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Articles

The Faith of Science

John Staddon

All actions save reflexes are guided by a motive, a goal the action is intended to achieve. The practice of science is guided by motives that are the topic of this article. If science is essential to civilization and some motives are essential to science, perhaps the values they reflect are ones we can all agree on.

Where do motives come from? Motives serve objectives such as self-preservation, wealth, or social status. Each objective represents a value. Sometimes the value is obvious: a search for money means you like money; philanthropy means the donor values art or the alleviation of poverty—and having esteem in the eyes of his countrymen. Other values are less obvious: why do daredevils take risks? Why do some people cause harm to innocents? Why did Winston Churchill, George W. Bush, and Hunter Biden become artists?

Some values are innate; others are provided by culture. The Christian religion provided core moral values in the West for several centuries, but in the last few decades, or perhaps ever since Darwin, it has lost its power. Religious sects remain, but are much divided and many Christians seem to be absorbing the values of secular humanists, who believe their values, unlike the values derived from religion, are somehow objectively verifiable. Secularists promise to provide values without superstition—no more reliance on unprovable deities and improbable historical events.

They are wrong.[1] Secularists who believe that science can substitute for religion miss philosopher David Hume's point, that without a motive facts by themselves lead to no action: "Reason is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them."[2]

1 John Staddon, "Values, Even Secular Ones, Depend on Faith: A Reply to Jerry Coyne," *Quillette,* April 28, 2019.
2 Quoted in John Staddon, *Science in an Age of Unreason* (Regnery, 2022).

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A respected secular-humanist colleague begged to differ, writing to me in rebuttal:

> On Hume, I acknowledge his narrow technical point that there is no strictly logical reason to prefer a scratch on one's pinky to preventing the genocide of millions (an implication of his observation that there is nothing strictly rational about preferring pleasure to pain or health to sickness), but once you grant that we do prefer pleasure to pain, it's not that hard to derive the implication that one ought to prevent genocide.

Yes, Hume was right but, says this critic, all must "grant that we do prefer pleasure to pain," whence much of morality follows. But of course, not everyone agrees. Would everyone take the "blue pill" for a lifetime of illusory bliss or the red pill for a life of risky reality? Red-pill reality-lovers might disagree with blue-pill pleasure seekers, but we cannot say they are irrational. As for genocide, hundreds of thousands, millions even, of religious zealots are perfectly happy to cry "death to infidels." Not everyone, always, objects to genocide. "Martyrs" and heroes seek pain over pleasure and many medical pioneers tried out painful procedures on themselves. In other words, even something so apparently universal as preferring pleasure over pain has its dissenters. It cannot automatically, "rationally," serve as a universal value from which others can be deduced.

Hume's distinction between fact and passion is easy to forget since some facts seem to cry out for action. The point is that facts—of science or simply of experience—are like a map: they can show how to get to a destination. They cannot choose the destination. They provide means, not ends. The facts of science cannot provide a set of values by which to live.

So can science ever be a moral guide? Yes, if we begin by valuing science in and of itself, as an activity. If science is indispensable to civilization, then those values which permit it to advance must also be important. In order to *do* science there must be motives and values. These cannot be proved by science. They are not themselves scientific facts; they come from elsewhere. We are free to believe in them, as the West in general has for the past three-hundred years, or not, as most of the world did and, in some cases, still does not. Since science is essential to modern civilization, it is perhaps with these values that we should begin to

recover the fading faith that once sustained it. To that end, here are some values that make science possible.

Beliefs That Make Science Possible

Truth

Science is a search for verifiable truth. *Verifiable* because "personal truth," "lived experience," etc. will not do. *Standpoint epistemology* is incompatible with science. Science cannot proceed without a belief, unrecognized or even incoherent, that nature has some fixed properties, independent of the vagaries of different observers, which the scientific method can uncover.[3] This belief is a matter of *faith*: faith that an understanding achieved yesterday will still hold today; and that an apparently capricious process today may yield to our methods tomorrow. Yet, some phenomena may be genuinely random and as Hume also pointed out, induction is not proof. The fact that something worked many times in the past is not proof that it will work next time. We nevertheless accept order and stability as matters of faith that allow science to proceed.

