



Policy, Politics, and the National Mathematics Advisory Panel Report: Topology, Functions, and Limits

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Analyzing Foundations for Success: The Final Report of the National Mathematics Advisory Panel (2008), the author situates it in evolving U.S. intergovernmental relations about education, ongoing policy discourses, and texts. State and local policy makers exercise considerable discretion on education, even with the No Child Left Behind Act of 2001. Federal policy makers rely on these policy makers and an expanding extrasystem of education providers to implement their proposals. The report's alignment with some key ideas in current policy discourses may increase the likelihood that some recommendations will get attention, but intergovernmental arrangements, changing political winds, and worsening economic circumstances pose major implementation hurdles.

Keywords: federal education policy making; mathematics education; policy implementation; policy making; school reform

The preparation of a report by a national mathematics panel in response to a presidential executive order is unprecedented in mathematics education in the United States. Although novel for mathematics education, *Foundations for Success: The Final Report of the National Mathematics Advisory Panel* reflects federal policy makers' growing activism on educational matters over the past several decades, especially with respect to teaching and learning. From the perspective of instructional policy making, the report and its recommendations are not entirely new.

Strictly speaking, the National Mathematics Advisory Panel (NMAP) report is not a policy document. Public policy denotes legislation enacted by some government entity. Its intent was advisory to Secretary of Education Margaret Spellings and President George W. Bush. In this way, national reports allow federal administrations to get advice from the chosen few in the field without having to endorse that advice as administration policy; such reports are potentially a mechanism for legitimating an administration's position.

But narrow definitions and conceptualizations of policy are limiting and potentially misleading for policy analysis and especially so in the vast U.S. education system and extrasystem. Legislation is only one of the many texts associated with any

policy initiative—administrative rules, curricular standards, student assessments, pamphlets that interpret policy for various stakeholders, workshops about implementing the policy, and so on are all relevant policy texts. National reports are one mechanism through which administrations attempt to lay out, reiterate, and press their agendas. Although not policy, individuals and agencies from Congress to the statehouse use reports, along with other policy texts, to inform and justify particular policy alternatives.

My reflections on the NMAP report begin by situating the report in the ever-evolving U.S. intergovernmental arrangements for governing education and the policy texts and discourses of the past couple of decades. I explore how the report both reflects and reifies some increasingly familiar themes in ongoing policy discourses. I also consider the segmented and shifting terrain of government and extrasystem agents and agencies that the report's recommendations will have to negotiate if these recommendations are to influence what counts as mathematics education or research on mathematics education in the United States. Based on my analysis of this topology, I consider the functions and limits that the NMAP report might serve with respect to research, instructional policy making, and practice.

My central argument is this: Policy analyses of reports, such as this one, must be considered in their broader political and institutional contexts. Whether or not the particular recommendations put forth in the national report are implemented, the report will contribute to the ongoing policy discourse by reifying them.

Topology

Text in Context

Over the past several decades, the U.S. federal government has become increasingly confident about flexing its policy muscles with respect to education, although it remains constitutionally constrained, administratively segmented, and resource poor in education matters. As noted in the Panel's report, the successful launch of Sputnik by the Russians, at the height of the Cold War, prompted increasing attention to and more investment in education by a federal government fearful about American preeminence in international affairs. Increased activity by a constitutionally challenged and administratively weak federal government contributed to education policy-making activity at the state and local government levels. New federal programs, such as the Elementary and Secondary Education Act of 1965 and

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the No Child Left Behind Act of 2001 (NCLB), defined new responsibilities and provided new resources for state and local government agencies, enabling them to expand (Cohen, 1982; Meyer, Scott, & Strang, 1987; Rowan, 1982). The federal government relied on state and local governments for the implementation and administration of many of its programs. With respect to NCLB, for example, the federal government depends on states to carry out the student assessment mandated under the federal law. President Bush's NMAP report is more evidence of increasing federal attention to education, especially to matters of instruction.

