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Science, Pseudoscience, and Religion

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Abstract

Astrology, homeopathy, and creationism are common examples of pseudoscience, but scientist Alan Sokal in "Beyond the Hoax" adds several novel examples to this list—Judaism, Christianity, and Islam. I contend that this is a mistake, for several reasons. First, none of these religions claims to approach the world in scientific terms. Second, all of these religions are examples of ethical monotheism, but there are many other kinds of religion—for example, Hinduism (many gods), Buddhism (no god), and Taoism (nature religion). Third, unlike some other religions, ethical monotheism tends to place greater weight on orthodox belief than on orthopraxy or right ways of life. You can be a good Hindu without having to subscribe to the Hindu pantheon of gods. Finally, the foundation of revelation and the source of morality in ethical monotheism make its goal and methodology very different from those of science. We can only conclude that Sokal's examples of religion are not pseudosciences. If any of the revelations on which they are founded prove to be unwarranted, it would be more accurate to call them pseudo-revelations.

Keywords

Pseudoscience, Ethical Monotheism, NOMA-Principle, Diversity of Religion, Methodological Naturalism

1. Introduction

Thanks in part to Karl Popper's criterion of falsifiability, many of the ideologies of modern science have come to be known as pseudoscience, and examples of it have proliferated, from lore about ancient astronauts to fantasies about visitors from outer space. Author of *Beyond the Hoax*[1] (Sokal, 2008) has added a volley of novel members to the list—Judaism, Christianity, Islam, and the nationalistic

[1]Sokal is perhaps best-known through his parody "Transgressing the boundaries: Towards a transformative hermeneutics of quantum gravity," published in *Social Text*, 1996, and reprinted with annotations here.

ideology of modern Hinduism (not the ancient religion of India)—along with the familiar examples of astrology, homeopathy, and "creation science." As he puts it, "Indeed, an unbiased count [of followers] would probably show that Christianity, Islam and Hinduism are *the most widely practiced pseudosciences* in the world today, far above homeopathy or astrology. And in their fundamentalist versions they are the most dangerous as well."

His list of pseudosciences will likely be met with a mixture of agreement and skepticism. While astrology, homeopathy, and creationism are standard examples of pseudoscience, the same thing is not true of religion. People today tend to think of religion and science in different ways. They think of science in terms of the investigation of the natural world by means of scientific method, and of pseudoscience as fake or sham science. Religion, on the other hand, is supposed to be concerned with God, the life of the spirit, and morality, so how can it be a pseudo*science*? Has Prof. Sokal discovered a novel fact about religion or only misunderstood the nature of religion? That is the question I want to pursue in this paper.

2. The Meaning of "Religion"

First, it is worth asking what Sokal means by "religion." Unfortunately, he offers no general account of its meaning but only cites three standard examples—Judaism, Christianity, and Islam—all of which are forms of traditional ethical monotheism (hereafter simply "monotheism")[2] However common it is to think of religion in those terms, it is simply not true that religion is synonymous with belief in Almighty God and Holy Scripture. There are religions like Hinduism that in their popular form believe in many gods, religions like Buddhism that in their austere form believe in no God or gods, and religions like Taoism and Confucianism that celebrate tradition and ancestors but make no pretence of believing in a supernatural God—to mention only a few that have their own stories to tell. There is even a philosophical religion—Spinoza's pantheism—that views God in a wholly immanent form, identifying "him" with an aspect of the world or nature.

Truly, there are many mansions in religion and, whether we are believers or not, it is a mistake to identify religion with any one of them. In "Science and Religion" (Andre, 2020), I call it the "Reverend Thwackum" fallacy, after the comic character in Henry Fielding's novel *Tom Jones*, who intones "When I mention religion, I mean the Christian religion; and not only the Christian religion, but the Protestant religion; and not only the Protestant religion but the Church of England." Yes, the latter is *a* religion, but religion is not the Church of England. Neither is monotheism the whole of religion. Nevertheless, for the sake of simplicity, it will often be convenient to follow Sokal in speaking of religion as if it

[2]According to the *Concise Canadian Oxford Dictionary*, monotheism is "the doctrine or belief that there is only one God." As the term is commonly used, ethical monotheism could be described more fully as the doctrine that God is the Creator and Ruler of the Universe, the Dispenser of Justice and the Ultimate Source of Morality.

were the same thing as monotheism.

