The Role of Scientific Expertise in Democracy

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Scientific expertise has become increasingly central to democratic governance over the past century. The scientific expert has gone from an occasionally consulted figure to a permanent fixture of government, through science advisory bodies and government scientists embedded within bureaucratic agencies. (Douglas 2009 chap. 2, Jasanoff 1990) Yet this growth in the importance of the scientific advisor for democracies has not been accompanied by a clearer normative positioning of that expertise within democratic governance. Even 100 years ago, when the science advisor was not yet a central figure of government, Walter Lippmann and John Dewey debated the place of the expert in democracies. The underlying issues of their debate remain with us. The issues were papered over during the Cold War period, when science advising grew dramatically, but they have persisted and more frequently erupted, with the result that expertise seems to have never been so influential and yet to disregarded in democratic policy-making. (Gluckman and Wilsdon 2016)

This chapter will first describe the debate between Lippmann and Dewey to explore the underlying difficulties of relying upon scientific expertise in democratic governance. Such reliance is crucial to good governance, but not normatively straightforward because of the demands of democratic accountability. Lippmann argued, and many have followed in this line of thought, that the expert needs to be as independent as possible from the political sphere in order to do their work properly. Dewey disagreed, arguing for more accountability for the expert to the public. This tension, between independence and accountability (to the political or public sphere), has been central to debates over the role of the science advisor.

I will then describe the embrace of the independence model for science advising in the Cold War and why that model began to fail by the late 1960s. I will examine one particular dispute over science advice, the dispute over supersonic transport (SST) in the Nixon administration that had important consequences for the US science advising system. This example shows that current disputes over scientific expertise in governance are not new, that the tensions over science advice have deep historical and theoretical roots.

I will suggest in the final section that instead of the independence model, a more apt understanding of the role of scientific expertise in democracy places the expert in the middle of a set of obligations, to the scientific community, to the advisee, and to the public. This replaces struggles over independence with multiple lines of accountability that maintain the science advisor's integrity.

I. The Normative Issues: Lippmann vs. Dewey

In the 1920s, a debate between Walter Lippmann and John Dewey mapped out the contours of the problem of scientific expertise in democratic societies. Walter Lippmann, a respected and prominent public intellectual of the era, published *Public Opinion* in 1922. In this opening volley of their exchange, Lippmann argued that the complexities of governance, and the needed expertise for that governance, were now beyond the epistemic capacities and attention span of the contemporary public. Lippmann noted the technical expertise that was needed to govern large, complex democracies, from the Census Bureau to the Geological Survey to intelligence reports from offices overseas. (Lippmann 1922: chap. XXVI) This work was crucial to making good governance decisions and running democratic societies, including setting the conditions for fair elections (e.g., through the work of the census bureau). Yet the public in general had (and has) neither the capacity nor the inclination to follow the work of these bodies carefully, especially given the numerous issues the public would need to follow closely. There is simply too much information being produced by this "intelligence work" (as Lippmann called it) for the public to keep track of it, and the details of this work involves intricacies that often require specialized expertise.

For Lippmann, the public was largely an emotional and disjointed mass of people, easily manipulated by the media and politicians. Good governance was best pursued behind the scenes, out of the public eye. Further, Lippmann argued that the intelligence work was best done separated as much as possible from the policy decisions to be made, so that the desires of the politicians would not distort the knowledge produced, and so that the expert would not wield undue power. (Ibid.) For Lippmann, the power wielded by the expert was to be constrained by separation of expert investigation (or inquiry) from decision-making on policy. Independent expertise embedded in government, but separated from democratically accountable decision-makers, was how Lippmann thought modern democratic systems should be structured. There was no need for the public to follow such expertise closely. The experts would speak to the decision-makers, informing their decisions, and the public would vote those decision-makers in and out of office.

John Dewey wrote *The Public and Its Problems* (1927) in direct response to Lippmann. Dewey agreed that the mass public was precisely as Lippmann diagnosed—volatile, easily manipulated, unfocused. Yet Dewey did not think that this led to Lippmann's required separation of the experts from the public. Instead, Dewey noted necessary connections between expertise and the public. First, expertise was often needed for the very formation of the public. For Dewey, a public was formed, brought into existence, when there was a detection of substantial impacts of private actions on those not involved in decision-making about those actions. Those so impacted became a public. This allowed Dewey to define the public realm in a way that was flexible to changing knowledge about what broader impacts of private choices were, without reifying public vs. private realms, and allowing for the shifting of boundaries between the public and the private. (Dewey 1927: 66–69) Historically, the realm of the public has expanded or contracted, depending upon the issue at stake. For example, the issue of faith-based belief has gone from a public issue to a private one, whereas the handling of sewage has gone from a private matter to a public one. The detection of impacts on a broader set of people often depended upon specialized expertise.

