



## Experts in Politics: Lessons from Socrates and Aristotle

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30 May 2024

Socrates sought to test the expertise (*technē*) of everyone around him: the bombastic know-it-alls, the bashful youths, the confident generals, those with unsuspected mathematical competence, the workaday artisans. Aristotle later explored the ways in which expert claims can be made credible to popular judgement. This lecture considers the role of experts in contributing to public debate in a democracy.

### Introduction

'[I]n life-and-death medical decisions, what could be stupider than holding a vote?' the philosopher David Estlund has asked.<sup>1</sup> Or, even more graphically, consider how you'd feel if you found yourself on a plane in the following scenario:

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<sup>1</sup> David Estlund, *Democratic Authority: A Philosophical Framework* (Princeton: Princeton University Press, 2008), 3.



*“These smug pilots have lost touch with regular passengers like us. Who thinks I should fly the plane?”*

Figure 1 - Will McPhail /The New Yorker Collection / The Cartoon Bank (2017) - used with permission

Captains and doctors: these are pretty compelling examples of the case for giving power to experts: surely a medical doctor is the only person who should take lifesaving decisions in an emergency, and a qualified pilot is the only person whom you want in the cockpit of your plane. Indeed, they were favourite examples not just for modern philosophers and cartoonists, but also for the ancient Greek philosophers Socrates and Aristotle, who were thinking about ship captains rather than airplane pilots, of course, and who were respectively active in the fifth- and fourth- centuries BCE in ancient Greece.

But once we broaden out the timeline and the complexity of a given emergency—to, say, the scope of the COVID-19 pandemic—the question of the role of the medical doctor compared to many other experts, and also compared to laypeople, appears more complicated. How to compare the expertise of the doctor and the teacher in deciding the length of school closures, for example, or of public health experts versus MPs in weighing dangers for essential workers against everyone else?

So there are a lot of different questions in the general space of experts and politics. One problem is to know *which* experts to trust—which ones are trustworthy at all, and who and how are the most relevant ones to a given decision. Taken to an extreme, that can lead to scepticism about trusting any experts at all. As then-Cabinet Minister Michael Gove famously opined in 2016, prior to the British referendum on Brexit: ‘People in this country have had enough of experts’.<sup>2</sup> And indeed, it might seem that expertise is antithetical to democracy anyway. After all, isn’t the point of democracy that every voter should have an equal say, and

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<sup>2</sup> Michael Gove, as reported in the *Financial Times*, 3 June 2016: <https://www.ft.com/content/3be49734-29cb-11e6-83e4-abc22d5d108c>

that no one's opinion is automatically entitled to more weight than anyone else's?

But there is also the opposite problem, where I started, with the temptation to cede democratic judgement to experts who might seem so much better placed to exercise it than ordinary people or MPs. After all, who do you want flying that plane, or steering what Plato in the *Republic* memorably depicted as the 'Ship of State'? In the words that he attributes to Socrates in that dialogue:

'Imagine...that something like the following happens on a ship...The sailors are quarreling with one another about steering the ship, each of them thinking that he should be the captain, even though he's never learned the art of navigation...They don't understand that a true captain must pay attention to the seasons of the year, the sky, the stars, the winds, and all that pertains to his craft, if he's to be really to be the ruler of a ship...Don't you think that the true captain will be called a real stargazer, a babbler, and a good-for-nothing by those who sail in ships governed in that way?'

(Plato, *Republic*, 488b-e, trans. Grube/Reeve)

But as the philosopher James Altham pointed out decades ago, being the master of the art of navigation does not give you the right to decide where the ship should go. Captains understand where it's possible for ships to go, where they will beach on the rocks, where it will be smooth sailing. But that doesn't settle the question of a destination. That's where democratic politics would come in.

So there are two extremes that threaten the place of experts in political decision-making. On the one hand, conspiracy theories and corrosive skepticism that reject the role of experts at all—while there is a real place and need for educated skepticism and testing of expert claims. On the other side, there is excessive deference which could undermine democratic decision-making and the need to balance many different kinds of expertise—while there is a real need to figure out how sound expertise can inform democratic judgment without usurping it.