Moreover, government education policy making has contributed to the development of a sprawling and mostly unregulated extrasystem of nongovernmental agencies, for profit and nonprofit, including publishers, testing companies, professional associations, and private consultants (Burch, in press; Cohen, 1982; Hill, 2007). Recent federal policies such as NCLB have opened up access to local education markets for firms in the for-profit and nonprofit sectors (Burch, in press; Hill, 2007). Lacking the administrative capacity, state and federal government agencies relied on these extrasystem actors to provide many of the services required under their policies.

Federal, state, and local government policy makers have gone to considerable lengths over the past several decades to target their policies at the technical core of schooling—specifying what teachers should teach, acceptable levels of mastery for students, and, at times, even how teachers should teach. These policy developments reflect a considerable shift. Looking beyond a purely instrumental view, policies that are intended to change mathematics education or reduce the achievement gap are also transforming educational governance arrangements by changing the relations among existing agencies and creating opportunities for new providers to emerge (Burch, in press; Cohen, 1982).

Overall, the result of increasing federal and state policy activity is not more streamlined arrangements for governing education but rather more segmented and unwieldy arrangements (Fuhrman, Goertz, & Weinbaum, 2007; Tyack, 1976). The terrain from Congress to the statehouse and then to the schoolhouse has numerous highways and byways that afford many opportunities for making sense of reform proposals that, intentionally and unintentionally, often fail to reflect the original intent.

Policy Texts and Discourses

Theoretically, we can think about policy as “text” and as “discourse” (Ball, 1994, 2006, p. 44). Taken as text, policy involves both the encoding of representations of ideas by policy makers and the decoding of these representations by actors across the system (Ball, 1994; Coburn, 2001; Cohen, 1990; Cohen & Weiss, 1993; Spillane, 2004). The NMAP report as a text encodes representations of certain ideas (while ignoring others) that policy makers and practitioners across the system will use more or less to make sense of (and give sense to) improving mathematics education. Of course the extent to which the text is noticed and used will depend on changing political and economic circumstances and how stakeholders in the education system perceive the document.

Policy texts are embedded in frameworks, produced by policy discourses. Based on the work of Foucault, Stephen Ball (2006) argues that policy discourses “produce frameworks of sense and obviousness with which policy is thought, talked, and written about” (p. 44). Thus policy discourses are systems of practice, beliefs, and values defining what is acceptable, “obvious, common sense, and ‘true’” (Ball, 2008, p. 5). Policy is developed, worked out, made sense of, negotiated, and disputed in and through these discourses. By virtue of what is “obvious” and “taken for granted,” these discourses serve to structure the production of policy texts and help make sense of these texts during policy making and implementation. At the same time, policy texts as instantiated in practice across the education system both enable and constrain the ongoing policy discourses. People in system and extrasystem agencies use policy texts to negotiate for resources, jockey for position, argue for a particular way of framing a problem, come to some agreed upon way of addressing a problem, oppose a problem solution, and so on. Hence policy texts not only reflect policy discourses but also contribute to defining or constituting those discourses by legitimating some ideas at the expense of others.

Policy texts take many forms in the vast and segmented U.S. education system and extrasystem that are not always well aligned with the original federal or state policies (Spillane, 2004). Teachers rely on secondhand accounts of state and federal policies—the translations of local school districts and extrasystem agencies. For teachers, school district standards are the relevant policy texts for guidance on state or national policies (Spillane, 2004). Developing these secondhand accounts, local policy makers decode state or federal policy texts encoding their understandings in local school district policy texts. Intentionally or unintentionally, these local translations are not always aligned with the original documents. School leaders and teachers use these other texts to make sense of policy and work out its entailments for their practice (Confrey & Stohl, 2004). As policy makers at all levels of the system become more interested in instructional policy and rely increasingly on a larger and more diversified extrasystem, we are likely to see an increase in policy texts that offer guidance to practitioners.

Framing policy as both text and discourse, we can situate the NMAP report in ongoing policy discourses. Some of these themes were in state and local government policy texts prior to entering the national stage (O'Day & Smith, 1993). Prior to NCLB, for example, Chicago and other school districts used sanctions to hold schools accountable for student performance (Lipman, 2004). Regardless of origins, these are discourses that have become more established over the past decade, gaining prominence and obviousness (Fuhrman et al., 2007):

- articulating student learning and performance standards centrally,
- aligning standards with student assessments,
- holding schools accountable with sanctions and rewards,
- incorporating evidence-based practice using rigorous research and better testing data, and
- using markets to improve schools through competition.