Second, Dewey argued that the public had an important role in evaluating specialized expertise. This was in part because "[a] class of experts is inevitably so removed from common interests as to become a class with private interests and private knowledge, which in social matters is not knowledge at all." (Dewey 1927: 224) It was essential, for Dewey, that expert knowledge be part of the public discourse justifying governance decisions, and that the public have the freedom and capacity to evaluate the expertise. As he wrote: "It is not necessary that the many should have the knowledge and skill to carry on the needed investigations; what is required is that they have the ability to judge the bearing of the knowledge supplied by others upon common concerns." (Ibid.: 225) Further, Dewey argued that the many often do have this capacity, just as the wearer of a shoe may not be able to make a shoe, but can tell where it pinches and thus what needs to be remedied. (Ibid.: 224)

Dewey thus did not argue for the most separation possible between experts and policy-makers or experts and the public, or for independent expertise. Instead, he argued that communication and interchange was needed for both the public assessment and utilization of expertise and for the proper formation of public interests. Dewey's arguments are bolstered by the recognition that social values are an essential and ineliminable part of the direction of expert attention and the decision to conclude inquiry (assessments of evidential sufficiency). (Douglas 2016) Scientific experts are not just neutral inquirers who then impart packets of truth to government or the public. Because value judgments are a necessary part of scientific inquiry, experts should not be independent from public understandings of those values. (Douglas 2008) For Dewey, experts needed to remain in the public eye, accountable to both the public and to the decision-makers whom they advised. The insulation of experts from the broader public would make their expertise less valuable rather than more, as Lippmann had argued.

Despite the potency of Dewey's concerns about experts in democratic systems, Lippmann's vision of independent experts separated from the public and the political sphere took hold after World War II. The crucial complexities of scientific expertise in democracies were papered over in the post WWII context.

II. Papering Over the Issues: The Cold War Social Contract with Science

The Second World War changed the discourse about scientific experts and democratic governance. Merton's 1942 essay on the ethos of science presaged this shift when he argued that democratic societies were more congenial to scientific investigation than authoritarian or fascist ones, and thus that democratic societies (i.e., the Allies) were more likely to win the devastating war that beset the world. (Merton 1942) Merton was right, and scientific expertise did prove crucial, from war-winning proximity fuses and penicillin to war-ending nuclear weapons. (Kevles 1995: chap. XX) By 1945, it was clear to all the important role science had played. The question was, what role should science play going forward, into peacetime?

In debates about science policy in the mid-1940s, several lines of argument intersected. The first was about the freedom vs. accountability of scientists to the public and the public purse. Legislators like Harvey Kilgore in the US and authors like J.D. Bernal in the UK thought scientists' efforts should be directed at public problems and scientific funding from the public should be distributed accordingly. (Kleinman 1995) For scientists involved in the Society for Freedom in Science (SFS), such direction of scientific effort was an anathema that would hamper the pursuit of basic research. Leaders of the SFS like Michael Polanyi and Percy Bridgman argued that public funds should be distributed to the best scientists (as determined by the scientists themselves) and that scientists should be left free to pursue those projects they thought were most interesting. (McGucken 1978) Vannevar Bush solidified this approach in his 1945 report, *Science: The Endless Frontier*, which argued that public good would come inevitably from public funding of basic science, which was also the science that private industry could not afford to pursue (it being too far removed from application). (Bush 1945) Public money was thus needed to enable the pursuit of this precursor of all applications, and it was in the application of science that public good, and public value, would arise.

This model of scientific funding, which became known as the linear model, presumed a uni-directional pipeline for science. Public funds were put into the pipeline at one end, scientists themselves decided (through funding agencies and peer review) how to best direct those funds, basic scientific knowledge would then flow out to applied scientists and engineers working in commercial labs, which then would produce the public goods (often commercial goods) that would justify public expenditure.