How to find a middle ground? You won't be surprised to know that my approach will be to turn back to the ancient Greeks. For, just as I argued in my first lecture of this academic year that the role of political office is fundamentally common to ancient Athens and to modern democracies, so too, the problem of experts and politics is as ancient as it is modern. Socrates, Plato and Aristotle reflected on the roles of generals advising the ancient Athenian assembly on decisions about war and peace, for example, while today we grapple with climate scientists advising governments through the Intergovernmental Panel on Climate Change (IPCC). My focus today will be especially on the kind of expertise possessed by natural scientists and social scientists, while climate change in particular will be the topic of my final lecture this academic year on 13 June.

So tonight, I invite you to join me in exploring two dimensions of the problem of experts and politics, drawing on two different ancient Greek philosophers for guidance. First, starting with Socrates, we'll confront the question of how nonexperts can identify true experts at all. How can a nonexpert know whom to trust? Socratic interrogation reveals that many self-proclaimed experts are not genuine experts at all, and that even people with expertise in some respects may still be susceptible to cognitive biases such as motivated reasoning. So while we shouldn't give up on finding or needing experts, we also have to make sure to test them. Giving this lecture in the week following the submission of the Report of the Infected Blood Inquiry to the UK Parliament is a stark reminder of that: as the Report states, 'The picture that emerges overall from the findings in this Report is one in which people have been failed, not once but repeatedly, by their doctors, by the bodies (NHS and other) responsible for the safety of their treatment, and by their governments'.<sup>3</sup> Experts can and do get it wrong, too often with devastating consequences.

In that context the Socratic lesson of the first part of the talk will be that, while safe flights and safer medical practice itself requires respect for the existence and importance of expertise in principle, nevertheless we have to cultivate a healthy skepticism leading us to test self-proclaimed experts in all domains. And in fact, the best way to test experts is to become healthily skeptical about one's own certainties as well. Experts can be vulnerable to biases, just as we all can. The way to avoid the extreme temptations of conspiracy theories is to recognize that all certainties have to be periodically scrutinized with an open mind.

In the second part of the talk, I'll turn to the question of just how democracies can draw on experts without

<sup>3</sup> Report of the Infected Blood Inquiry, HC 569-I, 20 May 2024, 7 vols., vol. 1: 13.

letting them usurp the kinds of judgments that citizens and political leaders should be making. A starting point is to say that citizens decide the ends, while experts advise on the means. But that will again turn out to be too simple. Ends and means are more closely intertwined; we have to engage more closely in testing both, drawing on scientific inquiry as well as democratic inquiry. Indeed, at bottom, these are the same, as the philosopher John Dewey argued in a pragmatist vein. A scientist is just someone who has been trained in a specialized mode of inquiry, and who subjects themselves to widely shared norms and practices for doing that.

So the thread running through the lecture as a whole is the idea that while democracies need experts, experts are human too. Indeed, it's a mistake to presuppose a stark wholesale contrast between experts and everybody else, as if these were two different species or natural kinds. Instead, there is a continuum. Scientists start out as curious, inquiring, ordinary people; they develop a training and commitment to specialized inquiry; but they never lose all the weaknesses that ordinary people generally share. So both groups can improve their performance through similar kinds of learning and practice. Both can come to appreciate the capacities of the other group, and of themselves, while also recognizing potential failings on both sides: failings that have far more in common than you might think. That's why the best way to approach experts in politics (and personal life) is a healthy respect coupled with a healthy skepticism—the same attitude that one should take to one's own epistemic efforts. Or to adapt the saying 'trust, but verify': in this case, we can say, 'trust, but (only because you also) test' others—and yourself.

