studies, assume faculty positions. The drop is less dramatic at four-year liberal arts colleges than at research-intensive universities, but it is present at both kinds of institutions.

So now that we are attracting women into pursuing doctorates in life sciences, why are they not choosing to go on to academic careers? More precisely, are these women not choosing to go on to academic careers or is academia not choosing them? I believe that both are occurring.

For several years now the presidents and senior faculty and administrators of nine research-intensive universities have participated in meetings sponsored by MIT that focus on how to improve the hiring and retention of women in the science and engineering faculty. At a recent meeting this spring, one of the large California research universities reported that they had looked at the applicant pool for academic positions in the biological sciences over the last five years and found that the number of women in the pool was 20-25 percent, half of what is expected given that the percentage of women receiving Ph.D.s in life sciences is approaching 50 percent. If this one example is representative, then it is deeply disturbing and suggests that women are themselves choosing to move out of, and not into academia. Why is that the case?

It is my belief that one important answer can be illustrated with a story. Seven or eight years ago I was invited to have dinner with a group of M.D./Ph.D. students at Johns Hopkins, in part to discuss careers in science. Johns Hopkins has one of the most prestigious M.D./Ph.D. programs in the country, and these students were the *crème de la crème* of the nation's highly selective group of medical students.

After I had gone on for ten or fifteen minutes, one of the women in the audience put up her hand and said, "You have nothing to tell us about our careers. Nothing about your story is relevant to us." I was a little taken aback and said, "Well, I am perfectly prepared to believe that but I think you need to explain what you mean." The student proceeded to tell me that my experience was not relevant today because it was much easier to succeed in science in the late 1970's and early 1980's when I was coming up through the ranks. She pointed out that the profession is much more competitive today, and that it takes much longer to obtain a faculty position. She claimed that today's students face extraordinary hurdles to survive into academic medicine.

That encounter was my wakeup call when I realized that for women today, the path to a career in academia looks long, hard and incompatible with having a family. I think that we cannot go away from a workshop like this without acknowledging this issue, which has been with us for a long time, but has not been solved. In fact the competitiveness that characterizes the biological sciences today has only made it worse.

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The length of time to Ph.D. or M.D./Ph.D degree in the biological sciences has increased by two years in the last 25 years. Furthermore the likelihood of taking on additional postdoctoral training has increased and the length of that training has increased from approximately two years to sometimes five or six years over the same period. During that elongated time a postdoctoral fellow is earning relatively little money and accumulating no retirement benefits, and the likelihood that an attractive academic job is the reward for delayed gratification is diminishing.

This is simply an unattractive career path for *everybody*, males and females. However, for women it is an especially difficult career path because of the degree to which the problem of balancing family and work remains primarily a greater issue for women than men. If I have one take-home lesson that I would like to deliver to this workshop, it is that if we are trying to understand why we are

not making more progress, particularly with women, I believe that the current design of the training path is the problem. My fear is that we are actually losing ground in terms of the participation of women.

If we are trying to understand why we are not making more progress, particularly with women, I believe that the current design of the training path is the problem.

So what can we do? I would like to suggest several things. First, we need to send loud and clear signals of encouragement to women and to underrepresented minorities. Programs are needed that essentially bridge the period between graduate school and the first academic job. The program that I was the most familiar with no longer exists but I think was a wonderful model, the Markey Charitable Trust Scholar Program.²⁵ This program funded salary and research funding for postdoctoral fellows one or two years into their postdoctoral fellowship and through five faculty years. Symbolically, this program said, “We are going to make it as easy as possible for you to make that transition between trainee and faculty member.” Needless to say, this program identified and then set up for success extraordinarily gifted scientists who have gone on to have successful careers.

Universities too have to think long and hard about the way in which they support their young faculty during the critical the first years. There is no silver bullet, by which I mean no single thing that universities can do to suddenly transform the landscape for women trying to make this difficult transition. But it is essential that universities signal that they are family-friendly places by sponsoring accessible and affordable daycare that is nearby and conducting the work of the university within the hours that are consistent with parenthood. For example two years after I arrived at Princeton, I was appointed to a very influential committee that the president chaired and I was told it met at 7:30 in the morning. I said, “Well, not if I’m going to be on it, it’s not going to meet at 7:30 in the morning.” It was virtually impossible to be a parent getting children up, getting them to school, and arrive in time for a 7:30 meeting. And I’m happy to say that the president permanently changed the time of the meeting.

