

SCIENCE AND SOCIETY

To Arbitrate or to Advocate?

Nathan E. Hultman

Perhaps there was a time when scientists found it easy to maintain a dispassionate separation from the big political questions of their day, toiling with utmost focus on formulating and investigating questions of theoretical importance without being asked by journalists, politicians, bureaucracies, and interest groups to interpret the “broader impact” of their inquiry and discovery. Although the reality of misty visions of past times can be

debated, it is clear that present-day issues of science and society—climate change, stem cell research, genetically modified organisms, space research, and biofuels, to name just a few—challenge many scientists to contextualize their research in a wider social matrix.

Yet navigating a path of responsible engagement in a loud and contested political context can try the integrity of even the most seasoned researchers; indeed, science is of course sometimes used as a shield for advancing individual political agendas, even by scientists themselves. Moreover, scientists often justify, sometimes under duress, their requests for funding by linking their research to broader societal benefits, even if their research has no such goal. In *The Honest Broker: Making Sense of Science in Policy and Politics*, Roger Pielke Jr. successfully illuminates these challenges to science and scientists. He also poses several reflexive questions that enable researchers to improve their contributions to the public interest.

Pielke (a professor in the Environmental Studies Program, University of Colorado) has contributed extensively to debates on climate change science and policy, especially on hurricane and storm damages. His perspectives on the scientific process and climate change also draw on his training as a political scientist, his familiarity with academic views of the role of scientists in policy, and his experience collaborating with his father, Roger Pielke Sr., an atmospheric scientist. The author’s background gives him a broad vantage point from

which to assess the problems that can arise when bringing scientific expertise into democratic debates.

In formulating his approach, Pielke addresses “scientists who increasingly face everyday decisions about how to position their careers and research in the context of policy and politics.” To simplify his argument, he posits four idealized roles for an individual scientist: the disinterested pure scientist; the science arbiter, who provides expertise on narrowly defined, scientifically testable questions; the honest broker, who provides a suite of scientifically informed policy options (in much the same way that a travel guide provides information on restaurants or hotels in unfamiliar territory); and the overt advocate.

Pielke’s framework provides a helpful starting point for investigating factors that complicate the science-society relationship. It highlights the question of what role individual scientists should play in a well-functioning democracy: Should a scientist engage in explicit interest-group politics in the Madisonian tradition or provide informed alternatives to politicians and decision-makers? It also illuminates different views of science in society: a linear model, whereby knowledge is created in the lab, packaged by scientific experts, and then handed off to politicians to do what they will; a stakeholder model, in which scientists-as-experts work to understand the interests of different groups and the users of knowledge themselves have some role in its production. Pielke has structured his four types such that the combinations of these two factors span the space of possible roles. The framework also incorporates aspects that explain why some debates tend to become vitriolic—for example, whether the decision at hand is characterized by consensus on values and low uncertainty, whether it is connected to a policy choice, and whether the chosen role of the scientist acts to restrict or expand possible choice for policy-makers. Pielke deftly shows how scientists’ selections among these options can affect outcomes.

In making his case, Pielke illustrates possible missteps, focusing on researchers who

claim to be acting in a nonpartisan way while simultaneously seeking to reduce society’s scope of choices. He notes with obvious regret that “science has come to be viewed as simply a resource for enhancing the ability of groups in society to bargain, negotiate, and compromise in pursuit of their special interests.” He also rues that “political battles are played out in the language of science, often resulting in policy gridlock and the diminishment of science as a resource for policy-making.” His appropriate distaste for such “stealth issue advocates,” however, occasionally strains the framework—in one example, Pielke says that a few well-known scientists “served as Stealth Issue Advocates when they claimed that [Bjørn] Lomborg has gotten his ‘science’ wrong, and because he has his ‘science’ wrong then necessarily those who accept his views of ‘science’ should lose out in political battle.” Pielke’s emphasis is specifically on the link between political argument and science, but one wishes for more guidance on

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by Roger A. Pielke Jr.

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Government flanked by Magnanimity and Prudence. Detail from Ambrogio Lorenzetti’s *Allegory of Good Government*, Palazzo Pubblico, Siena, Italy (1338–39).

how scientists might have better engaged in public disagreements over competing scientific approaches.

Though some of his examples seem peripheral (such as an extended analogy to decision-making under uncertainty within the Bush doctrine of military preemption), Pielke provides useful and thought-provoking metaphors for discussing how best to engage in public debate. Indeed, he urges a more subtle view of this process precisely to improve discussions among the many stakeholders who have an interest in a better world: “The scientific community should ... maintain its involvement in

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contested political issues rather than withdraw, as was historically the case when scientists sought to be ‘value free’ and removed from practical concerns. It makes no sense to try to return to a bygone—and largely mythical—era when science was thought to be separate from politics.” While *The Honest Broker* speaks to the academic literature of science in society—in particular on decision-making under uncertainty and on how scientists themselves can politicize science—the book’s direct language and concrete examples convey the concepts to a wide audience. By categorizing different roles in the often vexed but necessary relations between scientists and their social world, Pielke clarifies choices not only for scientists but also for the diverse members of democratic society, for whom scientific perspectives are an essential component of better policy.