## Socrates on how to tell an expert from a fraud

Socrates is depicted in Plato's dialogues as refusing to take anyone's claim to expertise or wisdom for granted—while also disavowing the possession of any wisdom or expertise himself. Instead, he interrogated self-proclaimed experts in the Athenian democracy around: everyone from generals to orators, each claiming mastery of a professional skill that was essential to politics. In so doing, he laid out criteria for identifying true experts and distinguishing them from self-important frauds, that are strikingly similar to those offered by some philosophers of science today.<sup>4</sup>

Consider these four criteria that Socrates and the philosopher Alvin Goldman broadly share.<sup>5</sup>

1. Testable arguments
2. Consensus
3. Credentials
4. Track record

Now in some moments, Plato's Socrates insists that these criteria can be deployed only by other experts: experts can determine whether they agree with each other, for example, but a layperson couldn't reliably do so. And some modern philosophers share this view. Elizabeth Anderson, for example, sets up the problem as one in which ordinary people need general 'criteria of trustworthiness and consensus for scientific testifiers'.<sup>6</sup> Yet she sees those criteria as having to be exercised at a generally deferential arm's length. As she sets up the issue, the problem of experts and democracy is a lopsided battle between a dominant group of credible scientists and a few 'crackpots'.<sup>7</sup> So ordinary people can check the credentials of putative experts,

<sup>4</sup> See for example Alvin I. Goldman, *Knowledge in a Social World* (Oxford: Clarendon Press, 1999), and Alvin I. Goldman, 'Experts: Which Ones Should You Trust?', *Philosophy and Phenomenological Research* 63 (2001): 85-110.

<sup>5</sup> For these criteria in Socrates, I draw on and adapt Scott LaBarge, 'Socrates and the recognition of experts,' in Mark McPherran (ed.) *Wisdom, ignorance, and virtue: new essays in Socratic studies*, 51-62 (Edmonton: Academic Printing and Publishing, 1997); for these criteria in Goldman, see his 'Experts', 93. I have ordered the criteria to bring out the parallels that exist in these four cases: explanation offered; agreement among experts; mutual recognition of experts; and success or track record. Socrates adds one criterion (omitted here) – the expert's ability to teach the expertise – that has no parallel in Goldman, while Goldman adds one criterion (omitted here) – evidence of biases – which has no parallel in Socrates. I discuss these additional criteria in Melissa Lane, 'When the experts are uncertain: scientific knowledge and the ethics of democratic judgment', *Episteme* 11 (2013) 97-118.

<sup>6</sup> Elizabeth Anderson, 'Democracy, Public Policy, and Lay Assessments of Scientific Testimony', *Episteme* 8 (2011): 144-164, at 145.

<sup>7</sup> Anderson, 'Democracy', 146-7.

and they might be able to spot a few egregious warning signs, such as conflicts of interest, or refusal to subject their claims to peer review.<sup>8</sup> But otherwise, in her view, people shouldn't try to assess the internal validity of expert claims themselves.

But Socrates in other moments of Plato's dialogues went well beyond that stance. While insisting that he did not possess substantial wisdom or expertise himself, he nevertheless dug in to testing the explanatory arguments that self-proclaimed experts put forward. In other words, he was a non-expert, who set out valiantly and tirelessly to test any and all putatively expert claims. In the *Laches*, for example, he tested two Athenian generals' knowledge of what courage requires on the battlefield, and found it wanting.

The Socratic method is to test whether an expert's claims lead them into self-contradiction. If someone cannot put forward an account of the subject matter of her expertise (in Socratic terms, a definition) which she wishes, and is able, to go on defending after its contradiction of other claims she accepts has been manifested, then it is a good bet that she is not an expert after all. And this gives the non-expert a crucial capacity: a systematic route to discrediting would-be experts who turn out to be frauds.

But at the same time, Socrates was as tough on himself as he was on others. After all, he checked out his own understanding in different domains and concluded that it was insufficient to warrant the honorific title of 'knowledge' or 'wisdom': in Plato's version of his *apologia* or so-called 'Apology' (the word *apologia* is better translated as a defense speech in response to a court prosecution), he disavowed having any knowledge (e.g. *Ap.* 21d). So his exposure of fraudulent experts was in no way a rejection of the possibility or value of expertise as such (of the Gove type). On the contrary: it was precisely because he thought that expertise was so important, that he pursued that scrutiny and interrogation, to make sure that expert claims were up to the job.

