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Committee on Prospering in the Global Economy of the 21st Century. (2007). *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*. Washington, DC: National Academies Press

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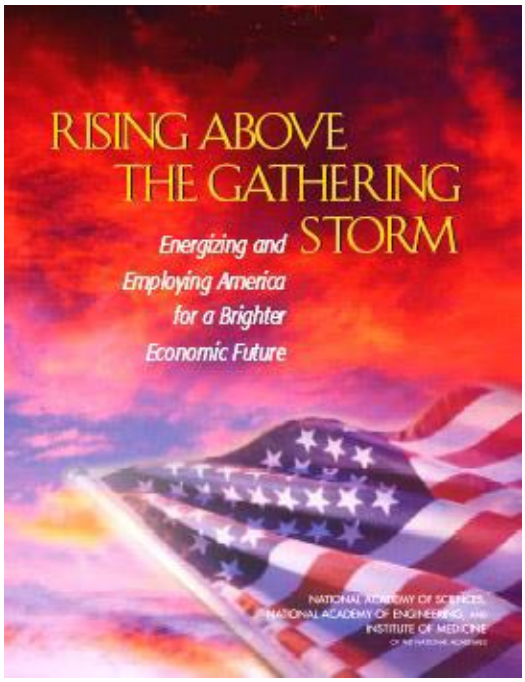
In Spring 2005, an oversight committee at the National Academies of Science expressed concern about the future of the "science and technology enterprise" in the U.S. With the additional prodding of two committees of Congress, the Academies quickly put together a committee (CEO's of major corporations, university presidents, leading researchers) and took but a few months to complete a set of recommendations for major increases in science, technology, engineering and mathematics education and research. The recommendations, projected to cost up to $15 billion per year by 2010, gathered wide attention in the press, inspired new budget initiatives from the White House, and fostered legislation supported by the leaders of both parties in Congress.

Given this stellar record, it would almost seem beside the point to review the report of this committee as if it were a mere book. Yet we are confronted with the book, 564 pages of text, tables, figures and footnotes, and a cover depicting an American flag jutting upwards as if to pierce through a swirling cauldron of red and purple clouds. What can we make of it?



Like most such books from the National Academies, this one starts with an executive summary focusing on the policy proposals. These focus on four areas: strengthening K-12 math and science education, increasing federal research funding in the physical sciences and engineering, supporting university-level math and science education, and providing incentives for private sector research. The first three chapters attempt to provide motivation for the proposals. A fourth chapter describes the work of the committee. Chapters 5 through 8 discuss the policy proposals in detail. The final chapter concludes by describing "what might life in the United States be like if it is not competitive in science and technology."

The first chapter, entitled "A Disturbing Mosaic," provides a collection of facts that have the feel of unrelated "bullet points" from a presentation. Did you know that there were almost twice as many physics bachelor's degrees awarded in 1956 than in 2004? Did you know that 93% of students in grades 5 to 9 were taught physical science by a teacher without a degree or certification in the physical sciences? The chapter and the book as a whole are crammed with items such as this, along with graphs, tables and charts illustrating the state of science and science education in America.

In chapters two and three, the authors address broad question about national competitiveness, the role of science and technology, and the American education system. The authors argue, like Thomas Friedman (2004) in *The World is Flat*, that other countries are emulating the U.S. in scientific research, and that we must increase our investment to avoid being overtaken economically. They are concerned that the U.S. education system is falling behind in production of scientists and engineers. They admit that differences of opinion exist on many of these matters by use of text boxes describing "Another point of view." However, these opposing viewpoints are never fully engaged.

Most of the $15 billion they would spend is targeted towards government, university and corporate research, rather than education. Nonetheless, the education proposals would make a large impact. At the K-12 level the focus is on teacher training. The committee proposes ten thousand scholarships for college students who combine the study of math or science with teaching and commit to five years in K-12 schools. They propose a massive continuing education program for current math and science teachers, involving summer institutes, math and science master's programs, and related programs. At the same time, they propose monetary incentives to schools and students to expand AP/IB testing.

At the college level, they would support both undergraduate and graduate study of science, math and engineering: 25 thousand competitive undergraduate math and science scholarships and 5 thousand graduate fellowships. They are also very concerned about improving visa processes for

international students, and reform of the “deemed export” provision of technology export control laws.

While many of these proposals are appealing, they are less well-developed than might be expected, given their provenance. A basic problem with the education proposals is that they would either educate too many or too few to achieve the comittee’s stated goals. To benefit the U.S. economy, only a small percentage of students need to be given intensive training, given that science and engineering occupations make up only 3 percent of the labor force (National Science Foundation, 2005). On the other hand, the committee’s concern for bringing more women and minority students into the sciences and improving the poor overall performance of students on national and international tests doesn’t match up with its proposals to target advanced students with AP testing and merit scholarships. Their target group is broader than the slice of students headed for scientific careers, but too narrow to improve overall scores.

This is not the place to engage all of the arguments and ideas contained in this volume. Needless to say, there are many controversies here, and while some have been confronted, many have been ignored or glossed over. Importantly, the case is never made that, given $15 billion to spend, theirs would necessarily be the best way to spend it. Those who are trying to understand the role that science, math, and engineering ought to play in our current education system and economy will find this volume raises more questions than it answers. Those who have already made up their minds may find this an extremely useful book.

References

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About the Reviewer

Kurt J. Bauman is a demographer and sociologist focusing on trends in educational attainment and measures of household well-being. His current research interests include measurement of high school dropout rates, GED recipiency, and homeschooling.

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