

MATTHEW SHINDELL*

Making a Community of Experts: The Rise of Consensus-Based Assessments for Policy in Cold War America

ABSTRACT

In the second half of the twentieth century consensus became the language through which scientists and other experts spoke truth to power and provided expert advice for policy making. Historical scholarship on science policy has acknowledged this trend but has not explained how consensus came to play such a large role in the relationship between experts and policy makers. This paper examines two historical case studies from the mid-twentieth century in which consensus was introduced—the failed consensus report experiments of the American Economic Association and the successful establishment of the National Research Council's consensus studies. These examples demonstrate that consensus was not a natural or obvious choice. Rather, the choice was driven by the growth and definition of the postwar scientific community and its negotiated relationship to the Cold War national security state. In this context, consensus became associated with depersonalized and objective knowledge. As it reinforces the notion of a divide between science and politics, consensus has remained an instrumental part of the relationship between the NRC and its patrons.

KEY WORDS: science and the state, expert consensus, policy, assessment, twentieth century

*Matthew Shindell, Ph.D., Space History Curator, National Air and Space Museum, Smithsonian Institution, Washington, D.C.; shindellm@si.edu.

The following abbreviations are used: AEA, American Economic Association; CEA, Council of Economic Advisers; NAS, the Academy for National Academy of Sciences; NDRC, National Defense Research Committee; NRC, the Council for National Research Council; NRC Policy Files—Organization for Office of the Chairman, Bronk D W, 1946–1949, Admin, Organization, NAS-NRC Reorganization, 1946; NSF, National Science Foundation; OSRD, Office of Scientific Research Development; PSAC, President's Science Advisory Committee.

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INTRODUCTION

Consensus emerged in the latter half of the twentieth century as an important element of the expert assessment process, and of the larger relationship between experts, their organizations, and the government. As a tool, its proponents claimed that consensus provided a way of signaling the agreement of experts about what knowledge was vital and/or sufficiently settled to inform policy making, and allowed experts—or at least discrete collections of them—to speak with a collective voice about policy-relevant knowledge.¹ When formed properly, through an independent and structured process, its advocates argue it eliminates (or at least balances) the conflicts of interest and biases of individual experts or advisers.

One of the most remarkable aspects of the story of consensus in the twentieth century is that, although it did become a widely shared method for scientists and other expert communities to “speak truth to power,” one could hardly have guessed at the beginning of the century that this would be the case. The idea that experts should advise government was not new; state-sanctioned honorific scientific bodies such as the French Académie des Sciences, the British Royal Society, and the U.S. National Academy of Sciences were founded not only to enhance the prestige of their home countries, but also to provide service to the state when specialized knowledge was required. As historians of science have successfully argued, the authority of science even before it became a profession grew precisely because of its ability to serve the economic and military needs of the emergent modern state. In these bodies, as well as smaller, more specifically focused collections of experts, there was at least a nod to the potential for agreement among experts on important problems. However, there existed nothing like the consensus-oriented assessment structures or institutions that define today’s expert advice landscape. Moreover, these honorific societies were composed primarily of men of high social standing, and did not resemble the professional communities of scientists and other experts that exist today.²

Some of the key contributing factors to the rise of assessment and consensus in the United States were no doubt those factors that have become familiar to

1. This argument is developed in a forthcoming book, written collaboratively by Michael Oppenheimer, Naomi Oreskes, Dale Jamieson, Keynyn Brysse, Jessica O’Reilly, Matthew Shindell, and Milena Wazeck, *Discerning Experts: The Practices of Scientific Assessment for Environmental Policy* (Chicago: University of Chicago Press, 2019).

2. *Ibid.*, 8.

anyone who has studied the transformation of American science and technology in the second half of the twentieth century: the close postwar relationship between expert communities and the government; the dramatic increase in funding for science and technology during the Cold War; the resultant growth of these professional communities; and the efforts on the part of scientists and engineers to organize and direct support for science and technology through organizations like the newly founded National Science Foundation, older institutions like the National Academy of Sciences and its National Research Council, and the various professional societies and associations that had been growing and gaining authority since the interwar years.³

The increasing size and authority of expert organizations intersected with the emergence of what Brian Balogh has dubbed the “proministrative state.” According to Balogh, the U.S. government emerged from World War II a more highly organized and powerful political actor. The postwar state required networks of expertise to administer its wider reach, and it was able to shape those networks. With the cooperation of the professions, the state created and supported well-organized groups of experts. This relationship was symbiotic: “Ultimately, it was the resources of the state—both financial and managerial—that the professionals could not do without; it was the prestige and the problem-solving capability of the professionals that tempted the state.”⁴ National security concerns and scientific research programs became closely aligned during this period.⁵ Toward the end of the century, beginning in the

3. There is now a growing body of literature on the growth of scientific authority in the twentieth century, and the evolving relationship between science and governance. The books I have found most useful in thinking through the ideas of this essay are: Brian Balogh, *Chain Reaction: Expert Debate and Public Participation in American Commercial Nuclear Power 1945–1975* (Cambridge: Cambridge University Press, 1991); Gregg Herken, *Cardinal Choices: Presidential Science Advising from the Atomic Bomb to SDI* (Stanford, CA: Stanford University Press, 2000); Daniel Kevles, *The Physicists: The History of a Scientific Community in Modern America* (Cambridge, MA: Harvard University Press, 2001); Daniel Lee Kleinman, *Politics on the Endless Frontier: Postwar Research Policy in the United States* (Durham, NC: Duke University Press, 1995); Allan Needell, *Science, Cold War and the American State: Lloyd V. Berkner and the Balance of Professional Ideals* (Amsterdam: Harwood Academic Publishers, 2000); Zuoyue Wang, *In Sputnik’s Shadow: The President’s Science Advisory Committee and Cold War America* (New Brunswick, NJ: Rutgers University Press, 2008); Audra J. Wolfe, *Competing with the Soviets: Science, Technology, and the State in Cold War America* (Baltimore: Johns Hopkins University Press, 2012); Audra J. Wolfe, *Freedom’s Laboratory: The Cold War Struggle for the Soul of Science* (Baltimore: Johns Hopkins University Press, 2018).

4. Balogh, *Chain Reaction* (ref. 3), 22.

5. Ronald E. Doel, “Constituting the Postwar Earth Sciences: The Military’s Influence on the Environmental Sciences in the USA after 1945,” *Social Studies of Science* 33, no. 5 (2003): 635–66;

1970s, the relationship between experts and the government was strengthened by changes in the structure of decision making in the regulatory agencies, the number of which was itself expanding.⁶

In addition to the growing size and importance of the scientific enterprise in America, experts also found themselves (to an extent) retreating from public life. The role of science in government decision making was distinct from the role of the expert in civil society. As Audra Wolfe has pointed out, despite the brief flurry of political activity and scientific activism that marked physicists' early Cold War effort to control atomic weapons, experts "gradually became more reluctant to be seen as public figures."⁷ The Cold War made it increasingly difficult for individual scientists to make pronouncements on policy matters or to affect public opinion on scientific or technical issues. It likewise became increasingly important for scientists, when speaking on political matters, to distinguish their individual opinions from their scientific findings, and to distance themselves in these moments from their peers and the professional societies that represented them. With some notable exceptions, those whose work required security clearances withdrew almost completely from public life. Those who persisted in attempting the life of the public intellectual, like J. Robert Oppenheimer, suffered real consequences.⁸

The move away from the individual was not all about clearances, however. The impulse toward emphasizing the scientific community over the more traditional "men of science" (and distancing individual opinion from collective judgement) was part of a concerted effort on the part of high-level scientific operatives such as Vannevar Bush and James Conant to make science self-regulating and self-disciplining.⁹ As Ted Porter points out, defining science as a community meant that boundaries could be drawn around it and judgement

Naomi Oreskes, *Science on a Mission: American Oceanography in the Cold War and Beyond* (Chicago: University of Chicago Press, forthcoming); Naomi Oreskes and John Krige, eds., *Science and Technology in the Global Cold War* (Cambridge, MA: MIT Press, 2014); Wolfe, *Competing with the Soviets* (ref. 3).

6. Sheila Jasanoff, *The Fifth Branch: Science Advisors as Policymakers* (Cambridge, MA: Harvard University Press, 1990), 3.

