

**THE VALUE OF PHYSICS**  
**(My election statement for APS)**

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All over the world, this is a particularly difficult time for physics. In many places, there is a sharp decline in funding for research and teaching in physics. Some nations have a very serious shortage of home-grown students of physics. In others, the international exchange essential for the conduct of science has been seriously curtailed. Some places show some support for very applied work, but little interest in the basics. Some governments and groups are actively hostile to the patterns and traditions of independent intellectual activity which surrounds good scientific work. Others would reject the best scientific knowledge in such matters as the construction of school curricula, or the development of health policies, or in the implementation of environmental policy. In some places, government labs are pressed into being mouthpieces of partisan policy or politics. Everywhere, industrial labs doing physics have mostly faded away, or work on problems with a very short time-horizon. Unfortunately, in the United States we see elements of all of these difficulties. Why is this happening?

Partly the problem is a confusion about the role of science. We need to articulate to ourselves and to the general public the true meaning and value of our scientific work. Our work is particularly valuable not for the wealth or power it produces-- in the present-day world there are quicker roads to wealth and power-- but because it is a method for generating and discerning true things. If we carry out our professional responsibilities correctly and carefully, we might have the opportunity to say things about nature that are and will remain true: a certain pollutant will diffuse at a certain rate through a given medium, in the ordinary course of things information never moves faster than the speed of light, photons tend to clump in the same state, etc. . These true statements can provide the hard facts upon which others may build the reliable instruments of our polity, or our economy, or our view of the world. More important, by using good judgment, we serve as examples showing how others might perform their own roles. That is our true value to the community-- scientists can produce objectivity and a good approximation to something true.

To meet this purpose, we have to keep our work up to the highest standards of morality and correctness. Thus, the data fabrication scandals at Bell Labs and Lawrence Berkeley have proven destructive, particularly so because of the centrality of these labs to our world of physics. Almost equally destructive are media circuses about "breakthroughs" which in the end never quite work out, or the promulgation of exaggerated statements about the economic or military value of our work. In asserting the value of our profession each of us has the responsibility to see that all the work that we do is honestly carried out, and reported accurately and fully, without undue puffery. In doing this we may have to resist pressures from our employers, journals, and even from the apparent needs of our own careers.

Insofar as we do meet high standards, and mostly we do that reasonably well, we serve our society. We serve it in the classroom by teaching methods for finding and reporting facts about nature. We serve it in the laboratory by finding new things and reporting them with a reliable accuracy. In both lab and class we develop and maintain standards of logic and evidence that should be applied in many other walks of life, particularly in public life. We further serve the society in the public arena by helping to bring our government and leaders into better contact with the limitations and possibilities of physical reality. And most of all we serve our society by providing a much needed example of the possibility of creating value by disseminating truth. By doing this we can further enhance the public's great respect for scientists.

The APS can play an important role in all of this. The Physical Society is one of the primary mechanisms for us to formulate and express our view of ourselves and of the broad issues relevant to us. The APS then brings this view to the attention of people, industry, and government. I hope to help the American Physical Society do that job as well as it possibly can.