Of course, we are not all Socrates. But we can similarly learn to assess the kinds of cognitive moves that self-proclaimed experts often make, and to develop a nose for which ones have epistemic skills and habits that are more likely to lead to success. A fascinating study by Philip Tetlock assessed the actual performance of putative political experts: pundits who made predictions over time that could later be tested for success or failure<sup>9</sup>. Tetlock invoked a classic distinction drawn by Isaiah Berlin between 'hedgehogs' and 'foxes': for Berlin, 'hedgehogs' cling to a single big idea, while 'foxes' are interested in lots of different things.

What Tetlock shows is that political pundits who are 'hedgehogs' are overall less successful (less genuinely expert) than those who are 'foxes'. This is because 'hedgehogs' cling to a single idea that won't always be applicable in the circumstances, while 'foxes' attend to a wide range of factors and possible explanations and causes. But also, and crucially, 'hedgehogs' are less willing to engage in self-scrutiny: they are over-invested in their one big idea, which makes them more defensive about their errors, and more likely to dig in and repeat them. By contrast, 'foxes' are not only better able to calibrate their predictions to the facts (giving them a first-order epistemic advantage); they are also less defensive about mistakes, which is a further way in which they tend to be more successful.

Now recognizing which pundits are hedgehogs and which are foxes is something that all of us could learn to do (and to do better). This goes one step beyond just checking their credentials, which was essentially what Anderson advised. It involves learning to recognize different cognitive styles and habits of analysis, in order to develop a better nose for when one is being misled. And that's something that we can learn to do without having to go all the way to becoming pundits ourselves. We might think here of a distinction drawn by sociologists H. M. Collins and Robert Evans,<sup>10</sup> between the 'contributory expertise' needed to participate in the activity and advance its objectives, and the 'interactional expertise' which involves an ability to talk about the activity and to understand talk about it without being able to contribute to its being done or to teach anyone else how to do it. By cultivating a nose for assessing experts' claims, and their very claims to *be*

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<sup>8</sup> Anderson, 'Democracy', 145.

<sup>9</sup> Philip E. Tetlock, *Expert Political Judgment: How Good Is It? How Can We Know?* (Princeton: Princeton University Press, 2009).

<sup>10</sup> H. M. Collins and Robert Evans. *Rethinking Expertise* (Chicago: University of Chicago Press, 2007), 14, 35, and *passim*.

experts, democratic citizens might be able to develop a restored faith in the general value of expertise, coupled with appropriate scrutiny of the claims of any one expert to necessarily *be* an expert.

Aristotle would later build on Socrates' point here—so I turn to him now to complete the first part of the talk, before moving on to the second part. In *Politics* book 3, chapter 11 (trans. Reeve), Aristotle confronts the view that experts such as medical doctors can be assessed only by their expert peers: 'just as a doctor should be inspected by doctors, so others should also be inspected by their peers' (1282a1–3). Why listen to non-doctors when doctors are in the house?

However, Aristotle goes on to explain why we should reject that blanket claim. This is because, he points out, there are various levels of education in a profession like medicine. One might have a general education in a subject; be an ordinary practitioner of it; or be a master craftsman (1282a3–5). And Aristotle implies that someone at any of these levels can judge even the most expert doctor. In this case, you do need *some* medical training to make this judgment about medical matters. But you don't necessarily need to be as expert a doctor as the doctor whose actions you are judging. There are certain kinds of analytical and subject-area competences that can enable someone to assess even a person who is far more skilled than they are (think of a judge at a gymnastics competition who never reached the heights of the gymnasts whom they are judging). Thus, in certain disciplines and contexts, non-experts may be able to develop the repertoire of skills, habits, and dispositions which can enable them to judge certain scientific claims well, without going so far as being able to make those claims themselves.

But now consider this—and here I open the door to the next part of the talk. That is: even when laypeople do well in identifying the best experts to trust, that doesn't mean that those experts themselves are perfect.<sup>11</sup> On the contrary, we all have a general tendency to what has been called an 'overconfidence bias' in response to the presence of uncertainty.<sup>12</sup> For example, a review article on climate change in *Nature* concludes that as a matter of general human psychology, 'uncertainty breeds wishful thinking' and 'promotes optimistic biases', leading individuals to 'often misinterpret the intended messages conveyed regarding the probabilistic nature of climate change outcomes – and tend to do so over-optimistically'.<sup>13</sup> And being educated in science doesn't put that tendency to rest. Far from it: 'There is clear experimental evidence that both experts and laypeople are systematically over-confident when making judgments about, or in the presence of, uncertainty'.<sup>14</sup>

