THE GREAT IDEAS ONLINE

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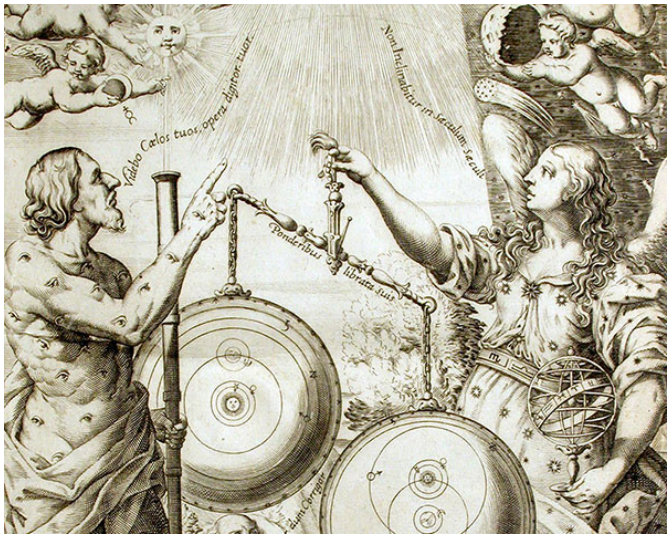

Fronstispiece from New Almagest (1651), by the Italian astronomer and Jesuit priest Giovanni Battista Riccioli.

THE VIRTUE OF SCIENTIFIC THINKING

Steven Shapin

Can science make you good?

Part 2 of 2

So natural science without the capacity of moral uplift, and grown-up scientists, so to speak, without moral authority, are—in historical terms—recent creations. Both the disenchantment of the world and the supposed invalidity of inferring ought from is derive from the historical development of a conception of nature stripped of the moral powers it once possessed. That development reached its culmination in the science and metaphysics of Darwin and the scientific naturalists of the late nineteenth century. Their modern conception of nature could not make those who studied it more moral than anyone else because no sermons in stones were to be discerned. Nature, said the great nineteenth-century biologist T. H. Huxley, "is no school of virtue."

The insistence that science cannot make you good, or make the scientist into a moral authority, flowed from a natural philosophical position: there are no spiritual forces operating in nature and there is no divine meaning to be discerned in nature. That is to say, Weber was making a sociological statement about what belongs to certain social roles, but he was doing so by way of historical changes in science and metaphysics.

This attitude had significant ramifications. Sometime between the beginning and the middle of the twentieth century—especially in America but in other settings too—the idea of the scientist shed its remaining priestly associations, and a presumption of moral specialness gave way to moral ordinariness. There was no single cause of this change; shifting conceptions of the world that scientists interpreted had much to do with it. But it was accompanied by notable developments in the nature of the scientific career, in the social relations and cultural standing of the scientific community, and in changing academic and lay ideas about what sort of thing science was and what it was for.

Since WWII, scientific inquiry has increasingly merged with the goals of power and profit.

First, there were a lot more scientists by mid-century. The growth in those numbers was so remarkable that in the 1960s one sociologist predicted it would have to stop soon lest there be two scientists for every man, women, child, and dog in the country. In a demographic sense, the scientific career was becoming more normal and less of an oddity.

Second, the process of transforming scientific research from a calling to a job, from an amateur to a professional pursuit, was substantially completed in the twentieth century. Darwin never received a salary for his work. Even after the Second World War, and the increasing inclusion of American scientists in the materially comfortable middle classes, there were still researchers who expressed concerns about the rise of professionalism and the decline of scientific asceticism: the "true scientist," the cancer researcher Frederick S. Hammett wrote in Science, is "only concerned with following his vocation." And in the mid-1950s the physicist Karl Compton said of scientists in general, "I don't know of any other group that has less interest in monetary gain."

Third, by the early twentieth century, scientists were increasingly employed by research laboratories attached to large industrial corporations and government establishments, often with ties to the

military. From the 1940s, American sociologists were beginning to give accounts of something newly designated as "the scientific community." And while Merton discerned in the "norms" of this community many of the values of a liberal, meritocratic, and open society, he insisted that there is no "satisfactory evidence" that scientists are "recruited from the ranks of those who exhibit an unusual degree of moral integrity." He urged that structural norms were not to be confused with psychological dispositions.

