

A View From My Benchtop

FITZGERALD BRAMWELL

IN 1994, I LED A TEAM OF SCIENTISTS WHO WERE ACADEMIC ADMINISTRATORS AT THE CITY UNIVERSITY OF NEW YORK AND WHO SHARED A COMMON CONVICTION.



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We felt that the United States, as a matter of national security, could no longer afford to promote a system of higher education that relegated to marginal status 50% of the national gene pool because of a gender difference, or 25% of that gene pool to marginal status because of increased pigmentation. Further, we felt, that in order to achieve quality science, to maximize the potential for the discovery and creation of new knowledge, and to create the technology that drives our economic engine, we needed to diversify the student pool from which were chosen the next generation of scientists, technologists, engineers, and other scholastic and academic leaders.

In those days, the CUNY team of scientists was known as the New York City Alliance. Its mission was to create a system of curriculum, instruction, and research opportunities for

undergraduates that would result in a doubling of the number of baccalaureate degrees issued to students from groups that were underrepresented in science, mathematics, engineering, and technology. We set about our task, with significant investment from the National Science Foundation and the City University of New York (CUNY), seeking to develop research and educational alliances that would strengthen the teaching and research capabilities of our faculty and students.

At the same time, NASA's Goddard Institute for Space Studies (GISS) was in the early stages of developing a strategic plan for making a meaningful contribution to a set of

complementary educational goals. These goals included increasing diversity within its own research community and helping students and educators gain a working knowledge of research activity. It seemed then and remains true today "a match made in heaven." Centered around the GISS climate research program, the Institute on Climate and Planets (ICP) that we developed sought for students and educators in CUNY and New York City public schools to assume meaningful roles in scientific analysis, discovery, and communications. In the process, the GISS community benefited from the scientific collaboration created by this educational program. Our students and faculty benefited from the research training and professional development possibilities. We dreamt of developing a "pipeline" of students, trained in research methods and

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scientific inquiry. And we dreamt of integrating the research skills of our science faculty with those of senior scientists at NASA GISS. Our goal was to create greater opportunities for research and curricula development for the larger population.

The growth of the ICP to include significant participation from high schools and junior highs has proven the worth of the concept and the realization of a large part of our vision. Participation of junior high to college students from culturally different backgrounds and faculty from their schools has led to significant academic achievements system-wide. The inclusion of science teachers in the research training process has led to new curricula within New York City metropolitan area schools. These new curricula emphasize the importance of research in developing an understanding of the complex nature of Earth's climate system. College faculties have also made similar curricula enhancements. They have leveraged their participation in the program into over a million dollars of additional resources to support scientific research, course restructuring, and teacher preparation on their campuses. NASA's investments in ICP have produced equally remarkable dividends for student researchers who matriculate to undergraduate and graduate programs.

The ICP collaboration presents a transferable and replicable model to enhance an educational system's ability to optimize academic excellence through the diverse student talent in the United States. It provides advanced research opportunities for faculty and students with a world-class research institute. ICP to develop its potential for

contributing to science education, especially in the areas of facilitating school-based student research, R&D of research-related curriculum modules and teacher education. Fully developing its capacity for systemic change will require a future investment strategy from NASA, GISS, Columbia University, CUNY, New York City public schools and other partner educational institutions.

It can be said that the policy roots of the ICP derive from the legend of Babe Ruth and the optimization of talent within higher education. The common link is that both these entities are the product, in part, of imperfect systems.

In the case of Babe Ruth, the legend depicts him as one of the greatest of American athletes, and indeed more than fifty years after his death he is revered as the "Sultan of Swat." The system that created that legend promoted a fantasy. Babe Ruth was the product of a system of privilege, one that excluded talent. He never faced a Satchel Paige, or competed against a Josh Gibson. He never went to bat against Jewish players like Sandy Koufax, or Hispanics like Juan Marichal, or Asians like Hideki Irabi. We will never know how good he was or could have been. The lesson learned here is that there is significant talent that must be accounted for before the title of greatness or excellence is conferred.

When systems are in place long enough, they are often accepted as normal. This is the

case with the higher education system of the United States, regarded by most as the finest in the world. Evidence in support of this claim can be found in the unprecedented numbers of foreign students that annually enter our higher education institutions. The power of this system can be seen in the success of graduates from American universities who have contributed greatly to the economic wealth and national security of many nations. Yet this system faces a constant challenge to optimize the breadth of potential talent that exists among our young people. In our current global climate, such optimization is of critical importance to American competitiveness, and to the drive toward academic excellence in our universities.

Thus, to optimize the creation and discovery of new knowledge, it is incumbent upon scientific and educational leaders to support transferable systemic initiatives, such as ICP, that promote academic excellence. It is my hope that visionary and intelligent leadership within the academic, governmental, research, and business communities will create the alliances necessary to promote the dreams and goals characterized by and found within the Institute on Climate and Planets. ■