Although these ideas figure prominently in the current policy discourses in the United States, other themes feature less prominently

or increasingly at the fringes (e.g., teacher professionalism, decentralization or local control, democratic goal of schooling).

Embedded in these ongoing policy discourses, the NMAP report reflects some familiar themes. For example, mathematics education is discussed chiefly in terms of social efficiency with some reference to social mobility, that is, meeting the needs of the economy and keeping the United States competitive in the world market. The democratic goal of education does not figure prominently unless reference to “the safety of the nation and the quality of life” (NMAP, 2008, p. xi) and “citizens and policy leaders who deal with the public interest in positions of civic leadership” (p. 3) count for that. The democratic goal figures at best indirectly with the report’s attention to the influence of race and class on student learning and achievement (e.g., see p. 5). Mathematics education and its improvement in this report, and indeed in much of the current education policy conversation in the United States, are framed chiefly in terms of addressing economic needs. At the same time, the report contributes to legitimating these ideas as the “real” or “only” alternatives in these policy discourses.

Considering this topology, how might the report’s recommendations play out in policy and practice?

Functions and Limits

Policy texts and discourses *can* influence how policy makers and practitioners think about improving mathematics education, although not always as intended (Coburn, 2001; Cohen, 1990; Hill, 2001; Spillane, 2004). For example, consider how curricular and performance standards have become standard themes in policy texts and discourses about improving American schools over the past two decades. Furthermore, implicit in the NMAP report is the assumption that ideas about mathematics education that are supported by “scientific research” are more persuasive and therefore more likely to get implemented in policy and practice.

The authors of the NMAP report rely on the “bully pulpit,” “hortatory policy,” or “ideas” as the key policy instrument (McDonnell, 2004; Schneider & Ingram, 1990; Stone, 1997; Weiss, 1990). Although these terms do signal some differences, persuasion is the primary mechanism for forging change in policy (Lindblom, 1977). Ideas as policy instruments work by

inviting people to think differently about their situation, by providing them with information about new alternatives or about the advantages or disadvantages of existing alternatives, making some perspectives more salient than others, directing attention toward some phenomena and away from others, or leading people to accept different values or preferences. (Weiss, 1990, p. 2)

Although the report’s alignment with ideas that are prominent in the current policy discourses and texts increases the likelihood that some recommendations will find (or already have found) their way into policy and practice, other aspects of the topology do not bode well for implementation. Of course implementation in policy and practice will ultimately depend on the functions that the report will be put to by actors and agencies in the education system and extrasystem.

The implementation challenges will differ depending on the particular recommendations. For example, with respect to

research and development the federal government has something of a tradition in supporting research and development through agencies such as the National Science Foundation (NSF) and the U.S. Department of Education. Matters are more unsettled with respect to who has and takes responsibility for content coverage and teaching approaches (Cohen & Spillane, 1993; Confrey & Stohl, 2004). State governments have the constitutional authority on such matters, an authority that they have exercised more over the past several decades through curricular standards, student assessments, and school accountability mechanisms. Still, there is considerable variation among states, with publishers and local school districts exercising more discretion in some states than in others. For example, although some states (e.g., Texas) regulate school textbooks through state adoption boards, others do not (e.g., Michigan). Federal policy makers can more directly address some recommendations in the NMAP report (e.g., research) than other recommendations (e.g., content coverage, teaching approaches). Hence I organize my commentary about the functions and limits of the report around

- research and development policy and practice and
- instructional policy and practice.

