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The Political Context of the National Mathematics Advisory Panel

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Abstract:

The National Mathematics Advisory Panel needs to be situated in its broader political context to more fully understand it. Who created it, for what purpose, and who will (and will not) benefit from it are key questions I address in this article. My argument is that the NMAP, as part of a larger initiative undertaken by the Bush Administration and US financial/corporate elites, serves capital's efforts to shore up the US's weakening economic global position and does not benefit the majority of the US people—particularly marginalized and excluded students of color and low-income students.

Keywords: Politics, policy, economy, capital, racism, mathematics education, economic competition, National Mathematics Advisory Panel

To more fully understand the National Mathematics Advisory Panel (NMAP), like any social phenomenon, one needs to examine its broader political context. Who created it, for what purposes, what agendas does it serve, and who will and will not benefit from it? To look at it critically—the purpose of this brief article—is to consider not only its stated aims but also to investigate the above questions as they affect historically marginalized students and their families/communities, particularly students of color and low-income students in the US. In this article, I do not discuss the specific report that the NMAP recently issued, as the other authors in this issue amply dissect this, but instead focus on its larger context (see Gutstein, in press, for a more comprehensive discussion).

The NMAP is an integral part of the *American Competitiveness Initiative* (ACI) that President Bush unveiled in his 2006 State of the Union Address. Thus, to understand the NMAP, one needs to begin with the ACI. Now partially codified by the *America Competes Act* (signed into law in August 2007), the ACI is a far-reaching endeavor with multiple facets (see Domestic Policy Council [DPC], 2006). The aptly named ACI is designed to deal with what the administration and financial/corporate elites consider to be the untenable situation facing the US on the global scale—that its economy is either already second-rate or is in imminent danger of attaining that status with

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respect to other nations. The initiative is based on a series of highly influential national reports, including *Rising Above the Gathering Storm* (National Academies, 2006), *Tough Choices or Tough Times* (the National Center on the Education and the Economy, 2007), *The Looming Work Force Crisis* (National Association of Manufacturers, 2005), and *America's Perfect Storm: Three Forces Changing our Nation's Future* (Educational Testing Service, 2007), among others. All these reports, and US government documents about the ACI, while extolling the virtues of the US economy ("The American economy today is the envy of the world," DPC, 2006, p. 4), have the consistent theme that the economy is in danger of losing its number one position. A consensus position of the documents is that technological innovation is, and has been historically, the engine for US economic growth and global position. However, while the US has not stood still, other countries are working overtime to catch and surpass the US (e.g., "Billions of new competitors are challenging America's economic leadership," Department of Education, 2006a, p. 4). The reports are full of data about the number of engineers being produced by South Korea, China, etc., and how various countries are eclipsing the US in these areas. Furthermore, they claim that US workers are not sufficiently prepared technologically, nor are US students ready for the challenging mathematics and science that they will need to know to help resolve the putative national crisis. As the National Academies (2006) argued:

Having reviewed trends in the United States and abroad, the committee is deeply concerned that the scientific and technological building blocks critical to our economic leadership are eroding at a time when many other nations are gathering strength.... we are worried about the future prosperity of the United States.... This nation must prepare with great urgency to preserve its strategic and economic security (p. 4).

The documents all frame the concerns as immediate and grave. Along with their disaster-invoking titles, the language portends gloom, using words describing the US global economic position such as "woeful," "unfortunate," "troubling," "disturbing," "danger," "risk," and "alarming!" (And these were written before the sub-prime mortgage crisis, \$4-\$5 per gallon gas, and the current economic slowdown/recession.) The *Looming Work Force Crisis* tells us that:

By itself, this problematic trend [the declining percentage of STEM college degrees in the US versus the increases reported in other countries] should be enough to grab the attention of our nation's leaders and compel them to develop a comprehensive strategy for reinvigorating science and engineering education. Viewed in an international context, the facts should be downright frightening for policymakers. (p. 5)

The report continued:

These troubling trends can lead our country down a path we do not want to take. Without an educated and highly skilled workforce to drive 21st century innovation, America's capacity to remain the world's most advanced economy is at risk. Other countries are moving fast to educate their workers and to innovate. If we do not implement a concerted national strategy to do the same, we risk America's future (p. 10)