A similar pipeline model arose for science advising. Scientists in advisory positions were construed as value-neutral and apolitical purveyors of scientific facts to decision-makers. Scientific expertise would be provided to decision-makers (e.g., politicians or political appointees), who would then use that knowledge to make better decisions. The knowledge provided would have been created by scientists independent of the governments that used it. The more such scientists were insulated from the political forces and from messy social values, the better that system would work—and the more reliable the scientific knowledge would be.

Finally, a similar model was also developed for issues of scientific literacy and public engagement with science. The more the public was properly educated about science (i.e., knew scientific facts produced by the pipeline), the more the public would agree with the advice of scientists and scientific statements generally. Disagreements between the public and scientists were simply the result of public ignorance. All of these models presumed science should be a value-free, politically neutral endeavor, insulated and isolated from broader political and societal concerns.

The idea that science could be so value-free was easier to believe when a relative uniformity about values was held across society. At the height of the Cold War, with Soviet Communism held up as the key enemy of free democratic societies, differences in central value commitments were harder to see and articulate. If all (or most) scientists, and most of society, agreed upon the most important value commitments, such commitments become relatively invisible. It was during this period that the science advisor held the most sway in the halls of government. For example in the U.S., the "golden age" of science advice is often thought to be when the Chief Science Advisor and the Presidential Science Advisory Commission had the most influence, from 1957–1963. (Wang 2008: 312) The goal of defending the country from Soviet Communism created a general unified value commitment that made the linear models of advising and science policy appear plausible.

Yet that overarching value uniformity was not to be long-lived. By the late 1960s, serious disputes about value commitments (e.g., which was more important, ecological health or commercial development? Human health protection or economic efficiency? Ecological protection or military advantage?) had erupted, and created genuine conflicts among not just politicians and the public but also among scientists involved in advisory systems. The next section looks in detail at such a dispute.

III. Science Advice in Action: The SST Dispute in the US (1969-1972)

Amidst other science policy disputes of the late 1960s, such as whether to pursue anti-ballistic missile systems, the role of science in the Vietnam War, and the growing concern about persistent environmental contaminants like DDT, President Richard Nixon's first term in office also witnessed a crucial dispute about the public funding for and support for civilian supersonic transport (SST). This potent public and technical controversy led President Nixon to disband his Presidential Science Advisory Committee (PSAC), which had been a mainstay of science advising in the US government since the Eisenhower administration, and led the US Congress to pass the Federal Advisory Committee Act (FACA). It displays clearly the challenges that can arise with scientific expertise in democracy.

The effort to create civilian supersonic transport began while the military was pursuing supersonic bombers in the 1950s. The US Federal Aviation Administration thought that if the military pursued a supersonic bomber, then that technological development could help civilian SST and lead to economically viable civilian SST in a way similar to the development of jet engine technology (which revolutionized civilian aviation). But the military scrapped the supersonic bomber idea by 1962. Despite the military's rejection of SST for heavy payloads, SST for civilian use got a boost from the Kennedy administration, when in 1963, President Kennedy declared his support for a government-industry joint effort to build a prototype, to compete with the British and French efforts. (Herken 1992: 177; Carter 1970) Technical and financial hurdles arose quickly. A study of the effects and acceptability of sonic booms (the inevitable accompaniment of supersonic travel) done over Oklahoma City in 1964 was not reassuring, with small booms producing thousands of claims for property damage. (Shurcliff 1970: 111-112) While there were potential technical solutions to reduce sonic booms, they increased the weight of the aircraft to the point where it would likely not be economically feasible for commercial purposes. In addition, by the late 1960s, with $1 billion of public funds already sunk into the program, some began to wonder whether the government should be subsidizing what should be a private industrial effort. (Carter 1970)

Thus, when President Nixon won the election in 1968, the SST issue was already on the docket. In early 1969, Nixon asked for a review of the project from five different sources: 1) a review by the airlines, 2) a review by government aeronautical experts, 3) a review by three external aeronautical experts, 4) a review by Nixon's Presidential Science Advisory Committee (PSAC), and 5) a review by an interagency group. (Carter 1970: 354) For the PSAC review, then PSAC-chair Lee DuBridge created an ad hoc committee, headed by Richard Garwin. (Herken 1992: 178) While the first three reports (largely focused on aeronautical issues) supported SST, the other two reports were not favorable to the project. Of the two, the Garwin Report (as it became known) from PSAC was far more critical and blunt. There were serious environmental and financial problems that looked insurmountable, and the Garwin Report recommended the project be scrapped. (Ibid.) Nixon did not like the conclusions. In a September 1969 press conference, he announced that he supported the SST program, and refused to release either report critical of the project. (Ibid.)