That conception of religion is important, for Judaism, Christianity, and Islam are commonly known as examples of "revealed religion." That is, the faithful regard them as revelations from God, as they are recorded by appointed human scribes. Whether they are the Torah of Judaism, the Bible of Christianity, or the Koran of Islam, they are regarded by the faithful as the "word of God." Broadly speaking, the believers are of two kinds: those who accept the doctrines of their religion as being literally true and inerrant—call them "fundamentalists"—and others who respect them as divinely inspired but also the work of human beings within a historical and cultural setting, and so subject to modest interpretation and qualification—call them "moderates." Sokal is aware of this difference in approach to belief, and, as we will see later, he sees in it the possibility of hope for religion.

The role of revelation has two related parts, which can be described in Sokal's terms. The first part is to impart the basic truths of cosmology—the creation story and the fall of man, for instance. The second part is to inculcate a set of moral teachings, like the Ten Commandments and the Sermon on the Mount, which are deemed to be necessary to follow for salvation and escape from death. Seen in this familiar light, the goal of religion can briefly be described as the use of revelation to transmit to sinful humans essential information about the world and the requirements for salvation—information which can be obtained in no other way. No doubt this minimal account could be expanded and made to sound more grandiose, but it seems to fit the three religions we are discussing, the so-called "children of Abraham." I haven't said anything about the role of faith, but clearly, it takes faith to accept the messages found in one book, rather than others, as "revelation," instead of fairy tales.

Thinking of religion in terms of monotheism invites the idea that religion is a body of doctrine that has no support beyond the dubious claim of divine origin. Thought of this way, it is easy for critics of religion to compare the methodology and doctrines of monotheism to those of modern science and find them wanting. But it is hollow victory. If you think of fish as anything that lives in the sea, you are bound to think of whales as big fish. Nevertheless, while Sokal's conception of religion is too narrow, what he has to say about monotheistic religions is perceptive, admirably clear, and right on target.

3. The Meaning of "Science"

"Science," as Sokal (Andre, 2020) points out, has four distinct but interrelated senses: an intellectual endeavor aimed at a rational understanding of the natural and social world; a corpus of currently accepted knowledge [of that kind]; the community of scientists, with its mores and its social and economic structure; and finally applied science and its technology. In his own view, he says, science is

> a worldview giving primacy to reason and observation and a methodology aimed at acquiring accurate knowledge of the natural and social world. This

> methodology is characterized, above all else, by the *critical spirit*: namely, the commitment to the incessant testing of assertions through observations and/or experiments—the more stringent the tests, the better—and to revising or discarding those theories that fail the test.

He adds that "fallibilism" is a corollary of the critical spirit. The scientist can make mistakes, but ongoing scientific investigation is able to correct those mistakes. Given his account of science, the *goal* of science can perhaps be described as discovering what is true (or at least approximately true)[3] of the natural and social world, and imparting it to those people who are prepared to accept it. Science is part of the social world, made up of its practitioners and shared with technologists and the public at large.

A page later Sokal adds another qualification to his use of the term. "I stress that my use of the term "science" is not limited to the *natural* sciences, but includes investigations aimed at acquiring accurate knowledge of factual matters relating to *any* aspect of the world by using rational empirical methods analogous to those employed in the natural sciences." This criterion of scientific status is too broad, for, as we shall see, there are other kinds of truth and ways of establishing them than those of scientific method.

The goals of religion and science are not the same, but each of them can be said to have a goal and alternative ways of achieving those goals. The goal of science can be said to be the discovery of facts about the natural and social world, and the use of scientific methods to do so; and the goal of religion to impart the content of revelation and the need for faith in God and morality. Both science and religion take for granted that the achievement of their respective goals is of value to the general public and worthy of their support.

One of the differences between the goals of religion and science, as I argued in my article, is that religion is more concerned with morality and post mortem survival than science is. That may be one reason why many people have more interest in religion than in science, for the prospect of death is frightening to almost everybody. It would be a great thing if religion could teach us how to survive as souls when our bodies perish. On the other hand, science is not without appeal either, for it has become closely associated with technology today, and technology serves immediate needs and interests more effectively than does religion. For a price, you can buy a smart phone and communicate with your friends or access information you need at virtually any time, thanks to applied science. You could pray to God for the same convenience, of course, but you might have to wait a long time for the answer.