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NEUROSCIENCE

Wittgenstein and the Brain

Barry Dainton

“Whereof one cannot speak, thereof one must be silent.” With this now-famous line Ludwig Wittgenstein brought to a close *Tractatus Logico-Philosophicus*, his first great work (1). The lines that bring to a close his second great work, *Philosophical Investigations* (2), are rather less well known; they include: “The confusion and barrenness of psychology is not to be explained by calling it a ‘young science’ ... in psychology there are experimental methods and conceptual confusion.” The alleged confusion stems from certain prevalent ways of thinking about the mental realm that Wittgenstein held to be disastrously misguided. These same ways of thinking are also prevalent, to equally disastrous effect, in contemporary neuroscience, or so philosopher Peter Hacker and neuroscientist Maxwell Bennett argue over the 450 or so Wittgenstein-inspired pages of *Philosophical Foundations of Neuroscience* (3). *Neuroscience and Philosophy*, the present (and much briefer) work, is a useful introduction to their position. It contains several extracts from *Foundations*, together with critical surveys by John Searle and Daniel Dennett—derived from an “authors and critics” session at

the 2005 American Philosophical Association meeting—and responses from Bennett and Hacker (henceforth “B&H”).

There are several strands to B&H’s case, some more contentious than others. Quoting from the like of Blakemore, Crick, Edelman, Frisby, Marr, and Young, they show that neuroscientists commonly talk of subsystems within the brain storing maps, representations, and information; forming hypotheses; or passing “symbols” and “messages” to each other. Much of this talk, they argue, is disguised nonsense. To take just one example, for something to be a map in the ordinary sense of the term, in addition to certain similarities of structure between the map and what it depicts, there are also rules and conventions that allow someone who understands them to know what parts or aspects of the world the map is representing. Because so-called neural maps are typically not associated with such conventions, it is wrong to suppose they “represent” in the way of ordinary maps, although some neuroscientists talk as if they do. Dennett complains that B&H are too conservative by far when it comes to recognizing legitimate and fruitful extensions to the way terms are normally used—such extensions are commonplace in all sciences. He may well be right. But B&H are also right to insist that such extensions must be carefully considered. (Indeed, Dennett’s own willingness to ascribe beliefs and intentions to systems as simple as thermostats strikes some as an ill-considered extension of ordinary usage.)

So far so good, but what B&H themselves describe as their main line of argument is more problematic and less obviously of potential use to practicing neuroscientists.

Although Sherrington, Eccles, and Penfield may have subscribed to variants of mind-body dualism, contemporary neuroscientists are generally of the opinion that our mental lives are material in nature and completely dependent upon neural goings-on in our brains. Yet B&H claim that the field remains committed to a pernicious form of dualism. Why so? Because these same neuroscientists hold that brains can think thoughts, have experiences, take decisions, hold grudges, remember past events, and so forth. B&H claim this too is just nonsense. For it is not brains that have thoughts and experiences, it is human beings—i.e., whole human animals. B&H do not deny that our mental lives depend on our brains, but they insist that to ascribe mental powers to brains is as senseless as ascribing

mental powers to numbers.

This claim will strike many as bizarre in the extreme. What are their grounds for making it? Their reasoning derives from Wittgenstein, who wrote: “Only of a human being and what resembles (behaves like) a living human being can one say: it has sensations; it sees, is blind; hears, is deaf; is conscious or unconscious.” Like Wittgenstein, B&H hold that when it comes to the correct ascription of mental states and processes, it is a subject’s capacities for publicly observable behavior that are significant, not what is going on inside the subject (or her or his mind or consciousness). Simplifying only a little, because brains are incapable of the relevant forms of behavior—they can’t walk, talk, flinch, point, or run around—it is senseless to ascribe mental attributes to them.

This neobehaviorist conception of the mental is not obviously correct, to say the least. The idea that conscious states possess an inner, subjective and private character—a character that is essential to their being conscious states at all—is a very natural one. As Searle notes in his contribution, Wittgensteinians can plausibly be seen as conflating the external (behavioral) evidence for consciousness with the existence of consciousness. What B&H offer here on these matters is not compelling; they say a good deal more in *Foundations*.

This much-disputed topic aside, B&H’s attitude to the brain is vulnerable to a more straightforward objection. I am currently able to think. It seems very plausible to think that I would continue to have this ability if I were reduced to the condition of a healthy living brain (maintained by life-support machinery, say). If I am essentially a human being, as B&H suggest, then I am still a human being in my diminished condition. But because I am now indistinguishable from my brain—we are composed of precisely the same atoms—how can it be senseless to say that brains can think? If there’s nothing to distinguish me from my brain, won’t my brain be able to do everything I can do?

References

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