Nevertheless, public debate on SST heated up. Citizens in League Against the Sonic Boom joined forces with Friends of the Earth to use a Freedom of Information Act request to get the Garwin report. Nixon claimed executive privilege over the report, refusing to release it. Congress did approve new appropriations for SST in 1969, but in the spring of 1970, the controversy got particularly pointed. A joint committee of the House and Senate had been unable to get a copy of the Garwin Report from Nixon, and so had asked Garwin to testify at hearing scheduled for May 1970, shortly after the first Earth Day. (Conway 2005: 141; US Congress 1970) Garwin's decision to testify was fraught. The standard view of PSAC's advice at the time was that it was private, solely for the president. But as Garwin recalled in 1981: "I looked at the government testimony [from the Department of Transportation Officials] and decided it was really dishonest and misleading. Really just awful. The government was concealing information and giving false information. So I said, 'Yes, I'll testify, but you can't ask me about the report.'" (quoted in Marshall 1981: 765) Garwin had consulted with PSAC Chair DuBridge about what he should do, and DuBridge had suggested that as long as he left out of his testimony information gleaned as part of his PSAC activities, and used only publicly available documents, he could ethically testify in front of Congress on the SST.

(Conway 2005: 141—see also fn. 99) The transcripts emphasized that despite Garwin's long history of science advising, he was testifying "only in his capacity as a concerned citizen." (US Congress 1970: 890)

Garwin's public testimony proved devastating. He criticized not only the SST program, but the way in which the Nixon administration was handling the technical advice and decision-making process. He stated that it was his "belief that there has been less than adequate, and in many cases distorted information available for this decision process, both within the administration and in the presentations to the Congress." (US Congress 1970: 904) He painted a picture of a deceptive bait and switch, where the aircraft actually under consideration was not the same one on which technical details had been discussed, and that the deception was covering up the fact that the technically acceptable aircraft would not be economically viable, and vice versa. He also argued that billions more in public money would be needed to complete the project, that private financing would not be forthcoming. (Ibid.: 905) Perhaps most pointedly, Garwin suggested that SST noise from one aircraft would amount to "50 747's taking off simultaneously," an assessment that reverberated in the press. (Ibid.: 907) By the following year, the SST program was dead. (Herken 1992: 179)

The scientific community was divided over Garwin's decision to go public. Some thought he should have resigned from PSAC before going public. (Herken 1992: 179) Others thought he did the right thing, arguing that being on PSAC did not mean that "the president owns your opinion before all possible fora." (quoted in Herken, Ibid.) In a National Academy of Science poll of scientists, respondents roughly split between deeming his actions appropriate or inappropriate. (Ibid.: fn 98, 322) The Nixon administration, in contrast, was uniformly furious. As quoted in Herken, one staffer exclaimed: "Who in the hell do those science bastards think they are?" Another replied: "Who needs this bunch of vipers in our nest?" (Ibid.: 180)

When Nixon succeeded in getting re-elected in the fall of 1972, he disbanded the PSAC as one of his first acts of his second term and got rid of his presidential science advisor (moving the science advisory function to the far remove of the National Science Foundation). (Herken 1992: 180) PSAC members were shocked and had no idea the demise of PSAC was on the horizon. Nixon responded to the perceived disloyalty of his science advisory system by removing them from the White House and from close contact with the President.

While Garwin's decision to provide such public and devastating testimony, going against PSAC tradition, led to the demise of PSAC, it also demonstrated the importance of scientific advice being made public. This case of science advice raised serious questions about what kind of loyalty was owed to politicians for whom science advisors worked, how science advisors should be selected for their positions, and what kinds of information should be made public or kept confidential. The US Congress was not happy with their inability to access the advice the Nixon administration was both generating and using to justify their decisions. Congress responded by passing the Federal Advisory Committee Act (FACA) in 1972.

FACA addressed many of the most serious problems encountered by science advisors under Nixon. No longer were advisory meetings to be held behind closed doors and results withheld from the public (unless national security demanded it). Advisory committee meetings had to be announced publicly ahead of time, be generally open to the public, and perhaps most crucially, meeting minutes and results (such as advising reports) had to be made public. One did not need to go through the trouble of a Freedom of Information Act request to access to such reports, and executive privilege could not (generally) be asserted. This provision also prevented agencies from being simply uncooperative with public requests for information. (Levine 1973: 231) The public, and the public's representatives in Congress, were thought to have a right to know the technical advice the government was receiving.[i] The scientists did not owe loyalty just to their advisees—they also owed loyalty to other political bodies and to the public generally. FACA ensures that politicians cannot claim a particular piece of science advice supports their position when it does not, and it ensures that both other elected officials and the public have the information they need to assess whether or not a policy is supported by the available expertise.

