

## **REALIZING DREAMS**

Joint NASA–NSF Research and Education Opportunities Conference for  
Principal Investigators, Faculty, and Partners

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### In Search of Opportunity

In 1980 the United States Congress passed the Science and Engineering Equal Opportunities Act. The Act declared that:

It is the policy of the United States to encourage men and women, equally of all ethnic, racial, and economic backgrounds to acquire skills in science, engineering and mathematics, to have equal opportunity in education, training, and employment in scientific and engineering fields, and thereby to promote scientific and engineering literacy and the full use of the human resources of the Nation in science and engineering.

During the intervening years, changes have occurred, with significantly more women, Asian Americans and a sizeable number of African Americans and Hispanic Americans pursuing and attaining degrees in science and engineering disciplines.

Perhaps the recognition of under-representation as a national problem helped spark these changes. Certainly, those of us in the National Aeronautics and Space Administration (NASA) and the National Science Foundation (NSF) hope that our targeted efforts have mattered.

## Accelerating Change

My purpose is not to describe the efforts that possibly have modified patterns of participation. You will hear far more about them over the course of this conference. Rather, I seek your insights; I want to enlist your help and your ideas. To paraphrase President John F. Kennedy from his inaugural address, I implore you for this moment to *Ask not what NSF can do for you; ask what you can do for NSF.*

I ask for your help on two matters: first, the unraveling of the conditions that have prompted change; and second, the identification of the implications that broadened participation has for disciplines, communities and individuals. Let me elaborate on the first point. It strikes me that if we have a clearer grasp of what has undergirded the change that we have seen, primarily on rates of participation, acceleration and expansion could be facilitated. And there indeed remain areas of under-representation – for particular groups, in given disciplines, and in positions of substantial influence.

We know that discrepancies in levels and rates of participation remain. The question is “Are there not lessons we can learn, if we probe in depth when, where, and why some modifications have occurred?” There is work, of course – some of it funded by NSF – on the circumstances associated with changing patterns of involvement in science and engineering. However, that work undoubtedly can and should be enlarged.

The second matter appears to be especially underdeveloped: the consequences of broadened participation. I cannot imagine that those who wrote the Science and Engineering Equal Opportunities Act envisioned “success” to be indicated solely by changes in numbers. There must have been a sense of the modifications that would accompany numerical increases. But what are the anticipated changes in the kinds of research undertaken and in the content and

directions of disciplines? Are problems likely to be assessed in similar ways, if they are viewed through different lenses?

### Broadening Participation and Weaving Dreams

How should and does the broadening of participation shape dreams? In these, the waning days of African American History Month, I am reminded of the poem from Langston Hughes that starts with these memorable words: “What happens to a dream deferred?” It ends: “Maybe it just sags like a heavy load. Or does it just explode?”

One need only visit elementary school classrooms, places for exploring science and similar locales to see just how widespread is the enthusiasm among our youth for discovery. The creativity, the sense of possibilities is widely evident.

What happens when the dream, of investigating worlds unknown, is deferred? Is this not the outcome for those who end up in the statistics as “underrepresented?” I can think of no better audience to ponder these questions than this assembly.

Gathered here today are many who have brought about the changes we are witnessing. What do your experiences and knowledge portend for further change? Gathered, too, are beginning scholars. I ask you: what must be in place if your dreams, your aspirations are to be realized?

Those of us from the funding agencies must stand ready to listen, for what we hear might have implications for what we must do to broaden participation. We must not only listen but accept willingly ideas that can change our practices and structures. In closing, I propose that what all of you can do for NSF and NASA will be to share your ideas, help us deepen our analyses and commit – with us – to a future in which dreams are realized widely.