Moreover, over-confidence in the presence of uncertainty is just one of the many cognitive tendencies and biases that experts and laypeople share. Analyzing the climate-economy system, John Sterman argues that even 'highly educated adults with substantial training in Science, Technology, Engineering and Mathematics (STEM) suffer from systematic biases in judgment and decision-making and in assessing the dynamics of the climate-economy system. There is no reason to believe policymakers are immune to these problems'.<sup>15</sup> These biases, resulting from common heuristics, are now well-known from the pioneering research of Daniel Kahneman and Amos Tversky and their followers. Sterman summarizes them thus:

'We violate basic rules of probability and do not update our beliefs according to Bayes' rule. We underestimate uncertainty (overconfidence bias), assess desirable outcomes as more likely than undesirable outcomes (wishful thinking), and believe we can influence the outcome of random events (the illusion of control). We make different decisions based on the way the data are presented (framing) and when exposed to irrelevant information (anchoring). We credit our personal experience and salient information too highly and underweight more reliable but less visceral data such as scientific studies (availability bias, base rate fallacy). We are swayed by a host of persuasion

<sup>11</sup> This paragraph and the next several are borrowed with minor modifications from Lane, 'Expertise'.

<sup>12</sup> John D. Sterman, 'Communicating climate change risks in a skeptical world', *Climatic Change* 108 (2011): 811-826, at 816.

<sup>13</sup> Ezra Markowitz and Azim F. Shariff, 'Climate Change and Moral Judgement,' *Nature Climate Change* 2 (2012): 243–247, at 244.

<sup>14</sup> M. Granger Morgan and Carnegie Mellon, 'Certainty, uncertainty, and climate change', *Climatic Change* 108 (2011): 707-721, at 709; see also Martin Kusch, 'Towards a Political Philosophy of Risk: Experts and Publics in Deliberative Democracy', in Tim Lewens (ed.) *Risk: Philosophical Perspectives*, 131-155 (London and New York: Routledge, 2007).

<sup>15</sup> Sterman, 'Communicating', 814.

techniques that exploit our emotions and our desire to avoid cognitive dissonance, to be liked, and to go with the crowd...'<sup>16</sup>

This catalogue does not even include other factors that Sterman discusses, such as the general failure to reason in accordance with sound scientific method; the effects of unconsciously processed conditions (e.g., weather) on our judgments; general ignorance; and faulty mental models. Most important for present purposes, Sterman acknowledges that 'Scientists and professionals, not only "ordinary" people, suffer from many of these judgmental biases'.<sup>17</sup> Compare the assessment of geologists attempting to develop methods of expert elicitation to reduce such biases: 'all humans – experts included – are subject to natural biases when trying to estimate probabilities or risks mentally'.<sup>18</sup>

The widespread recognition of cognitive biases in both experts and laypersons may tempt despair about the possibility of overcoming these challenges, but there is a silver lining to this analysis. Scientists are often able to minimize these weaknesses by engaging in learning through the scientific method. Indeed, Sterman suggests that some part of the gulf between scientific experts and laypeople who reject or resist their testimony may arise simply from the fact that scientific experts are engaged in an 'iterative, interactive learning process' in which the latter are not.<sup>19</sup> But Sterman recognizes this is not an irremediable gulf. One possible solution, which Sterman develops for the case of climate change, involves engaging laypeople in a form of reasoning developed by considering 'interactive, transparent simulations of the climate'.<sup>20</sup>

Thus if scientists and the rest of us are subject to the same kinds of cognitive failings, we can also all do the work to do our best to guard against them—and even, conversely, to cultivate the same kinds of epistemic virtues. After all, we are all inquirers.<sup>21</sup> Thus, a common self-awareness, a common engagement in learning (even if not at the same level of epistemic complexity and sophistication), and a common good intellectual character – with habits of epistemic virtue and associated skills – can bridge the capacities of the expert and non-expert. We can all become more self-aware and better inquirers, whatever our level of training.

