

izes that the actual number of Chinese papers published rose from 2,911 to 11,675. By comparison, close to a third of all the world's scientific papers were published by Americans-163,526 out of 528,643. In other words, China, a nation with almost four times the population of the United States, published (as of 1999) only one-fourteenth as many scientific papers as the United States."

While I think a dose of skepticism is always in order, I also think the skeptics would be wise to pay more heed to the flattening of the world and how quickly some of these trends could change. It is why I favor Shirley Ann Jackson's approach: The sky is not falling today, but it might be in fifteen or twenty years if we don't change our ways, and all signs are that we are not changing, especially in our public schools. Help is not on the way. The American education system from kindergarten through twelfth grade just is not stimulating enough young people to want to go into science, math, and engineering. My wife teaches first-grade reading in a local public school, so she gets *Education Week*, which is read by educators all over America. One day she pointed out an article (July 28, 2004) headlined, "Immigrants' Children Inhabit the Top Ranks of Math, Science Meets."

It went on to say, "**Research conducted by the National Foundation for American Policy shows** that 60 percent of the nation's top science students and 65 percent of the top mathematics students are children of recent immigrants, according to an analysis of award winners in three scholastic competitions. . . the Intel Science Talent Search, the U.S. team for the International Mathematical Olympiad, and the U.S. Physics Team." The study's author attributed the immigrant students' success "partly to their parents' insistence that they manage study time wisely," *Education Week* said. "Many immigrant parents also encouraged their children to pursue mathematics and science interests, believing those skills would lead to strong career opportunities and insulate them from bias and lack of connections in the workplace. . . A strong percentage of the students surveyed had parents who arrived in the United States on H-1B visas, reserved for professional workers. U.S. policymakers who back overly restrictive immigration policies do so at the risk of cutting off a steady infusion of technological and scientific skill," said the study's au

thor, Stuart Anderson, the executive director of the foundation. The article quoted Andrei Munteanu, eighteen, a finalist for the 2004 Intel competition, whose parents had moved from Romania to the United States five years earlier. Munteanu started American school in the seventh grade, which he found a breeze compared to his Romanian school. "The math and science classes [covered the same subject matter] I was taking in Romania. . . when I was in fourth grade," he said.

For now, the United States still excels at teaching science and engineering at the graduate level, and also in university-based research. But as the Chinese get more feeder stock coming up through their improving high schools and universities, "they will get to the same level as us after a decade," said Intel chairman Barrett. "We are not graduating the volume, we do not have a lock on the infrastructure, we do not have a lock on the new ideas, and we are either flatlining, or in real dollars cutting back, our investments in physical science."

Every four years the United States takes part in the Trends in International Mathematics and Science Study, which assesses students after fourth grade and eighth grade. Altogether, the most recent study involved roughly a half million students from forty-one countries and the use of thirty languages, making it the largest and most comprehensive international study of education that has ever been undertaken.

The 2004 results (for tests taken in 2003) showed American students making only marginal improvements over the 2000 results, which showed the American labor force to be weaker in science than those of its peer countries. The Associated Press reported (December 4, 2004) that American eighth-graders had improved their scores in science and math since 1995, when the test first was given, but their math improvement came mainly between 1995 and 1999, and not in recent years. The rising scores of American eighth-graders in science was an improvement over 1999, and it lifted the United States to a higher ranking relative to other countries. The worrying news, though, was that the scores of American fourthgraders were stagnant, neither improving nor declining in science or math since 1995. As a result, they slipped in the international rankings as other countries made gains. "Asian countries are setting the pace in advanced science and math," Ina Mullis, codirector of the International