The warning about the risk to the future of the country as a whole is consistent throughout the ACI documents and the various reports which all frame the crisis as one that affects us all. For example, *Tough Choices or Tough Times* (NCEE, 2007) commented on the poor educational showings of US students on international assessments:

If we continue on our current course, and the number of nations outpacing us in the education race continues to grow at its current rate, the American standard of living will steadily fall relative to those nations, rich and poor, that are doing a better job. If the gap gets to a certain—but unknowable—point, the world's investors will conclude that they can get a greater return on their funds elsewhere, and it will be almost impossible to reverse course. Although it is possible to construct a scenario for improving our standard of living,

the clear and present danger is that it will fall for most Americans. (p. 8)

In a similar vein, the National Academies (2006) report states: “Without high-quality, knowledge-intensive jobs and the innovative enterprises that lead to discovery and new technology, our economy will suffer and our people will face a lower standard of living” (p. 3). These pronouncements give the impression that the “crisis” will hurt all the US people, and the solution—the ACI—will therefore, by extension, help us all. Improve US mathematics, science, engineering, and technology education (an explicit purpose of the NMAP with respect to mathematics), increase worker output and skill-sets, stimulate investment in technological enterprises, up the number of available slots for highly educated immigrants who can contribute to US scientific and financial enterprises, and increase research into profitable sectors of the economy, all to enhance productivity and benefit the people—so the story goes.

However, the history of productivity increases shows that this boost to us all is a myth, in fact, a profound one. Over the past 40 years, US productivity has increased a great deal, albeit at uneven rates. But for the most part, only the wealthy have benefited, while both income and wealth inequality within the US have also increased, markedly. The *gini coefficient* is a one-number summary of income (or wealth) inequality; the larger the number, the larger is the income (wealth) inequality. The gini index ranges from 0.0 (perfect equality) to 1.0 (maximum inequality). The US gini coefficient (in terms of income) has increased since 1968 when it was 0.386. Ten years later, in 1978, it was 0.402; in 1988, it was 0.427; and in 1998, it was 0.456. By 2001, it had climbed to 0.466, and was 0.470 in 2006 (US Census Bureau, 2007). As a relative increase, income inequality went up 21.8% in under 40 years. During this same period, wealth inequality also climbed, but much more so. In 2003, Edward Wolff, a well-known economist who studies wealth inequality, reported, “We [the US] have had a fairly sharp increase in wealth inequality dating back to 1975 or 1976,” and the *wealth* gini index in 2003 was “0.82, which is pretty close to the maximum level of inequality you can have” (Multinational Monitor, 2003)—far more unequal than even income inequality.

Other measures corroborate this. For example, the ratio of mean US CEO annual salary to that of a minimum wage (federal) worker was 51 to 1 in 1965, but by 2005, it had soared to 821 to 1 (Economic Policy Institute, 2006). The ratio of CEO salary to the mean wages of US workers went from 24 to 1 in 1965 to 262 to 1 in 2005 (Mishel, Bernstein, & Allegretto, 2007). In a carefully argued, detailed analysis that directly tied US productivity to income distribution, Dew-Becker & Gordon (2005), stated that from 1966 till 2001, “*nobody below the 90th [income] percentile received the average rate of productivity growth*” [emphasis original] (p. 58). Where did the gains in productivity go? Their answer is that, “*only the top 10 percent of the income distribution enjoyed a growth rate of real wage and salary income equal to or above the average rate of economy-wide productivity growth*” [emphasis original] (abstract). They further point out that the skewing of income inequality is more pronounced as one gets richer:

Another way to state our main results is that the *top 1 percent* of the income distribution accounted for 21.6 percent of real total income gains during 1966-2001 and 21.3 percent during the productivity revival period 1997-2001, again excluding capital gains. Still another and perhaps even more stunning way to describe our results is that the top one-tenth of one percent of the income distribution earned as much of the real 1997-2001 gain in wage and salary income, excluding nonlabor income, *as the bottom 50 percent* [emphasis original] (p. 76).