I've just turned to Aristotle to bolster the Socratic point that laypeople can in some cases reliably assess experts, or at least, decide which ones they have better reason to trust. Now I will draw further on Aristotle to develop a broader argument: how to think about what kinds of decisions democratic publics have to make, and what role experts might play in informing those decisions.

Here, it's useful to recall a quotation that I shared in my fourth Gresham lecture, which was actually on ancient and modern democracy: Athenagoras, a democratic leader in ancient Syracuse, asserted that 'the best judges of what they hear are the many'. That quotation is the key to a basic paradigm about the place of expertise in democracy that remains a good place to start: experts give advice, while the many—the people—judge and decide. Or in other words, we can invoke a distinction between means and ends. On this view, we can avoid the dangers of technocratic rule, but still benefit from technocratic expertise: the people decide on the ends, and then ask scientists to advise on the best means to use to achieve them.

Aristotle developed this basic paradigm in some powerful passages from his work on *Politics*, as well as in his work on *Rhetoric*, about the nature of ordinary judgment. A judgment is a practical assessment of a claim made by someone else or of a state of affairs: it is the assessment of someone who is inquiring into what she should decide or do. The ancient Greeks emphasized the role of the judge in contexts of persuasion which marked their politics, from the assembly to the council to the popular law courts. According to Aristotle, 'we may say, without qualification, that anyone is your judge whom you have to persuade' (Aristotle, *Rhetoric*

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<sup>16</sup> Sterman, 'Communicating', 816.

<sup>17</sup> Sterman, 'Communicating', 816.

<sup>18</sup> Andrew Curtis and Rachel Wood, 'Optimal Elicitation of Probabilistic Information from Experts,' in Andrew Curtis and Rachel Wood (eds.) *Geological Prior Information: Informing Science and Engineering*, 127-45 (London: Geological Society, no. 239, 2004), at 127; see also Debbie Polson and Andrew Curtis, 'Dynamics of Uncertainty in Geological Interpretation,' *Journal of the Geological Society* 167 (2010): 5-10.

<sup>19</sup> Sterman, 'Communicating', 823.

<sup>20</sup> Sterman, 'Communicating', 824.

<sup>21</sup> Frank Fischer, *Democracy and Expertise: Reorienting Policy Inquiry* (Oxford: Oxford University Press, 2009), 160.

2.18, 1391b, trans. Barnes).

So who then, Aristotle asked, is the better judge: the expert maker or the non-expert user?

‘...there are some crafts in which the maker might not be either the only or the best judge—the ones where those who do not possess the craft nevertheless have knowledge of its products. For example, the maker of a house is not the only one who has some knowledge about it; the one who uses it is an even better judge...A captain...judges a rudder better than a carpenter, and a guest, rather than a cook, the feast’. (Aristotle, *Politics* 1282a)

Note that the primary verb at work here is the specific verb for judging (*krinein*: forms at 1282a18, a21), with the verb for knowing (*gignōskein*: forms at 1282a19, a20) being a general one which can mean knowing, but can also mean perceiving, recognizing, or judging, rather than a more specialized verb denoting a specifically theoretical kind of knowledge or understanding. As judges, the users are acquainted with the products of the arts and so are able to judge their merits although they lack the *technē* necessary to produce them (1282a19).

So in cases where people are going to be digging in to what experts produce – digging into a meal as guests at a chef’s feast, or using the product of a shipbuilder to steer a ship – the user is actually better placed to judge the product of expertise than its producer. (This isn’t to say that the producer is a worthless judge: there are still some things that only they may be able to appreciate or understand or do.) Notice that while the captain is another expert, the guest at the feast is definitely a nonexpert. So the argument is meant to apply to both, insofar as they are users of what some other expert has produced.

That points toward a means / ends distinction. The carpenter produces the rudder, but it is only a means to the pilot’s art (which is itself a means to the art of choosing where to go). So, one might say, it’s up to the people who commissioned the ship as a group to decide where it should go and to test its seaworthiness—even though they needed to employ expert carpenters to build it, which is something that most of them couldn’t have done for themselves.