7. Audra J. Wolfe, "What Does It Mean to Go Public? The American Response to Lysenkoism, Reconsidered," *Historical Studies in the Natural Sciences* 40, no. 1 (2010): 49.

8. Charles Thorpe, *Oppenheimer: The Tragic Intellect* (Chicago: University of Chicago Press, 2006).

9. Wang, *In Sputnik's Shadow* (ref. 3), 25; David A. Hollinger, *Science, Jews, and Secular Culture: Studies in Mid-Twentieth-Century American Intellectual History* (Princeton, NJ: Princeton University Press, 1998), 97–120.

on the standards, quality, and direction of scientific work could remain internal to that community.¹⁰ Science would police itself, and it would do so as a collective. As Melinda Baldwin's recent work has demonstrated, the authority of the community, and its autonomy from external judgement, was reinforced in the 1970s in disputes between the National Science Foundation (NSF) and Congress over the efficacy of peer review.¹¹ This required boundary work to differentiate what topics fell within the jurisdiction of the scientific community, and who counted as a scientist; it also required that scientists avoid making policy pronouncements that might destabilize these boundaries. This in turn permitted a close alliance between the scientific community and the national security state.

But refraining from making policy pronouncements did not mean refraining from influencing policy making. Boundaries require policing precisely because they are porous. Elite members of expert communities were able to move freely within policy circles and, in effect, sell the utility of dispassionate expert knowledge in decision making. Kleinman points to members of the scientific vanguard, including Bush and Conant, who constituted a "boundary elite" that was able to transgress the lines that separated science, industry, and government.¹² These elites were able to use various forms of capital to build alliances with counterparts in the legislative and executive branches of government. As historians and sociologists examining the American state have noted, it is a fragmented structure within which policy making takes place at the presidential level, in Congress, and within various agencies.¹³ Experts were able to position themselves in (or adjacent to) influential positions on every level of government. The most visible example of this was the President's Science Advisory Committee. As the landscape of American science advising matured, what these experts argued for was consensus.

Why did consensus-based assessment come to define the relationship negotiated between experts and the government in the twentieth century? Quite apart from its utility or epistemic value, consensus appealed to experts because

10. Theodore M. Porter, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton, NJ: Princeton University Press, 1995), 218.

11. Melinda Baldwin, "Scientific Autonomy, Public Accountability, and the Rise of 'Peer Review' in the Cold War United States," *Isis* 109, no. 3 (2018): 538–58.

12. Kleinman, *Politics on the Endless Frontier* (ref. 3), 94.

13. Here historians of science and policy have typically drawn upon Theda Skocpol's description of the state in Peter B. Evans, Dietrich Rueschemeyer, and Theda Skocpol, eds., *Bringing the State Back In* (New York: Cambridge University Press, 1985).

of the changing size and structure of their professional communities, and because of the nature of their expanding relationship with the middle levels of the U.S. government. As Yaron Ezrahi has argued, the bureaucratic nature of the American state demanded that science be depersonalized and freed from opinion and conflict of interest.¹⁴ The seemingly apolitical nature of scientific and technical knowledge, when divorced from individual scientists, was seen as a reliably objective guide for otherwise fallible policy makers. While it might be appropriate for a small group of distinguished scientists to offer advice directly to policy makers or the president, the professional societies and the organizations that represented them offered the collective knowledge and expertise of their members to the government as a whole. This appealed to the societies, who could claim to represent this collective expertise. This in turn appealed to the military and government agencies, who preferred not to be directed by unelected eminent men of science (there all were in fact men), but could act on advice that reflected the state of knowledge in the disciplines, especially when delivered in non-policy prescriptive formats—a trend that developed early in the relationship between civilian operations research and military patrons.¹⁵

To illustrate this relationship, I offer two early examples of experts' attempts at mobilizing consensus to participate in state decision making. The first example took place within a professional society—the American Economic Association. This was the first organization to experiment with what they named “consensus reports,” and their debates over what consensus meant and how it should be achieved or articulated provides a window into not only what made the concept appealing to scientific groups who wanted to influence policy and what benefits they thought it might provide, but also what reservations they had about this new way of organizing professional opinion. The second example comes from an institution that today is responsible for producing hundreds of expert reports annually—the U.S. National Academy of Sciences' National Research Council. In the early postwar years, under the guidance of a committee of elite scientists, engineers, and administrators, the NAS-NRC reorganized itself to meet the needs of the state. This included the expansion of the Research Council and the increased reliance on rank-and-file experts, rather than the eminent members of the honorific Academy. They negotiated a position

14. Yaron Ezrahi, *The Descent of Icarus: Science and the Transformation of Contemporary Democracy*. (Cambridge, MA: Harvard University Press, 1990).

15. William Thomas, *Rational Action: The Sciences of Policy in Britain and America, 1940–1960* (Cambridge, MA: MIT Press, 2015), 140.

at the interface of the expert societies and the federal agencies. They also formalized the consensus report process and format that is today considered the “gold standard” of objective and independent expert advice.

THE FIRST CONSENSUS REPORTS: THE AMERICAN ECONOMIC ASSOCIATION

One of the first professional groups to use the term “consensus report” to mean anything like what the term signifies today was the American Economic Association (AEA). According to economic historian Michael Bernstein, The AEA’s foray into consensus reports was an expression of American economists turning “their attention to planning for the postwar period and anticipat[ing] the role of economists in government during peacetime.”¹⁶ The AEA in fact spent eleven years between 1943 and 1954 experimenting with a consensus approach to advising public policy. The Association’s leadership ultimately deemed these experiments with consensus reports not worth continuing. Thus, this is not the origin story of today’s consensus reports. However, the issues that the AEA and their consensus committees confronted in attempting to construct a process that could muster Association expertise on important public issues to influence policy, in particular their attempts to avoid advocating any position so strongly that they appeared partisan, are instructive to current debates over the relationship between science and policy and the potential politicization of science. This story also offers an opportunity to analyze the historical moment in which consensus began to appeal to expert bodies as a way of communicating knowledge to policy makers.

Frank Graham’s Proposal

The story of the AEA’s consensus reports began in January 1943, when the Association’s incoming president appointed “a committee to consider the possibilities of focusing and making the informed opinion of our membership more effective in matters of public policy.”¹⁷ This Committee on the Focusing of Informed Opinion was the brainchild of the Association’s outgoing vice

16. Michael Alan Bernstein, *A Perilous Progress: Economics and Public Purpose in Twentieth-Century America* (Princeton, NJ: Princeton University Press, 2001), 86.

17. Frank D. Graham, Harry D. Gideonse, and C. Reinhold Noyes, “Report of the Committee on the Focusing of Informed Opinion,” *The American Economic Review* 34, no. 1 (1944): 424.

president, Frank D. Graham, who also served as the committee's chairman. Graham had already established himself as having a keen interest in influencing policy. A Harvard PhD and an "old-fashioned liberal," Graham "objected to the notion that economists should maintain a scientific detachment from the world of affairs and withhold their judgments or advice until the last scrap of data had been uncovered and neatly arranged."¹⁸ His view that economists should ply their expertise in the service of influencing policy was well known among his peers.

Graham's committee was eager to see the AEA bring its collective expertise to bear on the most pressing economic issues of the day. Indeed, economists would come to play an important role in postwar planning, and the government would develop a demand for economic expertise. Graham recognized that economists had already raised their status and visibility through assisting the government during the Great Depression. World War II had brought them even more prestige. As Daniel Hirschman and Elizabeth Popp Berman note, the war was a boon to the authority of the professional economist, as they assisted the government with wartime mobilization, production, and problems of finance, planning, and the management of resources. Their success in these efforts led one commentator to remark that World War II was "an economist's war" as much as a physicist's war.¹⁹ This was a dramatic shift from the state of the field at the turn of the century, when economists had virtually no official role in state policy. The passage of the Employment Act of 1946, which gave the Federal Government responsibility for inflation and unemployment, established the Council of Economic Advisers (CEA), put economists in the White House (and Keynesian economics along with them), and made the role of economists within the Federal Reserve even more vital. "Economics became part of the language of policy."²⁰

In 1943, Graham could hardly have foreseen the establishment of the CEA. But he wanted to take advantage of the social capital professional economists had garnered in the first half of the twentieth century. He wondered, was the AEA not the most complete collection of economic expertise available? Could it provide valuable advice in the form of weighing the collective opinions of its

18. Richard A. Lester, "In Memoriam: Frank Dunstone Graham 1890–1949," *The American Economic Review* 40, no. 2 (1950): 586.