In other words, during that period, the top 0.1 percent made as much as the bottom 50 percent—which is 500 times larger. Dew-Becker and Gordon further noted: “Not only have the bottom 90 percent of American workers failed to keep up with productivity growth, many have been harmed by it” (p. 77). Others point out the stagnation of US wages: “...from 1980 to 2004, while U.S. gross domestic product per person rose by almost two-thirds, the wages of the average worker

fell after adjusting for inflation” (Tabb, 2007, p. 20). Economist and New York Times columnist Paul Krugman (2004) added, about income inequality in the US more generally:

According to estimates by the economists Thomas Piketty and Emmanuel Saez—confirmed by data from the Congressional Budget Office—between 1973 and 2000 the average real income of the bottom 90 percent of American taxpayers actually fell by 7 percent. Meanwhile, the income of the top 1 percent rose by 148 percent, the income of the top 0.1 percent rose by 343 percent and the income of the top 0.01 percent rose 599 percent. (Those numbers exclude capital gains, so they're not an artifact of the stock-market bubble.)

If the past is any indication, any productivity boosts the ACI causes will go not to the bottom 90 percent, but rather to the wealthiest. There is nothing in the initiative nor in any of the reports that make visible the skewing of the distributions as they now exist, and more to the point, nothing whatsoever about redressing the past and present inequities or about income or wealth redistribution. While the reality of the US economic woes is clear, for both capital and the rest of us, the ACI is oriented toward the problems of the rich.

What specific role does the National Mathematics Panel play within the larger program of the ACI? The NMAP's purpose was clearly elaborated in President Bush's charge to it. The first words of the executive order that created were: “In order to keep America competitive, support American talent and creativity, encourage innovation throughout the American economy...” Point number one of the order said that its role was to recommend, “[t]he critical skills and skill progressions for students to acquire competence in algebra and readiness for higher levels of mathematics,” (Department of Education, 2006b). Thus, the stated purpose of the NMAP is consistent with that of the ACI, and its key role is to help determine what students need to access higher-level mathematics. But the purpose of this knowledge is also clearly stated: to help “keep America competitive,” and address the “danger” of the US economy losing its supreme status that was so clearly specified in the ACI descriptions and background reports.

The above suggests who will benefit from the NMAP-ACI goals of increased technological innovation and increased productivity in the US. It does not, however, address who will not, a key question in any critical analysis. The NMAP's (2008) final report stated:

Success matters to the nation at large. It matters, too, to individual students and their families, because it opens doors and creates opportunities. Much of the commentary on mathematics and science in the United States focuses on national economic competitiveness and the economic well-being of citizens and enterprises. There is reason enough for concern about these matters, but it is yet more fundamental to recognize that the safety of the nation and the quality of life—not just the prosperity of the nation—are at issue. (p. xi).

It also stated:

Moreover, there are large, persistent disparities in mathematics achievement related to race and income—disparities that are not only devastating for individuals and families but also project poorly for the nation's future, given the youthfulness and high growth rates of the largest minority populations. (p. xii)

From these statements, it might appear that the NMAP's report seriously addressed issues of the quality of life and the life chances and opportunities for low-income students and students of color. However, it did not. Other than a reference to improving the school readiness of low-income children (e.g., by recommending that teachers in Head Start and similar programs better understand children's mathematical knowledge) and one reference that the “achievement gap” between students of color and whites, and that between low-income and wealthier students, can be “reduced or even eliminated” with school mathematics success, nothing in the document addressed the specific *mis-education* (Woodson, 1933/1990) experienced by African American, Latino/a, Native American, and some Asian students, along with low-income students of all races/ethnicities. There was no mention

of the historical legacy of racism, the massive disinvestment in public education, the unequal educational experiences of these students. The NMAP did not, for example, propose that teachers have detailed knowledge of the students they teach, the issues in their communities, or the language and culture of their people. This is despite the vast amount of scholarship both without *and* some within mathematics education documenting the importance of these knowledges (Delpit, 1988; Foster, 1997; Gutstein, Lipman, Hernández, & de los Reyes, 1997; Ladson-Billings, 1994, 1995; Martin, 2007; Tate, 1995). Nor did the NMAP suggest that teachers have a historical role to play, as activists in social movements, committed to working in partnership for the liberation of their students against oppressive regimes that attempt to exclude and marginalize them—as critical educators argue, again, both in and outside of mathematics education (Apple, 1992; Bigelow & Peterson, 2002; Frankenstein, 1987, 1998; Freire, 1970/1998, 1998; Gutstein, 2006, 2008; Martin & McGee, in press).

