



## Engineers and the Public Good

By Ashvin A. Shah, P.E., F. ASCE

“The civil engineering profession recognizes the reality of limited natural resources, the desire for sustainable practices (including life-cycle analysis and sustainable design techniques), and the need for social equity in the consumption of resources.” This quote from ASCE Policy Statement 418, *The Role of the Civil Engineer in Sustainable Development*, links the issue of environmental sustainability with that of social equity.

These two concerns are not easily tackled separately from each other or by one nation independently of the rest of the world. Yet that is exactly what is happening today: scientists addressing the long-term issue of environmental sustainability without simultaneously recognizing its short-term impact on the economy, and economists addressing the short-term issue of unemployment without simultaneously recognizing the long-term need for an environmentally sustainable global economy.

Thomas Brooks, writing in this space (August 2012), sees the global link of economies as follows: “American businesses outsourcing and offshoring jobs to India and China” so as “to remain competitive” is one reason “hindering a full recovery” of the American economy. The less restrictive labor and environmental laws abroad constitute the primary reason for outsourcing American jobs. It is a short-sighted solution that creates social inequity across the board, causing unemployment in the United States and facilitating slave shops in Asian countries, as well as environmental degradation across the board, as rich and poor alike in Asia choke in pollution that eventually drifts to the U.S. West Coast.

“So what’s the solution?” asks the editor of *Modern Steel Construction* (October 2011). He adds, “I believe that we need to start taking responsibility for the products we purchase. However, the solution can’t rest on the actions of individuals as that would unfairly penalize those who try to do the right thing. Instead, we need a national policy that imposes tariffs on imported products that do not meet our environmental and labor regulations.” The global macro-economists who support free movement of capital across national boundaries would regard this as too nationalistic and

protectionist; it would likely result in trade wars and hurt both economies.

Fortunately, after the near-collapse of Wall Street in 2008, economists have undergone soul-searching about the fundamental assumptions of their discipline. They now recognize that in addition to capital resources, two other key inputs also deserve their attention: labor, including skilled labor and technologies, and natural resources. Labor injects the social equity issue into the economy, and natural resources inject the environmental sustainability issue. Recently, there has emerged a new international group of economists focusing on these two issues. They held their first annual conference in 2008 in Paris, and the most recent one in 2012 in Montreal.

Climate scientists and environmentalists approach sustainability with a global perspective, but generally do not get involved in the social equity issue, choosing to remain close to their field. Engineers, on the other hand, need to be concerned about social equity as they work directly with manual and skilled labor. Much has been written on the topic of the differences between scientists and engineers in their approaches to problem-solving. Henry Petroski, in his book, *The Essential Engineer: Why Science Alone Will Not Solve Our Global Problems*, invokes C. P. Snow’s reference long ago to the cultural divide between the humanities and sciences, then explains as follows a similar cultural divide between scientists and engineers:

If the two cultures of a half century ago were the sciences and the humanities, are the two cultures of today the sciences and engineering? Do scientists understand engineering, and vice versa? ... But the overall cultures of the sciences and engineering can be as disparate as those that Snow observed between the sciences and humanities. While there are scientists who look down on engineering and engineers who dismiss science as of no practical value, in an age of apparent climate change and other global issues, it is incumbent upon both cultures to see the importance of the other in

defining and solving the problems of the planet ... We all should strive to be of one culture ... There can be little doubt that these are not times for the global scientific, engineering, economic, political, and public policy communities to separate themselves into competing cultures. They can best unite when they understand each other’s disciplines and their essential roles in contributing to the whole.

After a century of technological progress and rationalization of markets, we now have three cultures – scientists, economists, and engineers – that interact in making decisions about global economic issues involving science and technology. In his bimonthly InFocus columns in this publication, Jon Schmidt has written extensively on social captivities of the engineering profession and is now developing virtue ethics concepts that could help engineers deal with the moral issue of the public good. For example, his column on “Knowledge, Rationality, and Judgment” (July 2012) explains the three traits that are all too often pursued singly by scientists, economists, and engineers, respectively, when what is needed is a fusion of these dispositions.

In the meantime, social equity and environmental sustainability are addressed in ASCE Policy 418, which states that “ASCE will work on a global scale” for engineers to “have a role in planning, designing, building and ensuring a sustainable future. Engineers provide the bridge between science and society. In this role, engineers must actively promote and participate in multidisciplinary teams with other professionals, such as ecologists, economists, and sociologists to effectively address the issues and challenges of sustainable development.” ■

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