Another area that needs further thought is the tenure process, and its impact on the retention of women and minorities. I am convinced that the process needs to reward quality, not quantity. Science moves forward on the basis of discoveries of high impact, not with small incremental work. That argues that it is the impact and the quality of the work that should be evaluated, and not the quantity. One paper that changes the way the field thinks is worth ten that dot the i’s and cross the t’s. Such a perspective will help

all junior faculty, but will especially help women struggling to balance family and work. Signaling to the faculty that being a parent is not incompatible with being able to be successful in the university is extremely important if we are going to continue to hope that young women are going to be attracted to careers in academia.

Third, let me just say a few words about how universities go about the process of hiring faculty. If the diversity of the faculty is a high priority the signal must come from the top, from university presidents, provosts and deans. Unlike undergraduate admission, which is conducted centrally at most colleges and universities and therefore can have policy imbedded in the process, faculty hiring is a disseminated process. For the central administration to have an impact, the signals have to be loud and clear, and the incentives transparent.

At Princeton, we have taken advantage of a “target of opportunity” search process that I know many universities use. A committee, chaired by the provost or the dean of the faculty, and composed of faculty who are among the most distinguished in the university, consider candidates who are nominated by departments. The only criterion is that the candidate must increase the distinction *and* the diversity of the faculty. We encourage the departments to look in unexpected places for candidates to counteract the “pedigree problem,” the belief that there are only two or three places that could possibly harbor people worthy of our attention.

This strategy has succeeded at Princeton because it has the imprimatur of the strong senior faculty, and because it has shown that it can attract to the university some of the finest scholars in the world. Thus it has become a badge of honor to have come to Princeton through this university-wide search process. The other key has been the provision of additional resources to departments that nominate successful candidates. Those additional resources stay with the department as long as the recruit is a member of the faculty, and do not disappear over time.

Although the target of the opportunity search process has been very successful in bringing women into science and engineering as well as bringing underrepresented minorities to the university, it is important to say that its success critically depends upon chairs of departments who care about this issue. If the committee does not receive nominations, the members cannot appoint them. Therefore it is important to appoint chairs who themselves believe that

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diversity is essential to the future vitality of the university.

It is occasionally helpful to remind departments that there are excellent candidates for them to consider. One strategy is to ask a chair to submit a list of women and underrepresented minorities that they would like to appoint if resources were available. When such a list fails to appear, it is sometimes helpful to ask the members of the department's external advisory council to compile the list, whose purpose is to bring to the faculty's attention the fact that there are excellent candidates that meet their very high standards.

I do not think any one of these ideas is sufficient: all of them are levers that we have to be pushing at all times. This is surely an uphill battle for all of us, but a highly worthy one.

²⁴ Carnegie Mellon University. Women in Computer Sciences: Closing the Gender Gap in Higher Education,
<http://www-2.cs.cmu.edu/~gendergap/>

²⁵ National Academy of Sciences. "Evaluation of Markey Charitable Trust Programs,"
http://www7.nationalacademies.org/BHEW/Markey_Evaluation.html

Dr. Norbert S. Hill, Jr. stated in his presentation that students need two things to survive in academia: safety and permission. He then proceeded to outline factors that affect the safety of a student in an academic environment and that affect the ability of a student to succeed. Dr. Hill stressed differing cultural values between institutions and the need to support all students in their education to improve diversity.



Students need two things to survive. They need safety and they need permission. Unless you are in a safe place, you cannot do your work. Unless you have permission from your advisors, your committee or an infrastructure of web-based support, you cannot do your work. You need permission to become brilliant at the places you are at. All of this is based on relationships, and if those relationships are not there, it can have harmful effects.

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The dance called tenure is another thing. I know that many of our faculty members get involved in the community but when push comes to shove and they are up for tenure, they find the door just slams in their face. I can see why people do not want to audition really long to do this.