Finally, by the early 1960s, Thomas Kuhn's picture of "normal science" portrayed scientific activity not as an open-minded philosophical quest but as puzzle-solving—the extension and application of existing paradigms. To the shock and indignation of some, Kuhn argued that being a scientist involved obedience to "dogma" and a narrowing of perception. Science remained, of course, the most reliable knowledge we had, but whatever moral authority might follow from regarding science as uniquely free of prejudice was—for those persuaded by Kuhn—no longer available.

In 1961 President Eisenhower's Farewell Address identified the "military-industrial complex" as a new threat to both democracy and the integrity of science, further reflecting the distance science had traveled from an age when it was presumed a pursuit of special moral status. Senator J. William Fulbright's later expansion to the "military-industrial-academic complex" recognized that universities were no longer to be thought of as disengaged ivory towers; they had become crucial resources for both the economy and the national security state. Hiroshima and the Cold War arms race propelled the issue of the social responsibility of science into prominence. Only when science had something terrible for which it might be held accountable could there be a serious debate about whether scientists were the sort of people who could or should take moral responsibility for the knowledge and artifacts they produced. Scientists had, for the most part, given up asserting their moral superiority; now, many of them argued that scientists should not be thought of as worse than anyone else. Robert Oppenheimer worried that he had "blood on his hands," but many other scientists insisted that Hiroshima was not their fault: they were following democratically legitimate orders.

Post-World War II science had new power and enjoyed new scope. One measure of its enormous success was the extent to which it had come to be enfolded in the everyday institutions and practices of government, production, and war. Science's goals were increasingly identified as their goals; its ways of doing things, their ways. One consequence is that a great deal of scientific inquiry has

merged with institutions whose goals are presumed to include profit and power, not the disinterested search for truth—and certainly not moral uplift.

Much of the historical distinction between natural philosophy and mathematics reappears in more recent times as that between science and technology, the former aimed at knowledge for its own sake and the latter at power and control. Not so long ago—as evidenced by Weber's 1917 lecture—this distinction was a matter of insistence: science was said to be misunderstood and demeaned by conflation with technology. Now, however, scientists and their paymasters work hard to identify science with technology, wanting nothing more than to have the authority of science supported by the utility of technology. This is one of the more visible signs of the folding of science into normal civic sensibilities. But when you model the search for knowledge on the search for power, you disrupt the historical association between the scientist and the priest and, substantially, between the idea of science and the idea of moral uplift.

Breaking that association has had its advantages. There are still many millions of Weber's "big children" around who think that nature is a divine creation and that its study yields moral lessons, but few of them are now to be found in university physics and chemistry departments. (The disenchantment of the world looks more plausible within the confines of research universities than it does off campus.) So accepting that science, of course, cannot make you good is just an acknowledgment of the world's disenchantment and of the massive achievements of amoral modern science. With the existentialists, "grown-ups" now recognize that solutions to problems of meaning and morality can come only from us and not from above—and certainly not from scientists. Morality cannot be outsourced.

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Writing after World War II, Oppenheimer warned against thinking of scientists as having the answers to all questions or the power to solve them. If scientists were indeed the stewards of a unique, coherent, and powerful method, that stewardship showed, at most, in a certain modesty of manner and judgment, notably including humility about the scope of their knowledge. "Science is not all of the life of reason; it is a part of it," he wrote. Scientism—the tendency to think one could extend scientific method everywhere and thereby solve problems of morality, value, aesthetics, and social order—was just sloppy thinking.

The scientism Oppenheimer warned against had a history. It traces back to nineteenth-century social Darwinism and the advertised reduction of morality to biology. This was exactly the sort of reasoning the naturalistic fallacy targeted—the notion that what was moral could be rendered in terms of what biological evolution had formed us to do or to feel. So if it was natural for us to war with each other in order to pass on characteristics to our offspring, then a moral problem was solved—that was what we should do. And if it was natural for us to cooperate or to behave altruistically to related or non-related others, then that too was what we should do. Moral instincts or inclinations were unveiled as natural phenomena, amenable to the methods and concepts of natural science. So-called evolutionary ethics bid to give a scientific solution to such questions as "What ought we to do?" and "What is moral?"