The ACI is no better with respect to addressing these issues for miseducated students. The college scholarship money for “talented” mathematics and science students is limited to those with at least a 3.0 grade point average who have passed either two AP exams (with a score of 3 or better) or *international baccalaureate* program exams (with a score of 4), or who took a “rigorous” high school course of study. Rigor is defined at the state level but generally includes three years of mathematics, three years of science, four years of English, three years of social studies, and one year of foreign language. Students who have struggled or who had no opportunity to take “rigorous” courses, or those leading to AP classes, are not eligible for the grants. In Illinois, where I live, the state education board mandates less social studies and science than the ACI grants require (ISBE, 2007), so a student with straight A’s who followed the “basic” plan of her school is ineligible. In fact, *no* ACI money supports these students for college. Furthermore, the first year ACI grants are only \$750, not trivial for working-class and low-income students, but even if they are “successful,” it may not be enough to go to college.

The ACI documents proclaim that it is intended for all students, for example, “The expansion of AP-IB programs [proposed by the ACI] will not only benefit students passing the AP exams, but will also serve as a mechanism to upgrade the entire high school curriculum so that other students benefit” (Department of Education, 2006c). The additional AP calculus (and other) teachers and classes proposed in the ACI will indeed reach some students in urban public schools—those youth who have managed to fight through various obstacles and are ready to do the course work, or those lucky enough to be in schools that promote excellence and truly respect, and are integrated with, students and their communities. But the relatively few additional individuals who will take advanced mathematics will not necessarily address the vast problems, educational and social, faced by low-income communities and those of color. Moreover, in a tracked educational system and stratified labor market, it is not clear that the “entire” curriculum will be upgraded so that “other students benefit.” The US does not have jobs for a work force that is entirely “highly educated.” In fact, according to the Bureau of Labor Statistics (BLS), whose analysts conduct a 10-year occupational employment projection every two years, the *majority* of US workers in 2016 will need at most short- or moderate-term on-the-job training (not college)—including “truckdrivers, heavy and tractor-trailer; and secretaries, except legal, medical, and executive” and “retail salespersons; and waiters and waitresses” (Dohm & Shniper, 2007, p. 104). These 86 million low-skill workers, from capital’s and the administration’s perspective, have little need to take AP tests because few will likely go to college, if even finish high school, given the state of education in the US and the lack of meaningful, decent-paying employment opportunities. A recent study showed that 25.8% of African American male public high school students in Chicago dropped out in one year (Greater Westtown Community Development Project, 2003). Extrapolating to four years, this suggests that only approximately one third of the Black males entering high school in Chicago will graduate, and that

does not even account for those who leave during middle school or after eighth grade. These young men are slated—and in general, educated (Anyon, 1980)—for those low-skilled jobs, but even that will be a challenge because of structural and institutional racism—Black unemployment rates are double that of whites (9.7% versus 4.9% as of May, 2008, BLS, 2008; see Gutstein, in press for more detail).

Thus, there is little evidence that the ACI, or NMAP, is “for all.” Rather, there is a strong historical basis that the proposed “solution” to the “crisis” afflicting the US economy on the global scale will benefit the wealthy rather than marginalized students and their families and neighborhoods. If one attempts to analyze or understand the NMAP without taking into account the larger sociopolitical context, one runs the risk of thinking within a box—of arguing whether or not the NMAP is promoting “good” math, mathematical literacy, and mathematical power. That may or may not be the case, but that is not my argument here. The Enron financial manipulators who bilked vast sums of money from thousands of ordinary people were certainly mathematically literate and had excellent “conceptual understanding, computational fluency, and problem-solving skills”—key attributes that the NMAP (2008) suggests all mathematical learners need (p. 30). Pentagon engineers who design precision missiles that rain “collateral damage” on Iraqi civilians likewise have this mathematical knowledge. But it is the question of the politics and purpose of the knowledge that concerns me here. In the case of the NMAP, as an integral part of the ACI, the goal is to serve the administration and capital’s plan to reclaim the planet, markets, and resources for US supremacy. That is the broader political context of the National Mathematics Panel.

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