19. P. A. Samuelson, quoted in Daniel Hirschman and Elizabeth Popp Berman, "Do Economists Make Policies? On the Political Effects of Economics," *Socio-Economic Review* 12, no. 4 (2014): 791.

20. *Ibid.*, 792.

membership? Graham believed that the Association could and should do this. His committee emphasized that the AEA was in a unique position to “perform a valuable public service by offering to designate, from among the members of the Association technically expert in any given field, *ad hoc* independent committees to study, and publish a report upon, any matters of public importance in economics.”²¹ Indeed, they felt that doing so was both “an opportunity, and an obligation, which it cannot afford to neglect,” since “it is now all but impossible for political leaders to discover the consensus of informed opinion on any question with which they are called upon to deal.”²²

The Association was not fully in agreement with Graham’s committee that there was a need for such reports (or that the AEA should be the organization to produce them). Nor were they convinced of the merit of the proposed methods by which the reports would be produced. When AEA’s Executive Committee reviewed the proposal, they found it to be “insufficiently matured” and referred it to a subcommittee for further evaluation. Of course the idea of bringing experts together or of affixing the names of experts to positions was not in itself new. In the subcommittee’s report, they pointed to three precedential categories through which expert opinion was already proliferating: large committee reports involving original research typically published by research institutes like the Brookings Institute, brief statements signed by numerous economists and circulated widely in newspapers and periodicals, and pamphlets that summarized the positions of one or two authors in plain language. Consensus was not a feature of any of these categories.

Ultimately, the subcommittee decided to recommend the production of pamphlets. These, it felt, would be an intelligent compromise between the lengthier collaborative research reports and the brief statements of policy recommendations; they felt that they did not have the funds to sponsor the original research involved in the former, and that the sense of universal agreement produced by the numerous signatures on the latter could be misleading. Customarily, the pamphlet was composed by and presented the views of only one or two individuals. The subcommittee suggested that the AEA essentially reinvent the genre, infusing it with some of the better qualities of the larger research report. They explained that a pamphlet of 24 to 80 pages (no small leaflet to be sure) could be given wider circulation than a full report. It would be “long enough to present views both pro and con, to quote briefly the views

21. Graham, Gideonse, and Noyes, “Report . . . Informed Opinion” (ref. 17), 424.

22. *Ibid.*, 425.

of representative economists, and to summarize the reasons for the conclusions arrived at.”²³ It could even contain a limited amount of special research results pertaining to the matter. Moreover, it would be short enough to be read by lay audiences, legislators, journalists, and public speakers.

One of the primary reasons to go ahead with such a venture, the subcommittee noted, was that it would encourage the AEA membership to write for lay audiences more often and make the expertise and prestige of the AEA more present in the world. Specifically, they felt that these AEA publications could be an outlet for the university professors who had no other way of reaching the lay public.²⁴ Bringing the professors and their expertise out of the ivory towers, they felt, was a worthwhile goal. Forcing them into discussion with one another with the goal of consensus would if nothing else help these academics to formulate articulate opinions on public issues.

Based on the subcommittee’s recommendations, the AEA Executive Committee decided that, even if the method was not yet perfected, the spirit of the idea had merit. They decided that the Association should perform one or two experiments in producing consensus reports. The AEA President, Joseph S. Davis, assembled two *ad hoc* committees, one on the topic of “Agricultural Price Supports” and the other on “The Function of Government in the Postwar American Economy.” Davis instructed the committees to draft their reports and present them at the Association’s 1944 annual meeting.²⁵

The AEA Committees: Struggling over Consensus

As Graham and his original committee envisioned it, the process of putting together a consensus report committee, along with the way in which questions would be initiated and how the expertise would be gathered and presented, were key elements of the consensus report itself. Not only would attention to detail in these early phases of the project help the AEA to avoid violating its charter’s prohibition on partisanship, it would also enhance the credibility of the finished report. Firstly, there would be a standing committee within the Association whose sole concern would be to appoint *ad hoc* committees when issues emerged. This committee would not act on its own initiative in

23. C. O. Hardy, “Report of the Committee on Association-Sponsored Consensus Reports,” *The American Economic Review* 35, no. 2 (1945): 502.

24. *Ibid.*, 505.

25. James Washington Bell, “A Report on an Experiment by an Ad Hoc Consensus Committee,” *The American Economic Review* 35, no. 2 (1945): 422.

determining what issues to address. Instead, the committee would initiate the process of appointing a committee only after the Association's President had received a petition signed by twelve or more Association members, approved the petition, and passed it on to the standing committee.

Graham's committee considered a variety of questions related to consensus formation, including what expertise should be included, what role the experts' known policy positions should play in the committee's composition, how peer review would be handled, and how disagreements within the *ad hoc* committee should be addressed. In appointing the *ad hoc* committee, the standing committee was instructed to assemble "all academically respectable views on any posed controversial question" and to "include some members not committed to any particular position on the matter in hand." Once this group had written its report, Graham's committee suggested that the report be peer reviewed through the circulation of the report to the Association's entire membership, and that the report should be revised based on the comments received. Where disagreements emerged, the committee suggested that "divergent opinions might well be expressed according to the method employed in Supreme Court decisions that fall short of unanimity."²⁶

Graham's proposed process had not assuaged the subcommittee's concerns about violating the AEA's charter. The issue of consensus was at the heart of these concerns. Whose consensus was being presented in these pamphlets, and what role was the AEA itself playing in fostering or endorsing it? Because the membership of the AEA was so specialized, a consensus of the entire Association on any one narrow topic would be "not much better informed than the rest of the educated public." The subcommittee was averse to the suggestion that the economists' professional training would allow them "to inform themselves and form a sound judgment on economic matters outside of their special fields more quickly and sure than, say, a physician or a minister of the gospel of comparable intelligence." "[A] consensus of the opinions of the professional membership of the Association," they worried, "would be a consensus of intelligent but largely uninformed opinion."²⁷

For the time being, however, these concerns were tabled. The experiment proceeded. The AEA's 1944 annual meeting, scheduled to be held in Washington, D.C., was cancelled due to a conflict with the wartime Office of Defense Transportation, and so the end results of these two experimental

26. Graham, Gideonse, and Noyes, "Report . . . Informed Opinion" (ref. 17), 424.

27. Hardy, "Report . . . Consensus Reports" (ref. 23), 505.

ad hoc committees were postponed. Still, Davis was encouraged by what results he had been shown. In his February 1945 report to the Executive Committee, Davis stated, “Others agree with me in regarding these experiments as very promising, and I recommend additional experiments of the same general type.”²⁸

The first *ad hoc* committee to publish its findings (and it did so not as a pamphlet but as a 26-page report in the *Proceedings* of the cancelled 1944 annual meeting) was the committee on “The Function of Government in Postwar American Economy,” chaired by James Washington Bell.²⁹ For the experiment, Bell assembled a six-member committee composed of himself and five other economists local to him. Because this was, after all, an experiment, Bell went to great lengths in his report to detail not only the method used, but the reasoning behind the method. Bell’s panel first explored the option of drafting a report that expressed the collective professional opinion of the six committee members. They imagined they would then send this draft to “a larger panel of [20–25] economists representing different schools of thought, traditional spheres of government control, and particular vested interests.” The original committee would then be responsible for “crystaliz[ing] and integrat[ing] these into a general statement of consensus and lack of consensus.” The committee soon decided, however, that this method would not work for a topic as open-ended as what the government’s role should be in the postwar economy.

Instead, Bell’s panel decided to submit their assigned topic as a question to a pool of economists with the instructions that it be answered in no more than 250–300 words (which they felt “would give writers latitude to present characteristic individual approaches to the relative scope of government in our economy with respect to their economic and political philosophy”).³⁰ To supplement this, they would also send a questionnaire with more specific questions about various forms of government activity that favored Yes or No answers. The questionnaire consisted of three parts: a question designed to probe the individual’s overall economic philosophy, a multiple choice “dragnet” questionnaire that would permit statistical analysis, and finally an essay question that might reveal “the individual’s own approach and what were

28. Joseph S. Davis, “Report of the President to the Executive Committee February 1, 1945,” *The American Economic Review* 35, no. 2 (1945): 451.

