Why Scientists Behave Scientifically

In the midst of all the debunking of science that is currently fashionable, we tend to lose sight of the fact that science has been and continues to be more successful than any other social institution in fulfilling its stated goals. Of course, science does not have to work all that well to be more successful than any other social institution (such as Congress) in attaining its stated goals. But much more can be said on behalf of science. If the primary goal of science is to increase our knowledge of the natural world, it has been successful beyond anyone’s wildest dreams. I admit that very little of this knowledge has found its way into the consciousness of very many human beings. Only a tiny proportion of the human race understands relativity theory, let alone quantum theory, and most people who think that they understand evolutionary theory profoundly misunderstand it. Even so, within its limited domain, science has been extremely successful.

Scientists would like to keep their discoveries to themselves, but also want it to appear as original as possible. Showing that it flows naturally from the well-established work of one’s contemporaries is likely to increase the likelihood that one’s fellow scientists will take it seriously enough to incorporate it into their own work. In general, if a scientist is sparing in citing the work of others, these other scientists are likely to return the compliment. In short, scientists trade credit for support and vice versa. For each opportunity to cite, a scientist can have one or the other, but not both.

Of course, mutual citation can be found in a variety of professional institutions, but what distinguishes science from other professions is that scientists do not operate with a notion of truth that is much easier to apply within science than outside it. In fact, one of the defining characteristics of science is the ability to test one’s views about the natural world in a reasonably direct way. Although scientists do not test each other’s results as often as some naive commentators seem to think that they should, replication does occur in science. One of the strengths of science is that not all results need to be tested. Scientists are not so fast and dirty, while others produce unreliable work. Some errors are more understandable, more excusable than others, but any error impedes the research of anyone who uses it. Failure to include appropriate citations hurts the careers of the scientists who are not cited. Erroneous results hurt the careers of everyone who uses them, and they are very likely to retaliate.

Thus, science can be viewed as a self-policing system of mutual exploitation—or cooperation if one prefers. It works only when individual and group interest coincide. As scientists are increasingly able to make money off their discoveries, the same sorts of financial considerations will increasingly characterize science.2 Whenever scientists serve two masters, complications will be made, whether these masters are government, industry, or mammon. Throughout most of the history of modern science, scientists have behaved extremely well as far as determining truth is concerned,3 not because scientists are inherently superior beings, but because it has been of their own best self-interest to do so. Many scientists may be excellent candidates for sainthood, but one reason why science has worked so well is that scientists need not be saints to contribute to it. As the fathers of our country noted, the “best security for the fidelity of mankind, is to make interest coincide with duty.”4

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1. For a fuller discussion of this quotation, see D. Dennett, Darwin’s Dangerous Idea (Simon & Schuster, New York, 1995) p. 324.
3. As the frequency and bitterness with which priority disputes are fought amply shows, scientists are not so virtuous when it comes to assigning credit. Scientists are also not quite as concerned with the good of mankind as numerous public declarations would have us believe.