

THE SOCIAL AND POLITICAL CONTEXT OF SCIENCE

Stuart A. Umpleby

Research Program in Social and Organizational Learning
The George Washington University
Washington, DC 20052
umpleby@gwu.edu

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Stuart Umpleby • George Washington University, USA • umpleby/at/gmail.com

Upshot: Second-order science primarily focuses on perception and cognition. However, social contexts, including political interpretations of science, are also included because they are part of the interpretations of the observer. To understand a scientific theory, it is helpful to understand neurophysiology, the history of the individual and the social and political context in which the scientist was operating.

1. In their target article, Philipp Aufenvenne et al. hope that second-order science will ameliorate the stridency of the climate change debate. In my opinion, second-order science, by pointing out the limitations and biases of an observer, can help people to be more tolerant of and more patient with the views of others. However, the importance of the debate and the strong interests of actors involved in the discussion will sustain debating methods that go beyond a normal scientific conversation.

The debate over climate change

2. Just as conceptions of scientific conversations have been changing, conceptions of public conversations have also changed. Consider the fields of advertising, propaganda and political campaigns. Advertising resulted from the combination of a market economy and mass media – newspapers and magazines, radio, television and now the internet. In advertising, the criterion for success is not truth or objectivity but rather whether customers buy the product. It was not long before the methods of advertising were applied not just to selling soap or cars but also to electing political candidates (McGinniss 1969).

3. World War II and the Cold War led to numerous innovations in propaganda. (Brown 1975) Propaganda during wartime is different from advertising in that the reputation of the source (e.g., a company advertising a product or a candidate running for office) need not be protected. Complete hostility is already assumed. Methods of propaganda can be classified as white, gray or black on two dimensions – the message and the source (see Table 1). The message can be truthful (as perceived by the source), a mixture of truth and falsehood, or a deliberate lie. The source can be truthfully given, obscured, or attributed to an incorrect source. Just as advertising has made the transition from selling products and services to political campaigns, so too have the methods of propaganda sometimes entered the political arena when some stakeholders feel very strongly about the consequences of the debate.

		MESSAGE		
		WHITE	GRAY	BLACK
SOURCE	WHITE	Truthful message	Mixed message	False message
		Source is given	Source is given	Source is given
	GRAY	Truthful message	Mixed message	False message
		Unclear source	Unclear source	Unclear source
	BLACK	Truthful message	Mixed message	False message
		False source	False source	False source

Table 1. Types of propaganda

4. Restrictions on the burning of fossil fuels threaten the profits of large industries, and not offering flood insurance for homes and businesses in some areas threatens property values. Furthermore, relocating cities and farms, even if done over a period of decades, is psychologically disruptive and can lead to denial. Hence, human caused climate change is not a normal scientific debate and we should not be surprised if methods of discussion go beyond what is common in the scientific community. Table 1 shows that the possibilities for styles of communication are larger than just the top left square.

5. The opinions of scientists have been politically important for hundreds of years. Gallileo was placed under house arrest. Copernicus decided to publish his conclusions posthumously. Some geneticists in the Soviet Union who resisted the views of Stalin were murdered (Medvedev 1969). In the United States, scientists who disagree with the policies of the administration not infrequently become whistle-blowers. When scientists engage in policy relevant research, they are not only thinking about theory, methods and data. They are also estimating the consequences for their careers of reaching “politically incorrect” conclusions. Hence, second-order science can encompass issues that go beyond scientific uncertainty and humility about what scientists can know. When vital interests are involved, the issue for stakeholders becomes how to shape the information environment so that political decisions will favor the interests of particular groups – for example, coal producers, or those who live near power plants, or the general public.

6. These remarks were stimulated by the example of climate change. If we turn our attention to the possibility of a second-order science, we are dealing primarily with academic traditions, egos and preferences.

The discussion of second-order science

7. Second-order science assumes that science is an instrument in the regulation of social systems and that human beings are purposeful systems. Claiming that science operates outside of social systems or that the purposes of scientific observers will not affect their observations is not believable in cases where strong commercial or political

interests are concerned. Second-order science suggests that we should recognize the personal and social context of observations and research, acknowledge these and, when appropriate, discuss them in research reports. We already do this to some degree. Including brief biographies is a step in this direction. Also, a common practice is to acknowledge the funding source for a study. Usually this is done to give credit to the funding organization rather than to indicate the bias or perspective underlying the research. But the latter purpose is served as well. Such disclosures may become more common (Morgan 1983). In the case of climate change, or the earlier debate over the safety of cigarettes, knowing who funded a study can be a better indicator of the conclusions of a report than knowing the theory, method or data used.

8. Advocates for a realist philosophy often argue that any move away from objective science opens the door not just to emotions but to political or self-serving arguments, apparent or disguised. However, if scientists do not acknowledge political interpretations and uses of science, these interpretations will be discussed in a forum separate from science, usually by journalists or “watchdogs” such as the Union of Concerned Scientists. Second-order science suggests that the social and political context is relevant to the science itself, that interpretations and their policy implications are not

separate from science. See the cartoon below.



[footnote]

9. One hears two arguments against second-order science. One claim is that second-order science would weaken the objectivity and authority of science and hence undermine the effort to create reliable knowledge. A second claim is that by pointing out the perspectives, including interests, of observers and institutions, one legitimizes a no-holds-barred contest over scientific results, at least as perceived by the public. A reply is that the interests of stakeholders need to be known and discussed. Second-order science would acknowledge and comment on the psychological, social and political

context of scientific research, when needed, in order to explain the implications of a report.

10. There are several audiences for scientific research. First, the scientific community shares an understanding of research methods and understands the various sources of uncertainty in results, but scientists from one field may have little understanding of the methods in another field (Umpleby 1990). Second, decision-makers, who commonly have a background in law, may know little about a specific scientific issue. Usually they will listen to the judgment of scientists but will also be influenced by lobbyists and campaign supporters. Third, science journalists will listen closely to what scientists say and try to communicate results and uncertainty to the general public. Fourth, the public will be influenced by many messages about a scientific issue from scientists, journalists, political leaders and affected interest groups.

11. It is important to understand that for several of the actors in a social system, the criterion of success is not truth, certainty or reliable results but rather whether public decisions are consistent with one's interests. Any means of communication that furthers that goal will be favored and considered legitimate by some people. An expanded conception of science would give scientists a larger regulator (in terms of requisite variety) for contributing to the wise management of society.

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The author

Stuart Umpleby is professor emeritus in the Department of Management and Director of the Research Program in Social and Organizational Learning in the School of Business at The George Washington University. He has taught courses in the philosophy of science, cross-cultural management and systems thinking.

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