29. Bell, “A Report on an Experiment” (ref. 25).

30. *Ibid.*, 424.

considered the most vital issues involved.” They sent their questionnaire to 125 Association members who had “expressed themselves as specializing in the field of public control,” as well as to past officers and others who had been especially active in the Association since 1935. Sixty economists responded.

Bell’s invitation to participate in his questionnaire made it clear that his committee did not intend to produce “an official statement of the AEA or of any segment of the Association.” Rather, he explained, “It is an experiment carried on for the purpose of testing a method—to find out if a consensus of informed and professional opinion or judgment on economic issues does in fact exist and if feasible ways can be devised within the Association to discover such consensus.”³¹ They did not take for granted that consensus among experts existed, let alone could be measured.

Their published report included a little more than seven pages of tables reporting and analyzing the responses they received. From the data the committee drew the conclusion that, on the selected topics, there was far more agreement than disagreement:

While the results do not prove that formally trained economists agree on all measures of economic policy the evidence disproves convincingly the popular gibe that “the economists of the country, laid end to end, arrive at no conclusion,” or as the banker delegate to Bretton Woods stated it in explaining that he learned there what a professional economist is: “A professional economist is anyone who disagrees with another professional economist.”³²

Their results suggested that, although disagreement existed “in the fringes,” a consensus among economists could be obtained. They still wondered, however, of what use this would be. “Even if our methods proved satisfactory and it was established that a consensus can be obtained,” wrote Bell, “further questions still remain unanswered; viz., can or should the results be used to influence public policy, and should the Association assume the responsibility of sponsoring consensus reports?”³³ Bell hesitated to suggest that such reports could be of value, even though “[p]ublic statements bearing prominent names exert influence whether or not they serve to ‘enlighten’ mankind.”

The second of the two original experimental *ad hoc* consensus committees was the Committee on Agricultural Price Supports. This committee, chaired

31. *Ibid.*, 425.

32. *Ibid.*, 445.

33. *Ibid.*, 446.

by Elmer J. Working, published its results one year after Bell's committee.³⁴ Working's committee concluded rather straightforwardly that although the indirect support and stabilization of the prices of agricultural products by the government was desirable, price supports were to be "steadfastly avoided."³⁵ The committee seems to have followed nothing quite so structured as Bell's survey method. In fact, Working included none of the details of the group's methods, other than the singular statement that the committee had deliberated. The report was presented with the language of unanimity. Strikingly, since this was an experiment in consensus reports, the report did not anywhere mention the word consensus (aside from the description of the experiment's origins).

The AEA decided to continue their experiment, and commissioned two more consensus reports—one on the 1918 Webb-Pomerance Act that granted companies whose export trade was essential to the war effort immunity from the Clayton Antitrust Act of 1914, and the other on monetary policy. For the latter committee, Bell reprised his role as chairman. His committee, once assembled, constructed a questionnaire similar to their earlier effort. While he found his method to be sound, he still wondered about the extent of its usefulness: "All agreed that this technique provides a valuable stimulus to participants in crystallizing their own judgments on economic problems of public interest, but some of the members of the *ad hoc* Committee warn us of the dangers involved in publicizing results of consensus polls, especially if statements emanating from this source are used to influence public opinion and legislation."³⁶ In short, some AEA members still feared being viewed as partisan, and others still wondered if the existence of expert consensus on an issue should be presented as advice. How could one be sure that the right experts had been surveyed? How could one correct for the fact that the membership of these committees were, to a certain extent, self-selecting?

Amidst the final conclusions of the report, Bell suggested that the questionnaire method's usefulness could be improved if it were embedded in a larger consensus report procedure that would result in a final consensus statement to which all or a great majority of participants agreed.³⁷ At the same time,

34. Elmer J. Working, "Report of Ad Hoc Committee on Agricultural Price Supports," *The American Economic Review* 36, no. 2 (1946): 817–26.

35. *Ibid.*, 826.

36. James Washington Bell, "Report of Ad Hoc Committee on Monetary Policy," *The American Economic Review* 36, no. 2 (1946): 812.

37. *Ibid.*, 816.

however, Bell realized that the amount of work involved in such a process, even for the survey part alone, was more than a volunteer committee such as his should reasonably undertake. He suggested that the Association continue this type of work with the cooperation of “some institution with a capable economist-director who has a staff—a large staff—of analysts and clerks to process the returns.” A tension had emerged. Consensus could be measured, but it was not clear what it should mean or what weight it should be given in advising policy. Moreover, doing any kind of organized assessment of an issue that would produce a meaningful consensus involved more work and more oversight than the AEA volunteers were willing to devote.

The Results of the AEA Consensus Report Experiment

In the end, the AEA did not adopt Bell’s method of combining consensus questionnaires with expert committees. Even before the four experimental consensus committees had run their course, the Association’s Executive Board convened a second subcommittee to assess the matter of whether and how the Association should make or endorse statements on public policy. The subcommittee found the preliminary results of the *ad hoc* committees encouraging. They furthermore agreed with Graham’s original sentiment “that simple, well-considered public statements by economists on questions of economic policy are often needed but often not available,” and that “[t]hrough such statements, something can be done to help the public distinguish between important and unimportant issues, recognize clap-trap arguments, and become aware of economic considerations which members of the profession think significant.”³⁸ The Association had an interest, the subcommittee believed, in producing “accessible, clear, cogent, responsible, and candid” reports. Moreover, they felt that a consensus approach, and the “cross-criticism” it encouraged, were “likely to uncover elements of consensus among divergent views and thus contribute to the constructive resolution of public controversies.”³⁹ The consensus process was a crucible within which opposing and divergent positions could find their commonalities. At least at this early stage, the leadership of the Association felt that the AEA was the appropriate space within which this work should be done.

38. Corwin D. Edwards, “Report of the Subcommittee on Consensus and Recommendations as to Association Policy,” *The American Economic Review* 36, no. 2 (1946): 833.

39. *Ibid.*, 833.

The subcommittee still struggled with the question of how to take consensus outside of the Association—how to educate the public on economic thought on specific policy issues without committing its membership to anything that might be viewed as a partisan position. The subcommittee's solution was that the Association should limit its role in the production of consensus reports. The Association could stimulate discussion on important issues, help members to crystalize their views, and provide meeting facilities and publication assistance. Safeguards would have to be put in place; the Association would have to give equal encouragement and aid to groups with opposing opinions, and the Association would have to make clear in any statement that it published that the opinions expressed were solely those of the committee who had written them.

But this did not mean that the Association would take an entirely hands-off approach to the production of these consensus reports. As the subcommittee explained, "To develop group statements upon controversial issues is difficult; and to express expert opinions upon technical subjects in language intelligible to the general public is also difficult."⁴⁰ More experimentation was necessary. The subcommittee thus proposed appointing a Board of Editors that would establish and facilitate committees to prepare statements on questions of economic policy, oversee the composition of these committees to ensure that they were competent and representative, provide a forum for peer review and criticism before and after publication, and establish "safeguards sufficient to prevent public misunderstanding about the degree of the Association's responsibility for the published statements." The Board of Editors was given editorial autonomy and asked to report annually to the Executive Committee on its progress. In the last year of the experimental period, the Board of Editors was asked to appraise its experience so that the Executive Committee could decide whether or not this structure should be continued.

In 1947, the Association did establish a standing Committee on Public Issues, chaired by Harvard economist Sumner H. Slichter, with Graham as a member. One of the new committee's first actions was to produce a set of instructions for any new subcommittees.⁴¹ The instructions addressed issues of audience (the thoughtful and intelligent layperson), content (expert knowledge of specialists in the field), and length (it was assumed that brevity would

40. *Ibid.*, 835.