This Victorian scientism had a future, and it now has a substantial present. In the modern American academy and in intellectual publishing, scientism, and specifically the redefinition of moral problems as scientific problems, is resurgent. Moral problems are not so much solved as dissolved. One speaks of moral problems as *une façon de parler*, a regrettable modern survival of a discredited dualism. Science assumes, or reassumes, its moral role by showing that traditional moral authorities are naked, and that what counted as moral problems are best—even only—addressed by the resources of the scientist. Science, it is now claimed, will show us what is good and how to live the good life—and if it does not now have the ability to do so fully and effectively, then we should rest assured that it soon will. Science will cure problems of moral relativism, and it will reveal the objective truth of some set of moral positions as opposed to fraudulent others. Morality, neuroscientist Sam Harris writes, "should be considered an undeveloped branch of science," and science, he says, "can determine human values." The cognitive scientist Steven Pinker moves from a bet about the future to a confident, if qualified, statement of current realities:

> The worldview that guides the moral and spiritual values of an educated person today is the worldview given to us by science. Though the scientific facts do not by themselves dictate values, they certainly hem in the possibilities. By stripping ecclesiastical authority of its credibility on factual matters, they cast doubt on its claims to certitude in matters of morality.

According to this newly confident scientism, science is the only bit of culture that can make you good because it trumps all the others—religion, traditional ethical codes, common sense. Or it shows

them to be nonsense. Or—with or without awareness of the irony—it brands them immoral: religion is a "God delusion," licensing prejudice, servility, and slaughter, all of which are morally wrong.

But there are several reasons why the ambitions of the new scientism may be self-limiting. Those who speak in the name of nature must face the fact that nature has never spoken with one voice. Different scientists draw different moral inferences from science. Some have concluded that it is natural and good to be ruthlessly competitive; others see it natural to cooperate and trust; still others embrace the lesson of the naturalistic fallacy and oppose the project of inferring the moral from the natural. That was the basis of T. H. Huxley's skepticism in 1893:

> The thief and the murderer follow nature just as much as the philanthropist. Cosmic evolution may teach us how the good and the evil tendencies of man may have come about; but, in itself, it is incompetent to furnish any better reason why what we call good is preferable to what we call evil than we had before.

Nor does the new scientism solve the long-standing problem of whom to trust. Just like every modern scientist, the advocates of the new scientism do what they can to sell their wares in the marketplace of credibility. And here the new scientism, for all its claims that there is a way science can make you good, shares one crucial sensibility with its opponents: having secularized nature, and sharing in the vocational circumstances of late modern science, the proponents of the new scientism can make no plausible claims to moral superiority, nor even moral specialness.

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Resurgent scientism is less an effective solution to problems posed by the relationship between is and ought than a symptom of the malaise accompanying their separation. So there is a price to be paid for the of-courseness of the view that scientists are morally no better than anyone else, and among those paying it are scientists themselves. The idea that scientists are priests of nature, that they are morally uplifted by the study of God's Book of Nature, may be dead—as Weber suggested, that is central to what modernity means—but the question of whether scientists are selflessly dedicated to truth remains alive and is central to contemporary tensions surrounding scientific expertise and public policy.

If the disinterestedness and selflessness of scientists can be no

more relied on than that of bankers, then scientific conclusions should be no more trusted than financial derivatives, and science should be policed in the same way as the banking industry. Regimes of surveillance and control are a modern indication of distrust. Yet science, like the financial system, works on credit, and, while there is excellent sense in subjecting both scientific and financial conduct to a degree of regulation, there is no sense at all in thinking that surveillance can ever eliminate the need for trust. If you don't find scientists trustworthy, if you think of them as mere servants of power and profit, then the ultimate price to be paid is that you'll have to do the science yourself—and good luck to you in making your findings credible.

So the cost of modern skepticism about scientific virtue is paid not just by scientists but by all of us. The complex problems once belonging solely to the spheres of prudence and political action are now increasingly conceived as scientific problems: if the global climate is indeed warming, and if the cause is human activity, then policies to restrict carbon emissions are warranted; if hepatitis C follows an epidemiological trajectory resulting in widespread liver failure, then the high price of new drugs may be justified. The success of modern is-expertise has propelled it powerfully into the world of ought-judgment.

That is why there can be no glib "of course" about discarding the idea of scientific virtue. We need to trust scientists, but we need scientists to be trustworthy. 🕮

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