



## The Role of Engineers in Transforming the Global Economy

By Ashvin A. Shah, P.E.

The American political stalemate today between individual freedom and social equity is occurring in the context of increasing inequality in the domestic economy. However, the American economy is directly linked to and affected by the global economy ever since America emerged as the leader of the free world after two World Wars. The global economy, today serves well the 300 million Americans, along with perhaps another 700 million people; it does not serve well the remaining 6 billion people on the planet. In other words, the issues do not end at America's borders; they are universal and demand a global approach. The debate needs to be focused on America's role in transforming the global economy to become socially equitable and environmentally sustainable by a date certain.

The vast majority of people in the global civil society lack adequate food, water, shelter, health, education, and security, to name a few social benefits that emerged from the 200-year-long technological revolution. These people need more of the individual freedom and social equity that Americans already have, but without the free-market fundamentalism of libertarians and the big-government safety-net ideas of the progressives. Freedom and equity go together in human affairs. When in harmony, both increase. When in conflict, both decrease. In my lifetime, I have seen Americans living with decreasing freedom and equity because these two values are in conflict in our politics. This also diminishes America's role as the leader of the global economy. Refocusing politics to assume the challenges of this role will increase freedom and equity, not only in the American economy, but also in the global economy.

Only America can provide leadership to make the global economy socially equitable and environmentally sustainable. Those living elsewhere simply do not have our two centuries of experience with the democratic evolution of constitutional government and equitable distribution of the social benefits of the technological revolution. Besides, there is now a third dimension beyond freedom and

equity making an impact: the natural environment, unable to provide virgin resources and unable to absorb wastes. Business as usual will not be able to create economic growth to provide well-being for everyone without reaching unacceptable levels of social and environmental impacts. A good example is China: In one generation, its economy has become the second largest, most inequitable, and most unsustainable in the world.

Some say that we need to control population growth, which is true, but they advocate top-down measures that would not work in the long term; they fail to see the link established by demographers and sociologists that increasing freedom and equity together also leads to reduced population growth. Often this occurs in one or two generations, as we have seen for example in post-war Europe, Japan, Taiwan, and Korea. Scientists are aiming for a sustainable global economy for 9 billion people by 2050, but say nothing about social inequity. By joining the issues of equity and sustainability, we may actually be able to stabilize the population at 6 billion or fewer within that time frame – an easier path to a sustainable global economy.

Exasperated by the present political stalemate, serious thinkers in American politics fear that constitutional government no longer works. Some are looking to the Declaration of Independence for remedies, whether more free markets or more government, adding to the stalemate. Only those professions that are directly involved in securing the well-being of Americans have the ability to take on the challenges to help the global economy become socially equitable and environmentally sustainable. These include medicine, engineering, education, law, and local and regional governments. Their goals should include decentralizing the economy and implementing the 10<sup>th</sup> Amendment of the Constitution to reduce the power of the federal government, increase the power of local governments, and increase both individual freedom and social equity.

There are global political reasons why the federal government over the past one hundred

years has become so centralized. Chief among them is organization around high-energy-density fossil fuels. After the end of the Cold War, global political realities are rapidly changing, thanks in part to the information technology revolution that is actually helping to decentralize power around the world. Sources of low-energy-density energy may play as decisive a role in decentralizing the global economy in the 21<sup>st</sup> century as fossil-fuels-based energy played in centralizing it around big corporations, big labor, big finance, big governments, and big national defense forces.

The engineering (and architecture) profession has a compelling story to tell about how we have successfully avoided going to the federal government to regulate safety in buildings. There is no giant Department of Buildings in Washington, DC, or even in most state capitals. Buildings, even big buildings, are generally regulated at the local level, by small departments in each town or city who enforce a uniform building code developed within an open and democratic consensus process. This system evolved strictly in the American domestic politics arena, untouched by the events that tended to centralize power at the national level. This is a success story worth touting for the benefit of other professions.

In summary, we need decentralization of science, engineering, and economics in America to function well at the local level, ultimately enhancing both individual freedom and social equity. Jon Schmidt's work on engineering ethics stands out as exemplary in its systematic inquiry at the philosophical level of what needs to be done in changing the paradigm of engineering ethics. Now we need a similar effort at the engineering practice level to implement this new paradigm. ■

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