41. "Instructions to the Subcommittees of the Committee on Public Issues," *The American Economic Review* 38, no. 2 (1948): 566–67.

enhance influence), among others. Two of the instructions were specifically designed to avoid partisan positions by limiting the reports to analysis and discussion of existing research and knowledge gaps (both tactics currently used in many consensus reports).⁴²

The Committee on Public Issues authorized two subcommittees to prepare consensus reports and provided them with the modest funding of \$500 each.⁴³ Only one of the two reports was completed—“The Problem of Economic Instability,” one of the authors of which was Milton Friedman.⁴⁴ The report carried a disclaimer, making it clear that the report was in no way the statement of the AEA as a whole, and that the Association still maintained its nonpartisan stance.⁴⁵ Thus the consensus presented was that of the committee alone, but the Association, through its editorial activities and actions in initiating and forming the committee, vouched for its credibility and its propriety.

Despite these efforts, however, and despite how similar some of the above guidelines appear to be to the guidelines employed in many of today’s consensus reports, the effort to form a sustained program foundered. An *ad hoc* Committee on Public Issues was constituted in 1954 to study “the eleven-year record of attempts, largely unsuccessful, to get a committee on public issues created or into effective action.”⁴⁶ This time, instead of the encouragement previous committees, subcommittees, and Association presidents had found in the consensus experiments, the *ad hoc* committee came to the unanimous conclusion that a standing committee on public issues was not only not needed, it was not appropriate. Where previously supporters of the consensus report experiment had found ways of bending the spirit of the charter in order to permit the Association to engage in such activities, the new committee pronounced that these had nonetheless been violations of the Association’s charter. They recognized no line, fine or otherwise, separating expert advice from partisan advocacy, and feared that consensus would always be read as the committed position of all AEA members. They furthermore believed that

42. *Ibid.*

43. Sumner H. Slichter, “Report of the Committee on Public Issues,” *The American Economic Review* 39, no. 3 (1949): 513–14.

44. Emile Despres et al., “The Problem of Economic Instability,” *The American Economic Review* 40, no. 4 (1950): 501–38.

45. *Ibid.*, 501.

46. “Report of the Ad Hoc Committee on Public Issues,” *The American Economic Review* 44, no. 2 (1954): 738.

economic reports on important public issues would be better performed by other agencies.

As a nonpartisan organization, the AEA struggled with the question of how it could present the consensus of economists without crossing the line of committing its membership to the consensus position, or seeming to advocate a particular policy choice. They also struggled to conceptualize the relationship of their *ad hoc* committees to the larger membership of the Association, as well as how their reports would be read by the outside world (not to mention policy makers). The AEA case also illustrates some of the perennial problems faced by institutions, organizations, or collectives who attempt consensus work. These include questions about how an expert body can use its prestige and collective expertise to inform policy without itself becoming politicized, how consensus should be obtained and articulated, whose expertise should be included in consensus activities, whether those with strong positions should be included in consensus activities, and how consensus committees imagine their audience.

The AEA ultimately decided that they were not the right organization to take on expert assessments, as they lacked the resources or the administrative structure to do it properly. By the mid-1950s, however, the economic profession had secured its position as state advisor, and as noted above, the language of policy bore a striking resemblance to the language of economics. The Great Depression, World War II, and the Cold War provided economists opportunities and social capital to shore up their professional authority within universities, and to take up positions within influential institutions and executive agencies. In short order they promulgated an economic “style of reasoning” that came to permeate business and management training, and introduced economic tools for decision making that seemed to hold the status of natural laws.⁴⁷ On top of these achievements, creating a permanent structure for the production of consensus reports may have simply seemed a superfluous use of resources. More importantly, though, it may have seemed more important than ever to maintain the perception that the language and tools of economics were impersonal and value neutral. They also were now able to take advantage of an institution with more resources that had developed a specialization in the production of consensus reports, the stated mission of which was to represent the collective knowledge and judgement of the expert professions.

47. Hirschman and Berman, “Do Economists Make Policies?” (ref. 19); Bernstein, *A Perilous Progress* (ref. 16).

CONSENSUS REPORTS AT THE NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL

Around the same time that the AEA was conducting its consensus report experiments, another, larger institution was also reevaluating its role in advising the government, and considering how it could draw upon the various American scientific and technical societies to represent the collective expertise of the scientific community as a whole. The NRC was no newcomer to government advising. As an arm of the NAS (which had itself been providing service, albeit modest, to the government since the American Civil War), the astronomer George Ellery Hale organized the NRC in 1918 to provide technical expertise to the government during World War I. Although requests for advice had dropped off in the aftermath of the First World War, World War II had ramped up the NRC's advisory activity to unprecedented levels. It had in fact become involved in so many activities during World War II that its facilities were bursting at the seams with scientific and technical personnel, not to mention support staff. As the war came to a close, the NRC began to imagine how it might maintain the close relationship it had forged with the military and government, so as not to settle back into a lackadaisical peacetime role. Over the next three decades, under four NAS presidents, and with the assistance of some highly placed "boundary elite," the NRC transformed itself from a small, by-request purveyor of occasional expert advice into an institution that specialized in the production of independent consensus reports for government.

Bursting at the Seams: The NRC after WWII

World War II was a time of greatly increased activity for the NRC. The Academy Building in Washington, D.C., was meant to house roughly 14,500 square feet of office space. During the war the NRC organized research on behalf of the National Defense Research Committee and its successor the Office of Scientific Research Development, within which Academy and Council members such as Vannevar Bush and Frank Jewett had leadership positions. These activities and the associated personnel all but took over the entire building, using 21,600 square feet of the building for offices (it reached full capacity in 1943), including the basement, library, exhibit space, and the balconies of the auditorium. Outside of the Academy building, the NRC had claimed an additional 6,200 square feet of office space for its wartime activities.

An internal report noted that the NRC was preparing itself to take on more responsibilities, not fewer, now that the war had ended, and that it anticipated the growth of many of its existing Divisions as well as the addition of more. The NRC estimated that it needed roughly twice the square footage of the original building in the near future.⁴⁸

The NRC had big plans for that future: it wanted to be “a headquarters for American science in general.”⁴⁹ A larger and better-staffed building could offer office space for various national scientific and technical societies, rooms for meetings, and space for the use of scientists who had come to Washington for government service. In this way NRC facilities would comprise both a physical and symbolic meeting place between scientists and the government. The NRC also planned to become a center for American science by becoming a more independent and active organization, less beholden to its parent organization, the Academy. One of the first steps along these lines was for Detlev Bronk, upon accepting the Chairmanship of the Council, to devote himself to the full-time administration of the NRC’s operations. Before the war, the NRC had been small enough not to require full-time direction, but with its burgeoning staff and activities, this trend could no longer continue.⁵⁰

Frank Jewett, the NAS President who oversaw the Council’s wartime activities and its postwar transition, saw the opportunity for increased NRC activity in peacetime. The OSRD had put American science at the center of American political life. Jewett saw no reason for science, in the form of the NRC, to abandon this central position. He was already aware that military patrons foresaw a continued need for civilian expert advice. As he explained in a letter to the previous NRC Chairman, Ross G. Harrison,

Now that OSRD is in process of liquidation and the Services to some extent in process of reorganization, the situation has changed materially. In divesting itself of its functions, OSRD has transferred to one or other of the departments of Government different parts of its activities, many of which involve continuation of civilian participation and advice of some kind in the post war years, and as you know there is a growing desire on the part, particularly of the Military Services, to request the assistance of the Academy and Council.⁵¹

48. Memo: “The Space Situation,” 16 Nov 1947, NRC Policy Files, Office of the Chairman, Bronk D W, 1946–1949, Admin, Executive Board, Committee on Building and Grounds, 1947.

49. *Ibid.*

50. Frank Jewett, Memo: “Changes in Organization, National Research Council,” 25 Jun 1946, NRC Policy Files—Organization.

51. Jewett to Harrison, 15 Jan 1946, NRC Policy Files—Organization.

Later in the same letter, Jewett explained that what was really needed was an organizational change within the NRC that would allow the Council to maintain its relationships with its wartime sponsors, now that the work was being demobilized.