This example (and others like it) show the inadequacy of the Lippmann model for expertise in democratic societies. The generation of science advice is not just for the use of decision-makers; it is also crucial that advice be shared with other political actors and with the broader public, so that a proper assessment of the actions of the decision-maker can be made. It is true that most of the public and probably most elected officials do not closely follow technical advising reports most of the time, lacking the inclination, time, energy, and expertise to do so, but then neither do experts outside their areas of expertise. However, when civil society groups and elected officials do weigh in on an issue, it is crucial that they have access to the relevant science advising reports, both to assess whether those reports address the issues of concern to them and to assess whether the decision-makers at whose request the reports were generated are responding properly to the advice.

The SST controversy also shows the importance of social and ethical values in science advising. Technical advice is never purely just technical. There are crucial issues of framing a technical scientific issue—what is part of the assessment, and what is not—which in the SST case produced different assessments of the technology. Yes, SST planes were technically feasible. The questions most relevant to the public were whether they were socially acceptable (because of sonic boom issues) and whether possible technical fixes to the sonic boom issues made the project infeasible economically. This revealed value disputes: What was more important, the pursuit of a project that would project US economic and technological power and that is technically feasible (as the aeronautic reports suggested), or the impact of that technology on citizens who would likely not have access to its benefits (because of the high costs)? The viability of SST was not a purely technical issue but also about the cost and benefits, and the distribution of costs and benefits, in the broader society. Consideration of these factors was by no means value-free. And the public needed to hear what experts had to say about such issues, and to see how their elected officials responded to the experts' assessments.

IV. Beyond Independence: Integrity through Accountability in Science Advice

The SST dispute described above illustrates the challenges of science advice in democratic societies. Science advisors serve at the pleasure of those they advise, but they do not (and should not) have loyalties just to those at whose pleasure they serve. In particular, science advisors should never accept the abuse of the authority of science by politicians to say the opposite of what the scientific assessment reveals. To allow this would be to fail in their obligations to the public. If, as Garwin thought, some scientific or technical advice is misleading or just flat out inaccurate, scientists have an obligation to speak publicly about that.[ii]

A further complication is that science advice is rarely univocal. Different experts will see the same issue differently, either because of how they frame the issue or because of different assessments of whether the available evidence is strong enough to make a particular claim. This means that science advice is not and cannot be value-free, because social and ethical values are central to how problems are framed (which aspects are included or excluded) and because social and ethical values are crucial to assessments of evidential sufficiency. (Douglas 2008; Douglas 2016) While broad societal agreement over values can make this aspect of science advice invisible, when values diverge, this aspect of advice becomes visible and important. The issue then centers on the nature of integrity in science advice.

I argue here that because of the importance of science advice to good decision-making in democratic governance, the lines of accountability that structure obligations of science advisors are at least three-fold: to the science, to the advisee, and to the public. Maintaining all three lines of accountability is crucial to the maintenance of integrity in science advice.

The first line of accountability for scientific expert advisors is to the scientific evidence and the scientific community that produces, interprets, and debates the evidence. The scientific evidence does not show up and speak for itself; scientists are required for the production of and interpretation of the evidence.[iii] The scientific community engages in an ongoing discussion and debate over what the evidence means, which evidence is the most reliable, and when the evidence is sufficiently supportive that a particular empirical claim is "proven." It is essential that science advisors be part of this discussion (in their areas of expertise) and that their advice (as much as possible) be open to the assessment of scientific community which produced the evidence on which the advice is presumably based. There may be exceptions when science advice is confidential, because of national security concerns or because it is informal advice given to a particular politician. (That such informal advice be allowed to be confidential assists with the ability of politicians to discuss ideas, even hare-brained schemes, with science advisors and receive candid feedback.) But in the vast majority of cases, and particularly when science advice is wielded by a politician in a public dispute, the science advice should be made public. It is through the response of the expert scientific community to the content of science advice that the science advisors remain accountable to the science.

