
Little Science, Big Science—And Global Science

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The handwriting for the future of federal science funding is on the wall, and Frank Press has read it as well as anybody.

In his April 26th speech, the National Academy of Sciences president uttered publicly what many have acknowledged privately: The United States cannot afford to pursue at full tilt its Big Science agenda—the superconducting supercollider, the human genome project, the space station—without cutting into support for the legions of individual investigators representing Little Science.

Press's statement (*The Scientist*, May 30, 1988, page 1) has recognized what had already become a fractious debate between proponents of worthwhile Little Science projects. Indeed, it may have divided the camps even further. But why should scientists squabble over a single small pie when they can collectively take a large one that feeds and sustains many?

Think for a moment how Derek J. de Solla Price described the transition of small science into large, organized research organizations of the modern era in his 1963 classic *Little Science, Big Science*. While recognizing that Big Science sometimes takes the form of costly and

monumental hardware, Price preferred to emphasize the growing number of scientists in small collectives in pursuit of a greater number of multifaceted projects, and their vastly more numerous publications, as the distinguished feature of the new Big Science era. He suggested that the exponential growth of science offered “new and exciting tactics for science.”

One tactic for successfully managing Big Science today is to make megaprojects into collections of Little Science projects. If we want the superconducting supercollider, and a map of the human genome, we ought to internationalize the effort. This means, of course, jettisoning purely nationalistic and political motivations. If the nations of the world would collectively allocate a small portion of their R&D funds and their human resources to these grand projects, the world could more easily afford them and all could benefit.

Consider, for example, Japan's Human Frontiers Science Program, which is being fashioned to investigate basic research in neuroscience and the molecular mechanisms of biological functions. A late April meeting of science representatives from seven nations achieved real

progress in making this program an international effort. France and West Germany now look to be eventual partners with Japan (see *Nature*, 333, 104, May 12, 1988). It took much discussion and negotiation and it will take more. But the idea is sound. There are, naturally, many critics. But it is always easier to criticize such efforts than it is to work for their success.

An international, distributed effort is a natural strategy for systematic mapping of the human genome. As for the SSC, it cannot, of course, be parceled out. But why shouldn't funding it and running it

be a collective, multinational effort? CERN shows that it can be done.

I am not so naive as to think that science can operate wholly free from politics or nationalistic sentiment, or that scientists are in any way "above mere politics." But that doesn't mean that scientists ought not to work together to convince government leaders that knowledge is more important than national image. We can truly make a virtue of present necessity by an international effort with these megaprojects. Perhaps then we will begin a second transformation from Big Science to Global Science. ■