Under the guidance of Jewett, Harrison, and Bronk, the NRC soon began revising its Articles of Organization to make the Council more independent of the Academy—attempting to give the Council more leeway in its own operations. In this regard, Jewett and Bronk circulated a copy of the Council’s Articles of Organization to an informal committee of distinguished American scientists to consider their revision in light of their hopes for the future life of the NRC. In the letter Jewett sent to this group, he stated four goals of the reorganization: strengthening the Council as the chief operating agency of the Academy, ensuring the Council’s autonomy to the maximum degree allowed by the Academy’s Charter and Constitution, giving the Council maximum flexibility in administering its own functions, and keeping the Academy informed but not in control of Council operations. Under this new organization, the NRC would not simply be a glorified committee under the direction of the NAS; it would become the sole, somewhat autonomous, operating agency of the Academy.⁵²

Vannevar Bush, Academy member and director of the OSRD, served on Jewett’s reorganization committee. Bush was then in the midst of shuttering the OSRD, and had only recently published his report to the President, *Science, the Endless Frontier*, in which he mapped out a plan for a postwar partnership between science and the government.⁵³ Bush appreciated Jewett and Bronk’s desire to see the Council flourish in its own right, out from under the yoke of the Academy:

... I feel it is essential to strengthen the Research Council, to give it greater autonomy and flexibility, and to retain in the Council of the Academy only such control of general policies as is appropriate to the proper exercise of the general supervision for which the responsibility resides in the Academy.⁵⁴

Kleinman argues that Bush’s OSRD had constituted a powerful institutional space within which elite scientists had enhanced their social connections with

52. Jewett to members of the NAS Council, 19 Apr 1946, NRC Policy Files—Organization.

53. Vannevar Bush, *Science, the Endless Frontier* (Washington, DC: United States Government Printing Office, 1945).

54. “Comments from Members of Informal Committee to Advise Regarding Suggested Changes in Articles of Organization and By Laws of the National research Council,” n.d., NRC Policy Files—Organization.

state and military officials, and had used their social capital “to translate the symbolic power of science—the credibility of science—into a powerful position in the state.”⁵⁵ No doubt Bush recognized that the NRC could occupy the same space, carrying on the work of his OSRD in peacetime, if given the proper structure and autonomy to continue providing science for policy. As noted above, the Academy Building had already provided a physical home to OSRD activities. It could inherit a demobilized scientific community that would be supported by the research funding Bush’s plan envisioned.

Why was it necessary for the NRC to become more independent of the Academy in order to better serve the government and its agencies? After all, the Academy was the most eminent honorific scientific and technical body in the nation. Would it not have been more effective to maintain the prestige that came from being under the control of the Academy? One problem that Jewett pointed out in a letter to the Council’s Executive Committee, was that the NAS “Policy Committee is a widely scattered body of distinguished men who during the war years have not been in intimate touch with the actual operating problems of the Research Council and of the difficulties inherent in the present setup.” Later in the same letter, Jewett referred to the Policy Committee as “a cumbersome piece of extra machinery” that had not proven very effective in running the NRC.⁵⁶

For some members of Jewett’s informal committee, the problem was that the work of the NRC was not done by the Academy, but by the larger scientific and technical community, and primarily through the assistance of the professional societies. It gave advice not by putting forward the most distinguished single expert, but by mustering the collective knowledge of experts in relevant fields. In their minds, the reorganization that Jewett and Bronk proposed did not go far enough. As one member of the committee, Henry A. Barton, Executive Director of the American Institute of Physics, put it:

... the Academy is still too much in the saddle to allow full development of active interest on the part of the scientific societies and full participation of their delegates in the Council’s active functioning. So long as the Council is not “of and by” the scientists, it will not be accepted as being wholly “for” the scientists (to paraphrase Lincoln).⁵⁷

55. Kleinman, *Politics on the Endless Frontier* (ref. 3), 58.

56. Jewett to members of the NAS Council, 19 Apr 1946, NRC Policy Files—Organization.

57. “Comments from Members of Informal Committee to Advise Regarding Suggested Changes in Articles of Organization and By Laws of the National Research Council,” n.d., NRC Policy Files—Organization.

The new organization should democratize the Council's activities, placing them under the general supervision of the Academy, but outside of its control. Having served as the NRC's wartime director of the Office of Scientific Personnel, Barton was especially aware of the growth of expert societies (he would later help to found the Scientific Manpower Commission on behalf of the major scientific societies). Barton recommended leaving the Academy only so much authority and responsibility in NRC matters as would allow the Council to retain the prestige that came with its association with the honorific body.

Barton further urged that the Council should make government agencies more aware of its existence, by cultivating "a general alertness to inform and assist government agencies in decisions, policies and procedures affecting science whether or not such activity is covered by formal contracts. . . ." In Barton's scheme, the NRC was located between the scientific societies and the government agencies, offering the services of the former to the latter, while keeping the former aware of what decisions were being made at the government level that might impact their work.⁵⁸

That the NRC's strength came from its ability to bring relatively unknown experts up from the societies was also articulated by George B. Darling (later director of the U.S. Atomic Bomb Casualty Commission), who offered a more favorable assessment of the NRC's relationship to the NAS than did Barton. For Darling, the NAS with its "freedom . . . from all forms of [political or financial] pressure" guaranteed the integrity and independence of the advice it gave, while the NRC provided the "mechanism . . . for the selection of the men best qualified to study and report on various scientific problems." This mechanism derived from the NRC's relationship with the professional societies. He clarified, "The organization of the NRC, including as it does representatives of the constituent societies, is intended to provide the channels through which the selection of appropriate people can best be made."⁵⁹

Darling felt that the NRC was the organization best equipped to handle questions from agencies that were "interested in learning what the facts are and in obtaining an evaluation of the meaning of those facts in the terms of current scientific knowledge." This, he said, was bound to become one of the primary roles of the NRC as an advisory body. He cautioned, however, that the NRC should avoid making statements about what "ought to be done about this or

58. *Ibid.*

59. Darling to Jewett, 10 Apr 1946, NRC Policy Files—Organization.

about that.” He preferred a strict divide between scientific and technical matters and matters of policy:

National Policy may be determined by many factors, political, economic, diplomatic, military security—as well as scientific. It is our job to see that the scientific evidence is presented when it is pertinent so that decisions can be made with the knowledge of that evidence and its validity as determined by the leaders of the science involved. We need to do much more analyzing of evidence and much less giving of opinion.⁶⁰

Taking this approach would keep the NRC useful to government without politicizing the organization, permitting it to “take part in controversial issues at a level where our participation may help to resolve, rather than to add to, the confusion.” Darling also insisted that the NRC should never overreach its expertise: “Obviously, failure is inevitable in any case when committee recommendations go beyond those justified by scientific evidence and spread into propaganda or political effort.”⁶¹

Jewett’s “Permanent Piece of Flexible Machinery”

Both Jewett and Bronk felt that the Academy-Council had a special role to play in American political life. This stemmed not only from the expertise the institution possessed, but also from the degrees of power and independence provided to it by its charter. As Jewett saw it, the NRC’s charter was “an astounding document” that provided “one of the most, if not the most, sweeping delegations of power coupled with obligation of service to the Nation which the sovereign [*sic*] authority has ever made to a group of citizens completely outside of the control of political government.”⁶² As he explained in a speech on the occasion of his retirement from the presidency in 1947,

In less than forty words the Act of Incorporation in effect created in the whole domain of science a supreme court of final advice beyond which there was no higher authority in the Nation and ensured that so far as was humanly possible its findings would be wholly in the public interest uninfluenced by any elements of personal, economic, or political force.⁶³

60. *Ibid.*

61. *Ibid.*

62. Frank B. Jewett, “The Academy—Its Charter, Its Functions and Relations to Government,” *Proceedings of the National Academy of Sciences of the United States of America* 48, no. 4 (1962): 482.

63. *Ibid.*

The Academy-Council was “the most powerful tool for the best unbiased advice that man can create.”⁶⁴ Its power to influence policy was tied directly to its independence. The influence of its advice was, by Jewett’s estimation, a function of this independence. That the findings would in effect have to carry their own weight in policy making—since the committees had no ability to put them into action themselves or to lobby the government on their own behalf—meant that the institution had to produce only the best supported and most objective recommendations in order to be effective. This focus on independence as a source of influence may explain why those involved in planning its reorganization were so hesitant to allow NRC committees to make policy recommendations and insisted on limiting them to the presentation of “facts.”