Research and Development Policy and Practice

The Panel’s recommendations for mathematics education research include increasing and stabilizing federal funding for education research, improving the education of education researchers, and encouraging interdisciplinary research teams. Furthermore, the report calls for more attention to aspects of scientific rigor, including “operational definitions of constructs, basic research to clarify phenomena and constructs, and disconfirmation of hypotheses” (NMAP, 2008, p. 63). Lamenting the dearth of “experimental studies in education that can provide answers to questions of cause and effect” and “quantitative analyses that permit inferences from samples to populations” (p. 63), the Panel argues for both “smaller-scale experiments” and “larger-scale randomized experiments” (p. 63). Considering my earlier discussion of the policy discourses, the NMAP report’s position on improving scientific research for mathematics education is not that surprising; the press for more randomized experiments is a prominent if relatively recent theme in the United States, championed in particular by the Institute for Education Sciences (IES). More, and better executed, experimental designs will contribute to improving the quality of education research (Cook, 2003; Feuer, Towne, & Shavelson, 2002).

By virtue of focus and omission, however, the report may contribute further to a narrowing of what constitutes rigorous research on mathematics education in federal education agencies. Other authors in this special issue (Cobb; Greeno & Collins; Roschelle et al.; Sloane) raise concerns with respect to the NMAP report’s position on scientific education research. I will not rehash their arguments. The report supports a particular view of mathematics research that excludes or downplays numerous methodological approaches (e.g., ethnography, neuroscience). In valuing some research methodologies over others, the report could have

a substantial influence on federal education research policy. As other authors in this issue argue, the result may narrow what counts as mathematics education research. Furthermore, by focusing on rigorous research in terms of experimental designs, the Panel missed an opportunity to influence mathematics education research policy writ large and make recommendations for a consideration of what counts as quality research across various research approaches that contribute to the scientific knowledge base (see Cobb, this issue).

Some caution is also necessary with respect to the NMAP report's recommendation for easing researchers' access to schools through the provision of incentives and resources to PreK–12 schools. As a researcher, I fully appreciate the difficulties of recruiting schools for research studies, and I welcome policy proposals that might ease the process. Still, this well-intentioned recommendation could easily morph into penalties in Washington policy making, such as the loss of some proportion of federal funding for local schools that refuse to cooperate with researchers, and thereby create an unequal playing field in negotiations among researchers and schools. (Recall, for example, the Solomon Amendment of 1996, which "allows the government to deny federal dollars to colleges and universities that do not provide military recruiters on-campus access to students"; Tierney & Lechuga, 2005, p. 14). Research and development in mathematics education is perhaps the area of education policy where a constitutionally limited federal government can exercise the most direct influence. Indeed, the report's alignment with existing federal policies and position statements on education research increases the likelihood that the recommendations with respect to mathematics education research will get picked up by federal agencies. Using national reports such as this one, federal administrations can attempt to influence the production of research and development through funding decisions at the NSF and the IES. The IES, for example, has managed to transform the type of education research funded by the U.S. Department of Education (Cook & Foray, in press; U.S. Office of Management and Budget, 2007). Federal agencies such as NSF and IES can include direct reference to the NMAP report in their calls for research proposals related to mathematics education. If they do, researchers from the public and private sectors will be induced to justify their research proposals in terms of the research topics and designs outlined in the report in order to increase their chances of being funded. At the same time, the new administration will inherit a national deficit and economic meltdown that will put tremendous constraints on federal spending on social programs for some time. Federal education research and development is unlikely to be immune from these fiscal constraints.

Of course, to have an impact, the recommendations for research in the NMAP report will have to be noticed, decoded, and acted upon by program officers and peer review panels in federal agencies. The beliefs and knowledge of program officers and those individuals who populated peer review panels will ultimately determine how the report's recommendations for research and development are understood in negotiating research funding decisions. Furthermore, the knowledge and beliefs of education researchers who respond to IES and NSF field-initiated requests for proposals will also influence whether and how the report's

recommendations for mathematics research find their way into research practice.

Federal spending on mathematics education research and development is a means to an end—that end being improvement in the quality of mathematics teaching and learning. Hence, even if the panel's recommendations find their way into the policies and practices of federal agencies, their impact will ultimately depend on how the resulting research findings are understood and used by state and local policy makers and practitioners as they make decisions and policy about mathematics education. Research findings on effective classroom practices will only make a difference to the quality of students' classroom learning experiences if they are taken up and put into practice by system and extrasystem actors. Past experience does not bode well for this.