Now the means/ends distinction is certainly important. There are some decisions that should only be made democratically – because it’s up to citizens and their representatives to decide on the inevitable tradeoffs between different values, costs and benefits. This is something that, in the United States, the former National Institutes of Health Director, Francis Collins, came to recognize after the height of the COVID-19 pandemic:

‘If you’re a public health person ... you have this very narrow view of what the right decision is. And that is: something that will save a life. It doesn’t matter what else happens. So you attach infinite value to stopping the disease and saving a life. You attach a zero value to whether this actually totally disrupts people’s lives, ruins the economy, and has many kids kept out of school in the way that they never quite recover from. ... This is a public health mindset, and I think a lot of us involved in trying to make those recommendations had that mindset’.<sup>22</sup>

The basic idea is that citizens remain in control of what philosopher Thomas Christiano calls the ‘non-instrumental values’ of society, while scientists continue to provide the instrumental means – albeit means in which judgments of facts and values are more narrowly intertwined.<sup>23</sup> After all, even if science is not (and cannot be) value free, we still need scientists to provide technical answers to lay citizens’ questions. On this account, so long as scientists continue to act in the interests set by citizens, citizens can remain in control of science policy. As Christiano elaborates:

‘...citizens are essentially in the driver’s seat in the society as long as they choose the basic aims the society is to pursue. By “basic aims,” I mean all the non-instrumental values and the trade-offs

<sup>22</sup> Francis Collins, former Director of the National Institutes of Health (NIH), in Panel Discussion, “A Deplorable and an Elitist Walk into a Bar: Francis Collins and Wilk Wilkinson,” Braver Angels National Convention, Gettysburg, Pennsylvania, July 10, 2023, online at: <https://www.youtube.com/watch?v=W1eAvh1sWiw&t=478s> I owe this reference and many other ideas to my Princeton colleagues Stephen Macedo and Frances Lee, who allowed me to read and reference the 2 February 2024 draft of their forthcoming book, *In Covid’s Wake: The Harm We Did Ourselves and Our Institutions During the Pandemic—And The Lessons We Must Learn* (Princeton: Princeton University Press, forthcoming 2025).

<sup>23</sup> This paragraph and some other material in this lecture is drawn with permission of both co-authors from Cameron Langford and Melissa Lane, ‘Epistemic Ecosystems: rethinking the scientist-citizen division of labor as background for scientific assessments’, unpublished paper presented at Global Assessments Workshop, Berlin, 2015.



between those values. The non-instrumental values can include side constraints on state action as well as goals to be pursued.<sup>24</sup>

