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A SUPERCOLLISION OF INTERESTS

A scientific endeavor with a goal as pure as they come--to discover the fundamental laws that govern the universe--has become mired in the mundane governmental process that allocates research support. In May, the House of Representatives voted to terminate the Superconducting Supercollider, or SSC, an $8.2 billion particle accelerator to be built in a 54-mile tunnel in Waxahachie, Tex.

The Senate came to the rescue in August, appropriating $550 million for the SSC for fiscal 1993--$100 million less than President Bush's request. At this shaky level of funding, even with the $1.2 billion already spent on the SSC, the giant accelerator will not be ready for experiments for another dozen years. The project is under continual attack from segments of the scientific community that believe the resources allocated to particle physicists could be better spent, as well as from members of Congress who are looking for relatively painless ways to shrink the deficit.

This tentative "support" could bleed the SSC to death. Instead of choosing between two reasonable options--completing the SSC quickly, or canceling it and devoting the resources to other worthwhile scientific and technological purposes--we seem intent on doling out annual appropriations that are too small to construct the project efficiently and that make cost escalation inevitable.

The issue is not the SSC's affordability but its priority. How is the nation better served: by investing billions in one high-energy physics project, or by devoting these resources to other areas of research such as materials, biomedicine, and manufacturing technology that offer tremendous intellectual opportunity as well as much higher likelihood of contributing to the country's economic well-being?

Advocates of the SSC tend to avoid the priorities question. They appeal to the excitement of discovery in a field that has produced some of the most important triumphs of human understanding and that has in the past led to important technological applications. Secretary of Energy James Watkins has argued that "it takes vision and courage to fund basic research" and that "the full payoff [of basic research] is often unclear." No one disputes these clich--s or the scientific merit of the SSC. But enthusiasm alone does not justify ignoring resource constraints.

Proponents also engage in unsavory distortion of the SSC's potential economic benefits. Several Senators reportedly were persuaded to support the collider by the prospect of spinoffs in computers, medical systems, and high-speed trains. All these technologies would be better pursued through direct support.

In my judgment, the scientific benefits of the SSC relative to those to be gained from other research opportunities do not justify its cost, and I would cancel the project. Instead, I believe, we should adopt an international strategy. High-energy physics experiments are very costly and provide fundamental knowledge that becomes freely available. It therefore makes sense for countries to cooperate in planning, building, operating, and financing these facilities. I recommended this strategy during the first five years of the SSC project, when I was member of its board of overseers.

Unfortunately, the high-energy physics community decided that to attract political support, it would promote the SSC as a major construction project and adopt jingoist rhetoric that stressed U.S. scientific dominance. But attracting foreign money to an "America first" SSC project has proved difficult. Japan correctly resisted pressure to pay $1 billion of the costs for a project that did not involve them in planning, site selection, or construction.

It is not too late to follow the international alternative. The European Community is already working on a much less expensive accelerator called the Large Hadron Collider (LHC), which will use an existing tunnel at Europe's jointly operated CERN laboratory near Geneva. The LHC could upstage the supercollider by conducting some of the important physics experiments--such as verifying the quark theory of matter--that U.S. physicists have been citing to justify the SSC.

The United States should propose that CERN be open to all nations. U.S. and Japanese scientists would collaborate with their European colleagues in planning and operating the LHC, with each country contributing $1 billion toward it. We should also propose that the member nations of this new consortium agree to build the next major high-energy physics project in the United States (perhaps at Waxahachie) with joint planning and international financing. For its part, the United States would assure steady appropriations toward this project, say $100 million per year for 10 years. This course of action would cost the United States $5 billion less than the SSC--and that would pay for a lot of basic research.

PHOTO: John M. Deutch (L. BARRY HETHERINGTON)

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