Consider the post-Sputnik era mathematics and science reforms, invoked in the NMAP report. The comparison is sensible and illuminating. But the available evidence on the implementation of these post-Sputnik-era national reforms suggests that cautionary rather than optimistic hypotheses are in order with respect to the implementation of the report's recommendations for mathematics education (Dow, 1991; Jackson, 1983). Some key stakeholders across the country actively opposed some of these federally supported curricula (Dow, 1991). Furthermore, the research evidence suggests that these reforms have had limited influence on curricular content and especially on classroom teaching (Helgeson, Blosser, & Howe, 1977; Stake & Easley, 1978).

Instructional Policy and Practice

The recommendations in the NMAP report, with respect to instructional policy and practice, will be familiar to most readers who have paid attention to instructional policy making in the United States over the past several decades (Cohen, 1996; Fuhrman et al., 2007; O'Day & Smith, 1993; Smith & O'Day, 1991; U.S. Department of Education, 1994). Among the key ideas that the Panel hopes that stakeholders in the education sector—policy makers, extrasystem providers, district and school leaders, and teachers—will understand, take to heart, and act on are

- a "streamlined" mathematics curriculum focused on "a well-defined set of the most critical topics" (p. 11);
- improved and better aligned student assessment instruments (pp. 21, 60);
- improved teacher quality through preparation, recruitment, and retention (p. 41); and
- more valid and reliable research findings and test data to inform educational decision making (pp. 60–65).

These ideas reflect some central themes in the policy discourses in the United States over the past couple of decades (Fuhrman et al., 2007; National Council of Teachers of Mathematics, 1989, 1991; Smith & O'Day, 1991; U.S. Department of Education, 1994).

The alignment of the report's instructional policy recommendations with key themes in ongoing policy discourses may bode well for its implementation in that these ideas are already out there. However, the implementation challenge is not just getting state and local policy makers and practitioners to buy into broad

policy instruments (e.g., standards, better aligned student tests); it is getting them to understand and buy into a set of substantive ideas about mathematics education and to redesign their policy instruments to represent these ideas so that school leaders and teachers notice, understand, and act on them.

Perhaps recognizing the implementation challenges, the Panel argues for “a consistent, wise, community-wide effort” (NMAP, 2008, p. 12) involving stakeholders in education, from students and teachers to education policy makers to test and textbook publishers. Noting that these various stakeholders are linked “through interacting national associations” (p. 12), the report states,

A coordinated national approach toward improved mathematics education will require an annual forum of their leaders for at least a decade. The Panel recommends that the U.S. Secretary of Education take the lead in convening the forum initially, charge it to organize in a way that will sustain an effective effort, and request a brief annual report on the mutual agenda adopted for the year ahead. (p. 12)

The available evidence does not bode well for this implementation strategy even if it was accompanied with some federal incentives for states and school districts.

To begin, the vast array of policy makers, practitioners, and extrasystem providers that constitute the education system in the United States would have to acknowledge that there is a problem with mathematics education in their jurisdictions. Furthermore, most would have to construct some new ideas about what mathematical content is worth teaching, when, and how. Then, these stakeholders would have to be willing to revise their existing policy texts (e.g., state or district standards, state assessment instruments) to encode representations of these new ideas about mathematics education. Rewriting policy texts is resource intensive and includes knowledge and money: These resources are not abundant and are unevenly distributed in the system and extrasystem. To get a sense of the magnitude of the challenge, consider the state level.

Those state policy makers attending the “national forum,” upon returning to their respective states, would have to educate the relevant stakeholders about the report’s recommendations for mathematics instruction and convince them of the merits of these ideas. They would have to mobilize state legislators, governors, state department of education staff members, state boards of education, and other stakeholders (e.g., state-level chapters of National Council of Teachers of Mathematics) spread across different branches of government and beyond. The success of any such effort will depend in part on whether these stakeholders see the report’s recommendations as legitimate. If some prominent mathematics education scholars are roughly right (see this issue), legitimacy is not a given. There are ample opportunities in the state-level policy process for the report’s recommendations about mathematics instruction to be constructed in different ways and negotiated away.

