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Hybrid Vigor in Science

When I was president of the U.S. National Academy of Sciences, I came to believe that the future success of humanity may depend on learning to use the tools of science—including the collection of objective evidence on what works and why—at all levels of decision-making. Thus, the National Academies have repeatedly addressed questions such as "How can we make a science out of education?" or "How can we make a science out of sustainable development?" Developing a sound platform of knowledge to address such critical issues will require harnessing research of the highest quality, both in the natural and social sciences. And for this research to be effective, scientists will need to develop much deeper connections with the rest of society.

A formative experience in my first few months as president of the National Academy of Sciences was participating in a workshop for a study on violence in urban America, for which a mixture of social and behavioral scientists, law enforcement agents, mayors, and others came together to formulate recommendations. The wide range of perspectives created an electric, highly creative, and collaborative atmosphere at the workshop that informed and enriched the results. Many of the scientists made new connections that seemed certain to improve their future research, as well as to make their findings more useful for society. Since then, I have repeatedly witnessed the innovation that arises from recruiting scientists and outstanding practitioners to work together, using scientific approaches to tackle important problems.

A recent experience began when the National Academies confronted the question of why research has supported innovation and continuous improvement in medicine, agriculture, and transportation, but not in education. The two successive committees that struggled with this problem were composed of a mixture of national leaders in business, research, policy, and educational practice. The result is the Strategic Education Research Partnership (SERP, a nonprofit organization whose board I chair). SERP is a 3-year-old experiment in which school districts are established as research "field sites," the first two being Boston and San Francisco.

In a field site, a cooperative team of distinguished researchers works hand in hand with local school district personnel to address a select set of challenges that have been identified by the school district. The research is carried out in real classrooms to explore the effect of jointly designed interventions that take advantage of local teacher expertise. There are valuable take-home lessons for all involved, underscoring how everyone can benefit when scientists take on practical problems.

There are many precedents for such productive partnerships. My office at the University of California, San Francisco (UCSF), is located at the new Mission Bay campus, where biotech buildings are springing up like mushrooms across the street. Most faculty look forward to the many synergistic interactions that are likely to arise from this proximity. I was at UCSF in 1976 when this industry began, and at that time the whole idea of university biology faculty becoming involved with the private sector seemed inappropriate and, to most of us, a waste of faculty time. But after many of our students moved on to jobs in the local biotech industry, they formed an effective bridge between the quite different cultures of industry and academia. They became the real agents of technology transfer from university laboratories and also helped to create new arrangements that now benefit the fundamental work of the university. Rather than distracting faculty from productive scholarship, as we had feared, the interactions have increased the pace of discovery.

By analogy with biotech, the formation of strong, long-lasting synergies between academic science and other critical institutions will require that some of our best students of science leave academia to become curriculum specialists inside school districts, policy analysts in state government offices, and so on. These people will form the bridges needed for science to affect a wider society. We should therefore be generating new programs to support such career transitions, while cheering on the scientists who pursue them.

– Bruce Alberts

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