We all know that we need to increase the pool of minority students at all levels, especially the graduate level. To help accomplish this, I think that teaching fellowships should have the same status as research fellowships. Where does one learn their craft to teach? One can both do research and learn to teach but somehow the system has to be structured in a way so teaching is of value.

If I get a student off the reservation who wants to teach and they are from Montana or they are from the Navajo Reservation, they do not want to come out East because first of all, they know it is not safe and second of all, there is a different set of values. If you come from the inner city or you come from a bayou or you come from a reservation, there is a whole different set of values and relationships where one would never fit. Somebody who wants to teach at Billings and Bozeman or in Gallop and work at community colleges or other places where there are native students, wants to do so because in these places, there are people who look like them and who they can relate to. It is in these places that certain people can thrive as a faculty member. So it is not always going to a Research One institution that is the solution and I do not think that Research One institutions always have all the solutions. They have some of the solutions.

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This whole issue is multi-layered, from research universities to liberal arts colleges to land grant institutions to comprehensive universities and community colleges. You have got to talk about displacement of culture and values to minority folks.

Also consider what happens when the money is gone. If you throw money at the problem, then what happens to the sustainability of programs when the money is all gone? Most likely the program dies. When state budgets are cut, the first thing that is cut is education benefits for people of color. Institutions are very nervous now when they hear the word “minority” because of the Michigan case.

People are still worried about lawsuits and the administration has created a climate of fear in this country. Institutions are reframing and renaming their programs. What is wrong with calling it an American Indian program for people whose land you stole and that you are building a university on! It is a funny time. It is about leadership. It is about institutional intention and it is about relationships. Commitment without cash is counterfeit so I think there is some cost-sharing that can be done and some other ways to make programs survive.

The Indian Health Service has a program that it calls “forgivable loans” in terms of if you teach for five years, 20 percent of your loan burden is reduced. So maybe there are some ways to structure a loan program and give money to the students, not to the institution. I heard on National Public Radio recently that people in academia are talking about law students getting forgivable loans if they do public service work and I know that there are other places where that can be done.

If you are going to spend twelve or thirteen years with a student, making them the best they can be, you want to keep them. Some institutions cannot always do this. In order to retain someone, you have to provide networking, mentoring, long-term financial support, travel, seminars, symposia, and training on how to teach. It is the interconnecting web of support and from identification of a student to tenure that helps institutions retain their own.

Dale Smith writes a lot about this in the Claremont Graduate Schools and she calls it “change interrupted,” and “institution interrupted.” You really need to look at the larger question of institutions and how they are structured and what they do rather than placing Band-Aids on this. We need to be diverse in our approach and I will finish by saying that change only comes when it is in everyone’s self-interest.

Change only comes when it is in everyone’s self-interest.

DISCUSSION

The discussion mainly focused on two issues. First, an audience member asked Dr. Norbert S. Hill, Jr. to comment further on his view that fear is contributing to a lack of diversity in the science and engineering workforce. Second, an audience member asked Dr. Shirley Tilghman to propose ways to remedy the “arms race” that is going on within biology graduate programs.

Stemming from comments made in his speech, an audience member asked Dr. Norbert S. Hill, Jr. to elaborate further on fear and its role in limiting participation.

Dr. Norbert S. Hill, Jr.

I think safety [as students go through their doctoral research] is really important for people. When people are afraid, you do not get their best work because they are worrying about other things. Safety also involves feeling good about where you are, financial support and knowing that you have the support of your colleagues. You need genuineness in your relationship with the institution itself.

An audience member directed a comment toward Dr. Shirley Tilghman. The member expressed concern that there is a problem with the number of years it takes to attain a Ph.D. and the “arms race” going on in biological sciences because of fierce competition, and questioned how to remedy this.

Dr. Shirley Tilghman

To provide a break on the lengthening of training, my recommendation to the NIH was to limit the number of years in which they would fund a graduate student on research grants. I believe that would be the single, quickest, most effective way to get time-to-degree under control in this country.

With regard to reducing the arms race, we put into place at Princeton a pretty controversial policy where we limited the time of institutional support and the time during which a student may be enrolled. When the policy first went into effect, there were a lot of students who had been around for too long who suddenly were finishing their Ph.D.s and some of them went off to excellent jobs.