Some coalition of state policy makers and extrasystem actors would then have to mobilize to revise state policy texts (e.g., mathematics curriculum standards, state assessments) among other things. State policy makers’ capacity—knowledge, funding,

personnel—would be crucial in this effort (Firestone, 1989; Fullan, 1991; McLaughlin, 1990). For example, rewriting state standards and redesigning state tests to reflect the report’s recommendations require expertise and funding, which are scarce. Most states in economic meltdown, with large state budget deficits, are going to be hard pressed to find these resources. Indeed, redesigning and improving state tests is even more expensive after NCLB due to the requirement of testing students in every grade. Moreover, state policy makers’ reluctance will be increased by the relatively recent experience of having to use state money to cover proportions of the student testing requirements mandated under NCLB. Even in better economic times and with the get-tough accountability requirements of NCLB, the federal influence on state policy making has been mixed, with some states using state tests and scoring metrics that exaggerate improvement and undercut a central plank of the accountability strategy (Stullich, Eisner, & McCrary, 2007).

The crux of the implementation challenge lies in the decoding of the report’s recommendations by system and extrasystem actors and the encoding of their understandings in state, local, and extrasystem policy texts. If the report’s recommendations for mathematics education fail to make it into these policy texts, it is difficult to envision how they will influence what counts as mathematics instruction in America’s classrooms.

Finally, reflecting current policy discourses, the report adds credence to “decisionism” (Majone, 1989; Shklar, 1964). Decisionism is based on the assumption that better social science research and student achievement data will enable policy analysts to advise policy makers about the best policy alternative to address a particular policy problem. And policy makers and practitioners will make their decisions based on the scientific evidence. More and more rigorous scientific research findings, as well as more valid and reliable student achievement data, could contribute to improving educational decision making from the White House to the schoolhouse. But whether it will do so ultimately depends on how policy makers and practitioners make sense of these data and use them to persuade others of problem definitions and solutions.

Evidence is not a synonym for information or data (Majone, 1989; Phillips, 2007). Rather, evidence “is information selected from the available stock and introduced at a specific point in the argument in order to persuade a particular audience of the truth or falsity of a statement” (Majone, 1989, p. 10). People and organizations interpret information through their existing values and beliefs (Cronbach et al., 1980). Policy makers and practitioners define and focus on some aspects of a problem while ignoring others. As Coburn (2006) argues, problem framing plays a critical role in decision-making at the school level, and it emerges as part of an iterative process of negotiation among staff. Furthermore, policy makers and practitioners use data (often selectively) to articulate policy solutions and/or to construct evidence in support of or in opposition to particular solutions (Benford & Snow, 2000).

Policy and politics are closely intertwined from the statehouse to the schoolhouse. Politics is about values and beliefs, not just scientific data (Fay, 1975; Henig, 2008; Kingdon, 1984; Majone, 1989; McDonnell, 2004; Stone, 1988; Weiss & Gruber, 1984). As Cohen and Weiss (1993) put it, “When research is used in

polycymaking, it is mediated through users' earlier knowledge" with the policy message "supplementing" rather than "supplanting" teachers and other implementing agents' prior knowledge and practice (p. 227). As Levin (2008) states, "Governments are not going to suddenly turn into organizations that are only concerned about scientific and long term consequences, because that would not be consistent with the realities of our political processes" (p. 44; see also Stone, 1997).

Conclusion

Analyzing the NMAP report from a policy perspective necessitates locating it in ongoing policy discourses and in relation to other policy texts such as NCLB. These policy discourses have been infused and informed by state and local policy practices and indeed by policy practice abroad (Ball, 2008). The report both reflects and reifies central themes in these policy discourses and texts. Many of these ideas are more or less taken for granted in the discourses about improving schools. Although federal policy makers have managed to reach inside classrooms, more or less depending on the state or local jurisdiction, their influence is still mixed, and sometimes the consequences are unintended and counterproductive (Louis & Gordon, 2005). State and local policy makers still exercise a great deal of discretion vis-à-vis the particulars of federal policies. And an increasingly diverse and ever-expanding extrasystem of for-profit and nonprofit providers adds to the challenge for federal policy makers and national reformers intent yet again on transforming mathematics instruction in American classrooms.

NOTE

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