He is certainly right that there is plenty of technological expertise. What the states need, however, are scientists who know how to apply this expertise to specific problems.

Three states have developed mechanisms for the application of technology in the legislative process: California (a distinguished council), New York (Assembly Scientific Staff), and Illinois (part of the legislative council). Four other states are getting started; elsewhere such mechanisms are nonexistent. Mechanisms for advising the governor are established in Georgia, Hawaii, Pennsylvania, Utah, and several other states.

Important requirements for legislative success include interest and backing by the leadership, and intimate participation of the staff in the formulation of bills and in the committee analysis process.

No legislator has time enough to make rational decisions solely from his own knowledge on the several hundred technical bills that are introduced in one assembly session. Consequently a staff must be brought together with expertise in science and technology and expertise in lawmaking.

In January, Speaker Perry B. Duryea of the New York State Assembly jointly sponsored a unique workshop conference on energy legislation with AISLE (An InterSociety Liaison committee on Environment—with members from a consortium of 20 professional societies, including AAAS, in science, engineering, and public administration). About one-third of the invited participants from government, industry, and universities were scientists; one-third were engineers; and one-third were lawmakers.

A few dozen recommendations were made and a few dozen bills were introduced to the Assembly. Of the 25 bills that received serious consideration, at the end of the Assembly session (16 May) 3 bills were still on the floor, 12 had passed the Assembly but were designated for out-of-session study in the Senate, 5 more were on the governor's desk with 900 other bills, and 5 were law. None was voted down. This record should be interpreted in light of the fact that it normally takes 3 years to get a new bill through one house.

It must be emphasized that it is impossible in this aspect of government to specify exactly just what results from what, and in the present case many factors beside the conference contributed. The 22 bills are energy-related and were introduced by members who participated in the conference. All of the delegates, both scientists and legislators, agreed that they learned much from the experience, and all have been lavish in their comments about each others' expertise in their areas of specialization.

The prime conclusion to be drawn is that our complex societal problems require the joint collaboration of experts in many disciplines. Only by working together can they reach constructive conclusions.

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Brewster Denny's editorial reminds us of the many problems facing science professionals engaged in public affairs. As scientists, we are convinced that we have something to contribute to the "very quality of local and state government itself . . ." which Denny concludes is an essential objective for scientists and engineers.

An important focus for scientists who are seeking to bring citizens "up to a level of understanding at which decisions involving technical issues can be made" is the state legislature. The state legislature represents a cross section of public opinion and, as such, offers the scientist more direct access to the public. Executive branches of government, both state and federal, have been guilty in recent years of using scientific and technical information poorly (*1*). For this and other reasons, the legislative branch of government has taken up the challenge to develop its own resources for making science policy. With such resources, the legislative branch is not intimidated by the expertise in the executive branch.

Scientists can have many roles in this struggle for political power. One of the obvious ones is to seek election in state and local government. Other roles include working *directly* with those who are in the political arena and demonstrating that sophistication in science and technology is politically valuable. These roles require that scientists develop an appreciation for the political environment and new communication skills. Any success that scientists enjoy in improving public policy will derive from their integration with the political process, not from their standing as a separate constituency. In general, it is the scientists who must take the first step toward establishing credibility if our contribution to public policy is to be effective.

In Illinois we are developing an armory of science-in-public-policy devices to test and implement these ideas. Sangamon State University, in the state capital, is in a good position to explore new roles for scientists in state government. One science faculty member has taken leave to work full time as a technical analyst to the Illinois House Energy Crisis Investigating Committee. New roles for scientists are being developed through the university's legislative internship program, more than a decade old, which is in its second year of vigorous recruitment of graduate students with science or engineering backgrounds. In 1974–75, such interns will work with both partisan and nonpartisan staffs. A staff scientist now works in the bicameral and bipartisan policy research unit of the legislature—The Illinois Legislative Council. New and unique relations between the legislature and academic scientists are being developed with the cooperation of the major institutions of higher education in Illinois.

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References

1. F. von Hippel and J. Primack, *Science* **177**, 1166 (1972).

Genetic Counseling and the Law

Margery W. Shaw's editorial on genetic counseling (17 May, p. 751) offers a good case for a rule of law which protects us from individualized ethical codes. I do not believe it narrows our options when we support life, particularly unborn human life. Law narrows a lot of "options." It limits my taking another's property, another's life, another's right to clean air and water, and so forth.

Justice Marshall, who concurred in the Supreme Court decision in Roe *v.* Wade on elective abortion, wrote in his opinion on another life-and-death matter, capital punishment (Furman *v.* Georgia), that the Eighth Amendment to the U.S. Constitution is our

"insulation from our baser selves" (*1*). Apparently pregnant women need no such insulation.

Where does the ethical stop and the amoral begin? Genetic screening may not lead to genocide, but there are some people who would use it for that purpose. Abortion may not necessarily lead to infanticide, but there are some who would suggest that infanticide is all right. We definitely do need checks on our behavior. As it stands right now, though, it is doubtful that the law of the United States as embodied in the Constitution provides the checks we need to guard against taking human life.

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References

1. T. Marshall, *U.S. Law Week* **60**, 4950 (1972).

Human Rights

I recently returned from the annual conference of the American Society for Engineering Education that was held at Rensselaer Polytechnic Institute (RPI). For some reason, I recalled the story about an Iroquois Indian by the name of Donehogawa (anglicized as Ely Samuel Taylor) that had been recounted in Dee Brown's *Bury My Heart at Wounded Knee* (*1*). He was not permitted to enter law practice in the state of New York because he was not a white male citizen. He made careful inquiries as to which of the white man's professions or trades an Indian could be admitted, entered RPI, and was graduated as a civil engineer. He worked on the Erie Canal, served as an engineer in the Union Army (because of his excellent penmanship, Grant asked him to write out the terms of surrender at Appomattox), and he later was the first Indian to serve as Commissioner of Indian Affairs.

In this day when we are reminded constantly of the need for affirmative action, we can take pride in the engineering profession and RPI for their early recognition of human resources and rights.

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University of Washington Libraries, Seattle 98195

References

1. D. Brown, *Bury My Heart at Wounded Knee* (Holt, Rinehart & Winston, New York, 1971).