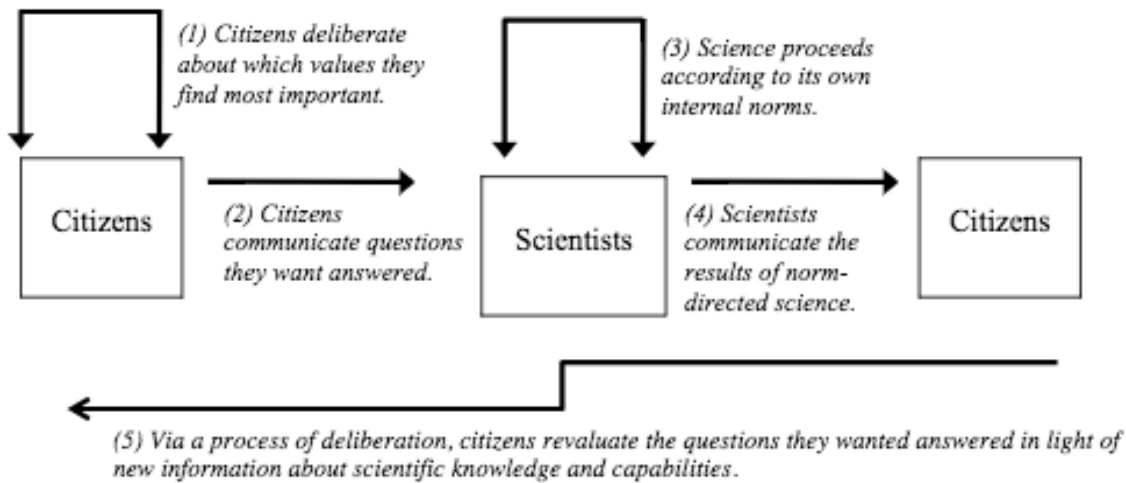


Figure 2 The Means/Ends Division

The bulk of Figure 2 presupposes a straightforward division between ends and means: citizens pick values, scientists communicate the necessary practical information to pursue them. But the bottom arrow, providing a feedback loop among citizens themselves, shows that ends and means are actually intertwined on a continuum. Ends are not set exclusively by picking between values, much less by doing so in a vacuum. Rather, the end that we decide to pursue (like the destination toward which a ship is to be steered) should and often can only emerge from an iterative and interactive learning process: in which potential means are tested against a range of possible ends, and in which a range of possible values is used both to choose objectives and then to assess how well performance against them as worked, and how they might be refined in future.

Indeed, we should think of scientists and other citizens as engaged in an ongoing feedback loop in which means and ends are intertwined (this is broadly a pragmatist picture of how scientific and civic learning work). Figuring out which ends to pursue requires getting a sense of what is feasible or risky; knowing which means to test depends on having a prior sense of what might be reasonable social ends to pursue. And this means that we need institutions to foster this kind of learning on all sides.

How might institutions help us to do this? One model are deliberative polls, advocated by the political scientist James Fishkin. These are somewhat similar to the citizen juries that I discussed in my last Gresham lecture, on ancient and modern democracy. But whereas citizen juries were concerned with evaluating policy proposals, deliberative polls convene small, random groups to discuss expert claims. By 'exposing random samples to balanced information, encouraging them to weigh opposing arguments in discussions with heterogeneous interlocutors, and then harvesting their more considered opinions', deliberative polls provide an example of how deliberative theory could function in miniature.<sup>25</sup> Other scholars, like Alexander Guerrero, have proposed institutionalizing these kinds of polls as a means of policy formation, requiring citizens to serve on topical polls much like Americans are currently required to serve jury duty.<sup>26</sup>

Moreover, the Internet and the news media present an array of options for citizens to interact with scientists, and vice-versa. Within this array, there are a variety of possible roles that scientists and citizens take on. Postdoctoral scientific researchers might be incentivized or required to participate in public forums, learning

<sup>24</sup> Christiano, 'Deliberation Among Experts and Citizens', 33.

<sup>25</sup> James S. Fishkin and Robert C. Luskin, 'Experimenting with a Democratic Ideal: Deliberative polling and public opinion', *Acta Politica* 40 (2005) 284-98, at 287.

<sup>26</sup> Alexander Guerrero, 'The Lottocracy'. *Aeon Magazine*, January 23, 2014. <http://aeon.co/magazine/society/forget-elections-lets-pick-reps-by-lottery>



to become the kind of scientists who can contribute meaningfully to public discussion and understanding (like Gresham's own Professor of Astronomy Chris Lintott). Conversely, citizens can learn to become lay scientists, as it were, participating in crowd-sourced formation of knowledge through activities like the annual 'Big Garden Birdwatch', or the Zooniverse citizen science platform, which Chris Lintott himself organises.

The key in all these domains is to foster the self-awareness and openness to self-criticism that can save us from putting our trust in false prophets, while at the same time saving us from the corrosive skepticism that threatens the use of expertise altogether. In the month in which the Report of the Infected Blood Inquiry was presented to the UK Parliament, the twin needs for both critical scrutiny of the claims of experts, and also for better, more publicly oriented and genuine practice of expertise, which together could have saved so many lives, have never been more evident. Or as Plato's Socrates puts it (as glossed by the scholars Hardy and Kaiser), a true expert '(1) is always seeking the truth and wants to be "free from error" (*Charmides* 171d–172a, *Theaetetus* 170a–179b), and (2) makes caring for common goods the priority in practising her expertise (*Gorgias* 464c–465a, 513d–e, *Alkibiades I* 126a–c)'.<sup>27</sup>

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<sup>27</sup> Jörg Hardy and Margarita Kaiser. 'Expert Knowledge and Human Wisdom: A Socratic Note on the Philosophy of Expertise', *Topoi* 37 (2018): 79–89, at 81.

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