Amulya Reddy and the Social Responsibility of Engineers and Scientists

(Contribution to the proceedings of a Seminar in honor of Prof. AKN Reddy, Indian Institute of Science, Bangalore, India, Oct. 28,2005)

Frank N. von Hippel, Professor of Public and International Affairs, Princeton University

There are a lot of intelligent people in the engineering and science professions. They enjoy talking to each other about their work and are proud when their technical insights are fundamental and their analyses elegant.

Amulya Reddy is smart and his analyses are world class. However, he also asks himself whether his work will be useful to the poor, and he insists that his collaborators also think about the impact of their work on the poor.

It is uncomfortable to introduce issues of values or politics into technical discussions. I learned this three decades ago when I started giving physics colloquia about the misuse of science advisors to legitimize political policies. Talking about politics in a physics colloquium felt like blaspheming in a church!

My feelings of discomfort reflect the fact that, like most engineers and scientists, I have been trained to be "objective." This encourages us to sticks to our areas of technical expertise and to leave social reform to "policy makers."

That is efficient. It minimizes the distraction of political debate within the technical community, and it is the way most "policy makers" like it.

In the United States during the 1950s, it was often said that "scientists should be on tap, not on top." And J. Robert Oppenheimer was made into an object example. In 1949, a committee of science advisors that Oppenheimer had chaired -- all of them veterans of the World War II fission-bomb development project -- questioned the morality of developing the even more powerful thermonuclear bomb. They described its purpose as "genocidal."

The reaction from those who felt that the United States must have the hydrogen bomb to deter the Soviet Union, which had just acquired the fission bomb, was that Oppenheimer must be disloyal -- perhaps even a Soviet agent. A hearing was held and the U.S. Government concluded that Oppenheimer could no longer be trusted to have access to secret information and he was banished from being a government advisor on nuclear matters.

The generation of science advisors that followed Oppenheimer was more careful to keep its advice strictly technical. They explained what *could* be done and did not give their opinions on what *should* be done.

Ultimately, however, each of us is responsible to his or her fellow human beings -- not just to the political leadership of the day. And, as Amulya Reddy recognizes, most of our fellow human beings are less fortunate than we are. And, unlike corporations and government agencies, the poor do not have the wherewithal to put engineers and scientists to work on the problems that they see. When he first began to work on energy, Amulya therefore went to the poor people of one particular village to consult with them on how engineers and scientists could improve their lot. And then he made that his priority.

Engineers and scientists have special social responsibilities also because, by virtue of their training and specialization, they know a *lot* more about the dangers from technology and how to reduce them than do their fellow citizens. They have a responsibility to share that understanding not just with policy makers but also with concerned citizens. In the area of energy policy, Amulya has done that at all levels: village, state (Karnataka), national, and global.

So, in many ways, Amulya's professional life has been a model of social responsibility. He and a few others like him have created an alternative model for the engineering and science community -- the model of the socially-engaged scientist.

In the U.S., non-governmental organizations have sprung up to carry on this work. The first was the Federation of American Scientists, established in 1946 by nuclear scientists to try to avert nuclear war. Then there was Environmental Defense, which was set up by a group of life

scientists, and the Union of Concerned Scientists. Recently, I learned of a new organization, Engineers Without Borders.

But this tradition is not yet being propagated into the seed-grounds of the engineering and science community. Universities do not teach engineers and scientists about their responsibilities to their fellow humans. They are taught to be experts in their field and, since that training is very intensive, it leaves little room for exploring the other dimensions of education.

I have raised this with the Engineering School in Princeton and the response has been, "we're not qualified to teach about politics and values. If our students want to learn about those things, they should go to the specialists in such matters in the Politics Department." I raised with the chairman of the University's Research Board the fact that Princeton's engineering and science students are not being taught social responsibility. He exploded, "But that would be like teaching Marxism!" I tried to explain that we should teach the students the questions, not the answers. Thus, this effort to socialize engineering and science has still not penetrated the core of the Universities.

But the models have been created and just as Amulya Reddy was inspired by Gandhi, he has become a model for the next generation of concerned engineers and scientists.

I am sorry that I will not be there to toast Amulya on October 28 but I will be one of the network of his colleagues all over the planet who will be thinking of him gratefully for sensitizing us and setting such a wonderful example.