Jewett was convinced that the Academy-Council could become the most powerful scientific organization in the United States, and perhaps the world. It could do so because of the voluntary contributions of hundreds of experts, most of them non-Academy members, whom the Council called upon to do its work. By Jewett’s account, the NRC was

... a permanent piece of flexible machinery admirably adapted to act as an operating agency. Backed by the authority of the Academy, it has a broad base in the whole domain of fundamental and applied science which ensures to it the ability to bring together and use effectively the best qualified men of the Nation for the solution of any problems.⁶⁵

Utilizing this flexible machinery, the NRC could provide the government, military, or other sponsoring party an assessment of the state of knowledge on any scientific or technical matter. It could do this because the national investment in science and engineering would allow American expertise to develop along all natural lines of inquiry (Bush’s endless frontier comes to mind here), and because the Academy-Council would itself ensure not only that the most knowledgeable and appropriate experts were chosen for committee work on a given topic, but that they would work for the national welfare, and not represent their own or their employers’ interests.

The product of Jewett’s “flexible machinery” was credible advice. The credibility of that advice was ensured by the NRC assessment process, which took place at the intersection of Academy oversight and the collective expertise of American science and industry. Within this shared space, provided by the

64. Ibid.

65. Ibid., 486.

Academy and occupied by the Council and representatives of “the whole domain of fundamental and applied science,” consensus emerged as the language through which committees expressed the results of their work; it was a concept well suited to the ideals and metaphors upon which the machinery was built. The “great men” of American science vouched for the independence and rigor of the process and lent it their authority, but they did not present the work as their own opinion. The committee members, working collectively, held accountable to each other and to their Academy reviewers, sublimated their own interests to those of the nation, and produced not policy recommendations, but a map for policy makers of what was known and thought to be relevant to the problem at hand. Although the credentials of these individuals certainly were important for the credibility of the reports, the ideal was that they represented entire fields of knowledge—the expert community, not the individual experts.

An Effective Federation of Science

The NRC does not seem to have been directly influenced by the consensus experiments of the American Economic Association detailed above, but they do seem to have taken note of similar efforts by other professional organizations. Before Jewett began his reorganization of the NRC, he put together a Committee on Future Needs, Activities, and Relationships of the NRC. The committee’s report noted the occasional attempts made by societies to advise government, and declared that it was the obligation of the NRC, as emphasized in the Executive Order that established the Council, to work for the public welfare on behalf of the societies.⁶⁶ Moreover, the membership of the NRC, as set forward by its previous Articles of Organization, was to be such as would make the Council “an effective federation of the principal research agencies in the United States concerned with the fields of science and technology,” including representation from the national scientific and technical societies, the government, and other research organizations.⁶⁷ If the AEA had felt that their association was not the organization best suited to produce policy advice, the NRC agreed; the associations should be working toward the public welfare through the NRC, not on their own. Only a devoted organization such

66. “Memorandum for Committee on Future Needs, Activities, and Relationships of the National Research Council,” January 3, 1946, NRC Policy Files—Organization.

67. National Research Council, “Articles of Organization and By-Laws (Edition of July 15, 1941), NRC Policy Files—Organization.

as the NRC could maintain a sizeable and credible advisory apparatus; the Council could go where the societies might fear to tread, while in the process acting as their representative.

As Bronk envisioned it, the NRC represented the collective expertise of the nation's scientific societies. As he explained to the NRC members who attended the Council's First Annual Meeting in 1958, the Council had built up its bureaucratic infrastructure in order to work on the societies' behalf, and with their assistance:

... the work of the Council is largely done through its committees, through its permanent staff, under the guidance of committees, through boards and through groups of individuals who gather together for a relatively brief period of time until the work they wish to accomplish has been done. Yet the purpose of the Council as a Council is to foster the work of the constituent societies and to fulfill their desires, to draw upon them for advice and guidance as to what should be done.⁶⁸

Bronk's introduction of the Annual Meeting was itself an attempt to draw together all of the NRC members—228 representatives of professional scientific and engineering societies, representatives of government scientific agencies, and members-at-large—as well as NAS-NRC staff under one roof. Here he solicited ideas about how the NRC could become a more effective source of advice, had attendees discuss how they could work collectively to improve scientific and technical training, brought before them congressmen and presidential science advisors to discuss the relationship between science and the government, and encouraged members from the various Divisions of the NRC to learn from one another what approaches to committee work had been successful.

From 1946 until 1962, Bronk built up the NRC. After Jewett stepped down from the presidency in 1947, the next president, Alfred N. Richards, gave Bronk a free hand to develop the NRC along the lines he and Jewett had sketched out. When Richards gave up the presidency in 1950, Bronk replaced him, holding the presidency until 1962 and serving as *ex officio* director of the NRC. Meanwhile, Bronk was also solidifying the connection between the NAS-NRC and the White House. When the Truman administration established the Science Advisory Committee of the Office of Defense Mobilization

68. "Meeting of the National Research Council, Plenary Session," 1 Apr 1958, NAS-NRC Policy Files, Office of the President, Bronk D W, 1957–1961, Admin, Organization, NRC, Meetings, Annual, 1958, First, Transcript.

(ODM-SAC) in 1951, Bronk served as an *ex officio* member, representing the Academy and the Council. He served the same role in the President's Science Advisory Committee (PSAC) when it was founded in 1957.⁶⁹ Because of his active involvement in these committees and the NSF, Audra Wolfe has dubbed him "the ubiquitous Detlev Bronk," noting his success at drumming up support and funding for the NAS as "the government's default contractor for scientific cooperation."⁷⁰ The purpose of both the ODM-SAC and the PSAC was to integrate science and experts into the government to provide critical evaluations of new developments in science and technology.⁷¹ While these committees represented "scientists on top," the work of the NRC (which Bronk was able to promote as a "boundary elite" from within the White House) represented "scientists on tap," ready to provide science for policy whenever needed.

The Cold War contract system helped Bronk to increase further the Council's activities. The NRC now seemed in some ways to be eclipsing the Academy. Whereas in the late 1940s the professional staff of the NRC had amounted to little more than 100 people, only ten years later the professional staff numbered over 150, with a total staff of 600.⁷² The NRC's activities had increased to match the new staff. As Bronk took office, he oversaw thirty-eight contracts for ten federal agencies, many of them originally OSRD contracts that had been transferred to the Council. With the outbreak of hostilities in Korea, these contracts were renewed and expanded, and others were added. In the first year of the Korean War, the value of NRC government contracts swelled to a new high of \$3,928,000.⁷³

The enhanced position and activity of the NRC was remarkable. In the late 1930s, when physicists had wanted to gain an audience with the president to inform him of the looming prospect of atomic weapons, they had not been able to identify any existing systematic means through which scientific or technical advice could reach the White House. Not even the NAS was able to provide such channels. But the events of World War II and the Cold War that followed had seemed to necessitate a permanent apparatus. By the late 1950s, the Soviet launch of Sputnik I and the beginning of the Space Race put

69. Wang, *In Sputnik's Shadow* (ref. 3), 4.

70. Wolfe, *Freedom's Laboratory* (ref. 3), 110.

71. Wang, *In Sputnik's Shadow* (ref. 3), 39.

72. *Ibid.*

73. Rexmond C. Cochrane, *The National Academy of Sciences: The First Hundred Years, 1863-1963* (Washington, DC: National Academies Press, 1978), 527.

science and technology even more at the center of Cold War geopolitics, making the White House an ever more willing consumer of expert advice.⁷⁴ A somewhat stable relationship had formed between the scientific community and the Cold War American state.

Structuring the Process: Fred Seitz and Committee Guidelines

When Bronk left the presidency in 1962, the next president to take office was the physicist Frederick Seitz. The ideals and metaphors of Jewett's machinery and Bronk's federation remained too flexible for Seitz's liking. Over his seven-year tenure as president, Seitz focused on giving structure to the NRC's assessment activities. In addition to reorganizing the NRC once again, Seitz introduced new guidelines for committee activities. This stemmed at least partly from an anxiety over problems that might arise when committees "find themselves in a position where they are representing, or might be construed to be representing, [the Academy or Research Council] in speaking or writing."⁷⁵ These guidelines further ensured that consensus, rather than the separate opinions of committee members, or the disagreements between them, would characterize the NRC's reports.