It is inconceivable that science could be carried on without belief in some fixed truth. It is hard to imagine a search for truth without a faith that there is a truth to be found. A corollary is that truth must be worth finding, valuable in and of itself. All of this is necessary to do science, but cannot be proved by science.

Curiosity

Belief in the value of verifiable facts is inseparable from the curiosity that leads us to seek them out. Not all cultures favor untrammeled curiosity,[4] yet without it, science cannot advance. "How do they know?" is basic to science. Of course, much must be taken on trust, the individual cannot test every belief. He must sometimes rely on authority or consensus. There is no rule to help him decide. But if a claim is in doubt, inquiry is always justified.

3 See, for example, John Staddon, *Scientific Method: How Science Works, Fails to Work or Pretends to Work* (Taylor and Francis, 2017).

4 There is a wonderful passage in Lawrence James's 1998 book *The Raj: The Making and Unmaking of British India*. (New York: St. Martin's Press), 173, where a "liberal-minded" Brahmin, given a microscope by an English gentleman, soon destroyed it "telling his friend that what he had seen had left him 'tormented by doubt and perplexed by mystery' to the point where he imagined his 'soul was imperiled.'" Curiosity is not always favored even by cultures that are far from primitive.

Fact vs. passion

Some facts point to action: a new disease demands a cure, an impending flood demands rescue, a newly discovered toxin requires warnings and an antidote. "Science studies" star Bruno Latour famously said, "To state the fact and to ring the bell is one and the same thing. No amount of naturalization will clean this little statement from being read as an attribution of responsibility that requires action and probably a fight." Latour claims that the moral and the factual are inseparable. Too many scientists and scientific organizations believe him, even though the ability to separate fact from value, the fact from the bell it supposedly rings, is essential to science. Facts are the business of science; the actions to which they may point are the business of ethics, religion, and politics—informed by science, to be sure—but not part of science. A functioning scientist must be able to separate passion from fact: "A scientific man ought to have no wishes, no affections, a mere heart of stone" in the words of a supreme scientist, Charles Darwin.[5]

Faith in a Stable Natural Order

Weather changes from day to day, but we do not infer that the laws of physics have changed. We may get different results from the same experiment on different days, but we blame the experimental procedure or our own misunderstanding, not a variable nature. This was not always obvious. Some religions teach that nature, in the form of a supreme being or beings, is in fact capricious.[6] Only if God is rational and orderly does it make sense for a believer, such as Isaac Newton, and many other Christian scientists, to search for order. Without faith in a stable natural order, science has no point.

Honesty

Knowledge cannot be acquired without honesty. The facts must be honestly reported and arguments must not be consciously false.

Open debate

Science is a social activity. For every Isaac Newton "voyaging through strange seas of thought alone" there are hundreds of scientists, especially in non-mathematical areas, who arrive at truth by discussing facts and reasons

5 Letter to T. H. Huxley (July 9, 1857).
6 See Hillel Ofek, "Why the Arabic World Turned Away from Science," *The New Atlantis* (Winter 2011).

with others. Open debate is essential to science. The ability to separate facts from the emotions they arouse is essential to free, productive discussion.

Sharing

A scientist must be willing to share his discoveries. When and how this is done has varied from time to time and is a practical as well as a moral issue. The many problems in this area—incentives, priority, negative results—mean that the scientific community has yet to reach a consensus. But ultimately, a scientific result must be shared.

Values Opposed to Science

Some values are either opposed to science or represent a misleading view of what science is.

