Policy Forum

Project 2061: A Congressional View

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Project 2061, the AAAS project to define an agenda for achieving national scientific literacy, is at once admirable and daunting. It is admirable for its clarity of focus; it is daunting in the magnitude of the endeavor implied for our nation.

Scientific literacy is as vital as language, historical, or cultural literacy. Those who master science have the potential to wield great power over those who do not. A democratic society may flounder unless all citizens understand the spirit, character, and values of the science that empowers so much of society.

Furthermore, science and technology are economic and cultural engines for much of the world. Science provides new ideas that expand and enrich our world view. Technology provides new products that ease and improve our daily lives. To live and work effectively in such a world requires a fundamental literacy of that science and technology.

Numerous reports suggest that we are becoming a nation of science illiterates; thus the notion of achieving national science literacy is a daunting prospect. Such a goal demands a high-quality science education program. Implementation of this solution is complex and will require profound changes in our notions about scientists and the science educational system.

We must broaden our traditional view of the white male scientist to include minorities and women. This assertion has often been made on grounds of equity and fairness, but there are also pragmatic reasons for this revision. The pool of white males available for scientific careers is decreasing. To maintain our present population of scientists and engineers, women and minorities must be encouraged to enter technical careers. Thus, our educational system, from kindergarten to graduate school, must encourage participation of these traditionally underrepresented groups.

We also need to encourage careers in science and technology. Many of our brightest young people no longer find these professions attractive. Other careers offer better economic incentives without the prolonged and rigorous training required by science. Society often views science as socially disruptive rather than constructive, and scientists are often portrayed as isolated and withdrawn from society. These and other factors discourage many young people from pursuing careers in science or engineering.

Furthermore, in order to maintain a pool of talented scientists and engineers, we must be dedicated to science education throughout the educational system, and we must develop incentives that make science education as rewarding as other scientific careers. To do this, scientists themselves should revise their role in society. Scientists must view educational careers with the same seriousness with which they view research careers. This has become difficult in recent decades, in part because of the massive infusion of federal research funding into our academic institutions. This funding has provided invaluable intellectual and material benefits for us all. However, there have been expensive, nonfinancial costs, for this action has caused many of our academic faculties to devalue teaching and to focus on research and its concomitant rewards.

A National Science Board study (*1*) of the impact on undergraduate science education of federal support for academic research concluded (*1*, p. 41) that "faculty members in those areas to which research money was easily available became . . . less citizens of their academic campuses and more citizens of their disciplinary communities. Their *priorities* shifted from the task of imparting knowledge to the young to the creation of new knowledge. . . . A revision of the professional value system followed inevitably."

Research is a demanding vocation. It almost seems improper to ask scientists to invest additional energy in high-quality science education. Nevertheless, because most scientific work is conducted under the sponsorship of society through the distribution of tax dollars, society must expect to receive that energy.

This is more than a simple case of "He who pays the piper calls the tune." A democratic government must be responsive to the will of the people, that is, society. If society is to properly express its will about spending funds on science, people need to understand what it is they are being called on to do. This means they must be made literate. If the scientific community fails to help develop a scientifically literate society, then it risks destroying the basis of support necessary to continue its existence.

The eloquent poem by George W. Wetherill, which closes the Project 2061 Report (*2*), illustrates this point. The poem reflects on the history witnessed by comet Halley and the space probes launched to study the comet in 1985. It closes with a vision of the return of comet Halley in 2061 for more extensive explorations (*2*, p. 168).

> Next time there will be more.
> They'll even mount your haggard head
> and ride you into Neptune's night!
> Yes, we still are bold.

To retain the boldness to visit comet Halley on its next return to our solar system, a significant expenditure of federal money must occur—money from taxes. Will our country be willing to support such exploration? The answer will be negative unless society understands why such a project is important.

To understand the importance of such visionary exploration requires scientific literacy. Politicians cannot provide that literacy. It can be achieved only by scientists working in close cooperation with others in society who share their values. Absent that commitment and involvement, I fear that Wetherill's vision of a return visit to explore comet Halley, and all that his verses mean for the prospects of Project 2061, will be only an unfulfilled poetic hope.

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REFERENCES AND NOTES

1. National Science Board, *Undergraduate Science, Mathematics and Engineering Education* (National Science Board, Washington, DC, 1986).
2. F. J. Rutherford, Project director, *Science for All Americans* (AAAS, Washington, DC, 1989).