The guidelines for committees were given to all incoming committee members and were attached to a letter addressed "TO COMMITTEES, BOARDS, AND PANELS OF THE NATIONAL ACADEMY OF SCIENCES AND NATIONAL RESEARCH COUNCIL." The letter explained that the enclosed "precepts and procedures" were necessary for four reasons:

1. Our structure of scientific and technical groups is now so large, and the responsibilities that we have accepted under the Act of Incorporation of the Academy are so broad, that appropriate channels of action must be established and understood.
2. Statements to which the names of the Academy and Research Council are attached must represent the considered views of the appropriate duly appointed group; and any policy aspects of such statements must be fully reviewed by the appropriate officers of the Academy and Research Council.

74. Herken, *Cardinal Choices* (ref. 3), 101.

75. Governing Board Meeting, 9 Feb 1964, Appendix 2, NAS-NRC, Policy Files, Office of the President, Seitz F, Bronk D W, 1962–1965, Admin, Governing Board, Meetings, 1964, Feb.

3. As science comes more and more into the public eye and pervades public policy questions, the timely issuance of reports and other pertinent information relating to our activities must engage our careful attention.
4. The growing involvement of leading scientists and engineers in undertakings receiving public support means that conflicts of interest may frequently arise in the course of our efforts to provide objective advice to public agencies in response to multiplying needs and requests.⁷⁶

The attached guidelines for the first time formalized the requirement that deliberations be kept confidential.

As the second stated purpose for the guidelines made clear, the Academy and Research Council were now also becoming more concerned with policy recommendations. The guidelines stopped just short of formalizing the separation of technical expertise and policy recommendations that Darling had suggested, opting instead to make any policy recommendations subject to the review and revision of the NAS-NRC, since these would be construed to represent the institution's policy positions. (Not because it was seen as outside of what the institution should be providing.)

Although the guidelines did not specify that committees should present a consensus report, they did specify a univocal approach to the report and any public statements related to the report. As the guidelines explained:

Verbal statements to the press by any member of a committee are likely to be construed as expressing the views of the entire group. Where a statement is necessary, committees should agree on a spokesman, usually the chairman, who will make any public statement or carry on any press discussion of the work of the committee.⁷⁷

Formal communications with the White House or with Congress were to be handled by the Academy President himself. When a committee member was invited to testify before Congress, "he should at once inform the President of the Academy so that any policy or procedural questions can be resolved."

Seitz's concern with formalizing the committee process may indeed have grown out of the four needs expressed in his letter to committee members. It is also worth noting, however, that there was also a growing concern on the part of government in providing some sort of oversight or regulation of advisory

⁷⁶. Ibid.

⁷⁷. Ibid.

committees just prior to Seitz's presidency. In 1957, for example, the House of Representatives passed House Bill 7390, which was designed to prescribe minimum standards for the establishment, administration, and operation of advisory committees within departments. Two years later, the Acting Director of the Bureau of the Budget sent a directive to the Chairman of the Senate Committee on Government Operations, titled "Standards and Procedures for the Utilization of Public Advisory Committees by Government Department and Agencies." In 1962, this directive was superseded by President John F. Kennedy's Executive Order 11007—Prescribing Regulations for the Formation and Use of Advisory Committees. None of these actions directly addressed or affected the work of the NRC, and focused instead primarily on advisory committees formed by government departments and agencies. But they nonetheless demonstrated a growing interest within the government in understanding and regulating the ways in which advisory committees were impacting policies and programs.

Over the course of Seitz's presidency, as well as that of his successor, Phillip Handler, the consensus study became the official *modus operandi* of NRC committee work. Although the Council rarely at this point used the terms "consensus report" (or "consensus study") to describe what it produced, it is clear from looking at the above guidelines and discussions that it was during this period that the NRC developed the formal process they now describe with this label. Committees would work independently of influence, they would speak with one voice, and they would limit their findings to matters within their scientific or technical expertise (unless they received special permission or guidance from the Academy President to speak directly on matters of policy). By the 1970s, as the Federal regulatory agencies expanded and proliferated, and expert assessments became ever more in demand, the term "consensus report" was again being used by the NRC in its published reports. It remains to this day the primary product of the NRC, which produces more than two hundred such reports each year under contract from various agencies.

CONCLUSION

The epistemic merit of consensus cannot have been the determining factor of its adoption in the twentieth century. As these cases illustrate, there was initially no shared sense that consensus could either be measured or, if it could, that it had any meaning or inherent value. In her work on peer review, Baldwin

suggests that peer review was “elevated from an optional bureaucratic process to a system that was supposed to ensure the quality and trustworthiness of science,” becoming a “stand-in for the judgement of the scientific community as a whole,” but that its true value was that it allowed the community to remain autonomous.⁷⁸ In the accounts provided above of the introduction of consensus-oriented assessment reports, I suggest that we see a similar tactic of turning to the scientific or expert community in lieu of individual authority. In this case, however, it was not so much to avoid intervention as it was to remain instrumental to the state. Consensus came to signify impersonal objectivity in reports that were meant to be divorced from politics and free from bias. One can argue over the effectiveness of these reports in influencing policy on politically contentious topics such as climate change. One can also argue about the embeddedness of politics in the reports of neutral experts on natural or technical problems.⁷⁹ However, one must admit that the language of consensus has been an effective tool in creating the appearance of expert knowledge as separate from political power and action. (The ineffectiveness of reports on climate change only add to this appearance.)

The AEA, despite its early experiments with consensus, was not responsible for equating consensus as a proxy for objectivity. As noted above, the economists found other and perhaps even more effective ways to influence policy—essentially making the language, thought styles, and tools of their science synonymous with policy making. Other experts, represented by the NRC, negotiated a service relationship with the state. The state would fund the expansion of the expert community, leave it mostly to its own devices (although military and other national security patrons played a large part in shaping its growth), and in return that community would serve the state when called upon. This relationship was based on World War II experiences with the NDRC and OSRD, on a postwar belief that science and technology were essential to the successful prosecution of the Cold War, and on an ideal of scientific autonomy from its state and military sponsors. The leadership of the NRC restructured the Council and its activities to become the premier source of expert advice on this new landscape. Although the NRC struggled with some of the same issues as had the AEA, they found solutions to these

78. Baldwin, “Scientific Autonomy” (ref. 11), 557.

79. Clark A. Miller, “Resisting Empire: Globalism, Relocation, Relocalization, and the Politics of Knowledge,” in *Earthly Politics: Local and Global Environmental Governance*, eds. Sheila Jasanoff and Marybeth Long Martello (Cambridge, MA: MIT Press, 2004), 81–102.

problems in the way they defined their own position at the interface of the scientific community and the government, and in the authority and independence that their relationship with the Academy provided.

The NRC reorganized its administration and restructured its activities in such a way that concerns of the type the AEA found insurmountable were answered. It advertised its advice as independent of any vested interests or partisanship.⁸⁰ At the same time, the NRC, with membership representing the societies, branches of the armed services, and various government agencies, could draw upon the relevant expertise needed for the problems it was asked to address. As an organization that had forged strong ties with the government and military during the war, it had a ready-made audience for its reports and, through well-placed individuals, was able to anticipate the policy needs of these entities. Moreover, it was able to tap into the government contract funding system to support the construction of a robust apparatus for the production of assessment reports.

But the choice of consensus was neither natural nor pre-ordained. Its adoption as a tool for speaking truth to power was a result of the institutions that fostered it, of the structures, norms, and precedents they established, and the challenges and opportunities they faced. I would suggest that, while the choice of consensus may ultimately be contingent, it may also be the reason why the NRC persists today as a science policy apparatus while other institutions failed. The members of PSAC, for example, refused to demur from offering policy advice, and would not limit themselves to offering reports on agreed-upon facts. When they ran up against a presidential administration that did not appreciate their politics, PSAC was summarily disbanded. While not all NRC reports have been popular, the organization has nonetheless maintained the reputation of providing independent assessments that are policy relevant but not policy proscriptive. Consensus has been the primary tool through which they have achieved this.

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80. Although the NRC funds its operations through government and private contracts, and conducts its reports on a contract basis, it does not pay its committee members and it requires a statement of bias and conflict of interest from every committee member. It also still to this day claims that the prestige of the Academy protects the independence of the process from influence.

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