

My Profession and My Nation A Worrisome Confrontation

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I'VE ALWAYS FELT COMFORTABLE—indeed complacent—about the relationship between my profession, engineering, and the society in which I live. Engineers have been good for America: diligent creators of comfort and wealth and as individuals, by and large, upright citizens. America has been good to its engineers: rewarding their efforts, if not with riches or fame, at least with plentiful employment opportunities and, if polls are to be believed, with ample respect. Admittedly there was for a while, starting in the 1960s, an *anti-technology* movement, stemming largely from concerns about the environment. But that seemed to dissipate as it became apparent that protection of the environment was itself a form of engineering. At the same time, acceleration of technological change added an element of uncertainty to engineering careers, particularly in fields such as aerospace. Yet that eased as the end of one program invariably heralded the beginning of another where engineers were in demand. And when competition from abroad brought new pressures, and American industry was forced to turn *lean and mean*, engineers, hardworking and resourceful, were usually able to adapt. As we entered the new millennium it remained hearteningly true: The profession and the nation had a strong and mutually beneficial relationship.

Suddenly, however, this happy liaison is being threatened. With the coming of *globalization*, the climate for American engineers has turned ominously inhospitable. Specifically, the outsourcing of technological work requires American engineers to compete with skilled professionals abroad whose salaries are very low. At the same time, Congress has attracted thousands of foreign technical workers to the U.S. by authorizing a special new visa category (H-1B). It is difficult to prove statistically that globalization is jeopardizing the well-being of American engineers. Yet sudden spurts in unemployment—such as the seven percent figure experienced by electrical engineers in 2003—plus abundant anecdotal evidence, have created widespread feelings of anxiety and anger.

Granted, workers in many industries have long complained about unfair competition from abroad, only to be told that this is the way of the world. But for engineering professionals the problem is new and alarming. Other professions—notably medicine and law—have licensing requirements that protect their practitioners from foreign competition. Yet, aside from the P.E. seal, required mainly for construction work, engineering for American enterprises can be done legally by just about anybody on the planet. To rub salt in the wounds, at the very moment that American engineers are faced with multitudes of new competitors worldwide, an energetic campaign is under way to recruit more young Americans to study engineering.

Numerous authorities have argued that these developments are good for the nation, good for the world, and in the long run will prove beneficial for technologists of all sorts in all places. Many American engineers respond bluntly that their legitimate present interests are not being given fair consideration.

Is it possible—appalling thought—that the legitimate interests of American engineers have come into conflict with those of the nation as a whole? For a particular group of engineers, charged with playing an active role in establishing technology policy, this question presents a uniquely troubling and personal dilemma. I refer to members of the National Academy of Engineering (NAE).

As a member of NAE, I have often been reminded that membership is not to be considered as simply honorific. In the words of the academy's president, Dr. William A. Wulf, the organization's mission, in addition to honoring professionals deemed worthy, is "to serve the nation by providing authoritative, unbiased advice on technical issues." Or, as set forth on the cover of a recent academy report: "Promoting the technological welfare of the nation by marshaling the knowledge and insights of eminent members of the engineering profession."

Founded in 1964 (under the Congressional charter granted to the National Academy of Sciences in 1863), NAE carries out its advisory responsibilities through committees of carefully selected volunteer experts convened when requested by governmental agencies. This committee work is generally handled by the National Research Council, an organization administered jointly by the academies of science and engineering and the Institute of Medicine. NAE also initiates programs internally using its own resources.

For NAE members the bitter outsourcing debate brings into focus an issue we have seldom had to confront: potential conflict between the technological welfare of the nation and the welfare of many of our co-professionals. Like Engine Charlie Wilson, who famously opined—in ill-chosen words but with a kernel of truth—that what's good for General Motors is good for the country, and vice versa, most of us have assumed that the well-being of the engineering profession and the technological health of the nation are synonymous. But now this assumption appears open to question.

So far, aside from inviting public discussion on its web site, NAE has not moved formally into the outsourcing controversy. Perhaps it never will, because the problem is at least as much economic and political as it is technological. (The Department of Commerce has asked the National Academy of Public Administration to assist in a study of the issue.) However, our president, Dr. Wulf, has ex-

pressed an unambiguous opinion: “I don’t believe in a protectionist approach to solving the problem of access to engineering talent. Protectionism might be OK in the short run, but it’s not in the long-term interest of the country.” I suspect that many NAE members will agree because, as leaders of industry and academe, they tend to look at the *big picture*—however much they may empathize with engineers who toil in the lower ranks. (Ironically, those of us who are not personally faced with fierce competition for our own jobs, particularly those of us who are ourselves employers of engineers—and here I must include myself—seem willing to indulge in a bit of our own protectionism. Without apparent reluctance, we seek advantage in trade and tax policies and such subsidies and incentives as the government sees fit to grant. And our academic colleagues appear to value their own ultimate security: faculty tenure.)

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guide to current affairs.*

Of course, the masses of salaried engineers are not totally helpless in the currents of historical change. They are represented by a number of the professional societies, and these societies have lobbied vigorously to protect their members from the adverse effects of globalization. They have called upon Congress to curtail the number of H-1B visas and to consider various ways of discouraging the outsourcing of engineering work.

The matter is painfully vexing: not only, on the one hand, for NAE members aware of their designated responsibilities and, on the other, for engineers fearful of losing their jobs to foreign competitors—but inevitably for every thoughtful engineer. We all want to further the technological welfare of our nation. At the same time most of us feel an allegiance to our fellow professionals, although we may be hard pressed to define this sentiment in detail.

Enough of lamenting the situation. Where do I stand? My instinct—contrary to the well-considered and well-intentioned opinion of NAE President Wulf—is to support the engineering societies which seek, by legitimate political means, to protect their members from excessive foreign competition. What is excessive? Well, John Kenneth Galbraith said that politics “consists in choosing between the disastrous and the unpalatable,” and in this instance I believe it would be disastrous to so disenchant a large number of American engineers that the profession’s image would be damaged and its appeal to talented youngsters diminished. Thus might the hard-headed pragmatists reduce our nation’s technological well-being, the very cause they seek to support.



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Mr. Florman earned his B.S. in 1944 and his C.E. in 1946 from the Thayer School of Engineering at Dartmouth and a master’s degree in English literature from Columbia University in 1947. His more than 200 articles dealing with the relationship of technology to the general culture have appeared in many professional journals and scholarly magazines. He has been a contributing editor to *Harper’s* as well as a columnist with *Technology Review*. He is the author of six books, including: *The Civilized Engineer*, *Blaming Technology*, and *The Existential Pleasures of Engineering*.

He serves as a trustee for the New York Hall of Science and for the Hospital for Joint Diseases Orthopaedic Institute, and was an overseer for his engineering *alma mater*. He has served on the National Research Council’s board on engineering education and on its commission on engineering and technical systems. A registered professional engineer, he is a member of the National Academy of Engineering and a fellow of the American Society of Civil Engineers.

And, while I’m quoting economists, let me use the words of John Maynard Keynes to respond to Dr. Wulf’s comments about protectionism perhaps being OK in the short run but not in the long. It is widely known that Keynes said, “In the long run we are all dead.” Less familiar is his preceding sentence in the same essay: “Long run is a misleading guide to current affairs.”