Consensus

John Ziman many years ago highlighted the social dimension of science.[7] He pointed out that scientific fact is established through the achievement of a scientific consensus. But consensus is not itself a scientific value. Truth often leads to consensus, but the reverse is not true. The way consensus is achieved is what matters. Facts and arguments are legitimate persuaders. The unanimity of a crowd means nothing if each individual has not satisfied himself of the cogency of the position he is supporting.

The fact that true scientific facts often gain universal assent seems to have led some "science studies" types to "affirm the consequent": because truth often leads to consensus, consensus implies truth. "If it is true, most scientists will accept it" is not the same as "scientists accept it and therefore it is true." Unfortunately a consensus can sometimes be attained by non-scientific means, often by clever rhetoric, group pressure, or financial incentives. But since truth is the aim and not consensus, rhetoric and pressure aimed at achieving consensus are anti-science.

Ad Hominem

The content of a scientific claim should be evaluated independently of its source. Fortunately for technological civilization, William Shockley's

7 J. Ziman, *Public Knowledge: The Social Dimension of Science* (Cambridge University Press, 1968).

unpopular views on race and eugenics came well after the physics community had happily accepted his discovery of the transistor. Had things happened the other way round, microelectronics might have been much delayed. The widowed Marie Curie was advised not to attend the meeting where she was to get her Nobel award, because the chairman of the committee (Svante Arrhenius, whose own work on carbon dioxide is a main ingredient in the CO2-makes-global-warming story) disapproved of her subsequent affair with a married man. She attended anyway, her findings intact.

Science is harmed when an idea cannot be examined because of the reputation of those who espouse it. Pioneer behaviorist John B. Watson had to leave the academy because of an affair with then student (subsequently wife) Rosalie Rayner, leaving the field of behaviorism to be explored by others. Watson was a creative fellow; behavioral psychology would certainly have benefitted by his participation. Instead, he devoted his life to a much less noble activity: advertising.

Science is most gravely injured when the emotional power of an idea is allowed to affect the reputations of those who study it, when fact is not detached from passion, when the idea alone is allowed to "ring the bell." This conflation of the personal and the factual has blighted the field of individual differences, particularly cognitive differences and especially when the issue is differences between the sexes or between identifiable populations such as blacks and whites.[8] The "fact vs. passion" imperative means that an idea must first be investigated for itself, independently of who proposes it.

Other Values

The "faith of science" is not universal. Life throws up many situations in which these rules provide no guidance: love and marriage, civil and criminal law, cultural conventions in general. These other situations are covered for religious people, by religious values, like the Ten Commandments or Sharia Law. For secular people like my correspondent, they seem like common sense but can probably be traced to the writings of Enlightenment philosophers and social scientists from Baruch Spinoza to John Rawls. Some of these values are consonant with the values of science. Others, such as the recent varieties of identity politics, are emphatically not. In a conversation with a young person of

8 Noah Carl, "How Stifling Debate Around Race, Genes and IQ Can Do Harm," *Evolutionary Psychological Science* 4 (April 28, 2018): 399–407.

my acquaintance, my insistence that two plus two equals four should be true for everyone elicited the objection that philosophers have indeed questioned this (and all without any acquaintance with Russell and Whitehead's three-volume *Principia Mathematica*). Postmodern uncertainty can block inquiry into any question. For this person, the principle of *equity* was truer than elementary math. Identitarian "woke" values violate the fact vs. passion barrier, so are totally contrary to scientific inquiry.

Conclusion

Modern civilization depends on science. Any civilization depends on a consensus about fundamental values, good vs. bad, permitted vs. forbidden actions. These many rules are unprovable by the methods of science. The facts of science by themselves provide no values: science is a map not a destination. But doing science depends on certain values such as a belief in truth, honesty, open debate etc. and, above all, the ability to separate fact from passion, to respond to a proposition first with "how do you know" and only afterwards "what should we do about it?" Perhaps these values can provide a starting point for moral education in an increasingly secular society.