The second line of accountability is to the decision-makers (politicians, appointed policy-makers) for whom the advice is intended. The obligation here is to make the advice relevant to the concerns of the advisee, taking into account their social and ethical values, at the same time that the advice is scientifically accurate (and would thus pass muster with the scientific community, as discussed above). When the advice is geared towards a specific person, the advisor can ensure that the advice takes into consideration that framing of interest to the advisee and the values relevant to the assessment of evidential strength (including what kinds of errors the advisee would find tolerable). However, much advice is directed towards decision-making bodies, rather than particular individuals. In these cases, especially with formal advisory committees that produce lengthy advising reports, advice should make clear the framing decisions for the advice, any debates over evidential sufficiency that remain, and the value judgments that are part of the science advice. (Douglas 2008, Havstad and Brown 2017)

Only with such clarifications can the advice be properly deployed by the decision-makers.

The third line of accountability is to the general public. This is necessary because the public needs both to use science advice to inform whether a concern is a public matter and to evaluate the response of their elected officials (or their appointees) to science advice. For both these reasons, science advice should generally be made available to the public, with the exceptions noted above. (This also assists with the accountability of the advice to the scientific community) Not every member of the public will read carefully, and evaluate the response to, every piece of science advise. But when an issue of import arises for a member of the public, it is crucial that they have access to the advice so that they can read the advice, and evaluate the response to the advice by the decision-maker. This was one of the key aspects of US FACA law, and is central to the use of scientific expertise in democracies. The public can hold scientific experts accountable by granting or withholding trust in their expertise.

With this understanding of accountability, it should be clear that integrity in science advice is not manifested by a simple independence of science from politics or from values. Values, including social and political values, are deeply relevant to the advising process, and properly so. Integrity instead consists of maintaining *all* the lines of accountability, in the process of generating and providing science advice. It means scientific experts should be concerned about their obligations to the scientific community, to their advisees, and to the public, all at the same time.

In practice, this means being open about the debates that hone scientific results and about the value judgments that are used to frame scientific issues and to assess the whether the available evidence is strong enough to come to a particular conclusion. Scientists should not use their authority to hide complexity because they are concerned the public, or policy-makers, cannot handle the complexity. Messages should not be oversimplified or dumbed-down in order to produce a particular response in the receivers of the advice; doing so would fail to meet the accountability concerns to the public and the politician. Nor should politicians lean on advisors to produce a desired result because it would be politically preferable. Demanding that science advisors produce a particular result would undo their accountability to the scientific community and the evidence it produces. Integrity requires respecting all the lines of accountability, that they all be held in mind, when giving and utilizing expertise in democratic decision-making.

As I write this, in the midst of global pandemic and against the backdrop of the ongoing climate crisis, both the importance of science advice and the contentiousness that comes with it remain apparent. Experts debate what the rate of infection of COVID-19 actually is, which treatments may be effective, and what we should be doing to reduce the harmful impacts of the pandemic. Much remains disputed. But the centrality of scientific expertise in detecting the virus that is sweeping the world and in working to reduce its damage is undisputed. It is a good thing that many of the debates that experts are having are taking place in the public eye. The public has proven adept at understanding aspects of expert thought quickly (e.g., the way in which the public has grasped the idea of “flattening the curve,” a concept few in 2019 would have understood). We do not all need to be experts to be able to assess expertise, our elected officials’ response to expertise, and expertise’s impact on policy. We do need access to that expertise, to see the advice the experts give, and to assess the values at stake. Such assessments will be crucial to how we hold our elected officials accountable in future elections.

Scientific expertise will remain central for good democratic governance. Science has become too important, too powerful a force in society, and too many crucial public issues hang on the technical details of scientific assessment. Understanding the lines of accountability that structure science advice, and attending to the process of providing scientific expertise for governance to bolster those lines of accountability, will help us make the most of it.

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[i] FACA also has provisions calling for fair balance "in terms of points of view represented and functions to be performed." (FACA Statute) This provision forestalls an advisory committee made up solely of a particular advocacy position. What constitutes an acceptable balance for any given committee remains contentious.

[ii] Some see this as a crucial failing of the scientists who were providing earthquake risk assessment to L'Aquila, Italy. They failed to correct grossly inaccurate statements by the elected official. (Hall 2011)

[iii] It is crucial that politicians not try to suppress the generation of evidence they would find embarrassing or unwelcome. Such an abuse of power would greatly hamper the ability of the public to assess the impacts of policies, and of the politicians who push for them.