Sokal rejects Stephen Jay Gould's "NOMA principle," (Gould, 1999) according to which science and religion have different roles to play in human life and should never overlap or interfere with each other. For science is concerned with the discovery of facts about the world, and religion with the maintenance of values and the meaning of life. Sokal insists, as I have done, that the NOMA prin-

[3]The qualification is Sokal's own.

ciple makes no sense. Values imply a context of facts. If we lived in a world where every good deed was *punished*, it would be senseless to admonish people to follow the golden rule. On the contrary, the admonition to treat others as one wants to be treated oneself is a good rule to follow because of the fact, as the saying goes, that what goes around generally comes around.

As Pascal[4] was the first to note, rationality requires more than the assessment of evidence: if the evidence for theism and atheism were approximately equal but people *knew* that believers go to heaven, whereas their rivals go to hell, it would only be rational to be, or pretend to be, a believer. Facts make a difference to our goals and our choice of means to achieve them, and our values arise from those goals and means. If I want to be respected by my neighbors, achieving and maintaining their respect is one of my values, and it calls on me to be friendly, cooperative, responsible, sincere, and in short respectful of them. That doesn't mean that the things we value are easy to achieve, for often achieving one deeply held value may conflict, or seem to conflict, with others, as when personal liberty seems to be at odds with one's own health and safety concerns, or with responsibility for the welfare of others.

4. Are Science and Religion Compatible?

The disparity between their goals and methods invites us to ask whether science and religion (conceived of in monotheistic terms) are mutually compatible. Sokal thinks not, for the worldview of science is incompatible with the tenets of monotheism. For example, the creation story of Genesis is incompatible, *taken literally*, with the well-established theories of geology, paleontology, and biology. How could it be true that the earth (let alone the universe) was created in seven days, less than ten thousand years ago, when these sciences require hundreds of millions of years, if not billions, to explain the evidence of ancient rocks, fossils, and the diversity of life? If the creation story is true, it must be so in some other sense than literal truth.

The significance of incompatibility is often lost on laypeople, so let me give an example. Suppose I tell my listeners that I am an only child, and later I tell them that I have a sister living in Montreal. Naturally, they will be confused. While either of these claims is possible by itself, in conjunction they are impossible. If I am an only child, I can't have any siblings, and if I have a sister, I can't be an only child. If one of these claims is true, the other must be false. That doesn't tell us which is false, but it does tell us that they can't both be true. To determine that further question we have no alternative but to consult the records and look for historical evidence.

But what is it for a message to be literally true? It can best illustrated by an example. Suppose the police receive a message from a phone caller who claims that a bomb is hidden in the political science building and will go off in half an hour. The police don't know whether the message is true or false but they can't

[4]Pascal, Blaise. The "Wager" in many editions of his *Pensees.*

afford to take chances, so they clear the building. Now imagine two scenarios half an hour later. In the first there is no explosion and afterwards inspection of the premises fails to turn up any evidence of a bomb, even a dummy one. In the second, there is a violent explosion that rocks the building, shatters the windows, and starts a fire. Verdicts: in the first scenario the message is a hoax; it is false. In the second scenario the message is true: the caller said there would be an explosion and there was, in fact, an explosion. By the same token, the religious message "God is everywhere" will be true if and only if God is everywhere. Truth in religion is thus no different from everyday truth or truth in science, though the evidence for it or against it may take many different forms.

These are examples of the realist theory or, as it is also known, the correspondence theory, of truth: a message is true if and only if what it says turns out to be the case. There are, of course, other theories of truth, such as the intersubjective theory, which holds that a message is true if individuals or cultures agree to accept it, or the utility theory, which holds that a message is true if it is useful in practice. Sokal rejects these alternative theories of truth, and I think he is right to do so. A message can be accepted by countless people, or turn out to be useful in practice, without being true in the realist sense.

Truth for established science is not just what is true for me or what is true for my culture, but what is true for everybody, whether they are able to recognize it or not. That is why the heliocentric theory is true and rival theories about the motion of the planets are false. In other words, science makes a claim to universality and objectivity, despite the fact that it also admits to fallibility. Is this combination of claims a possible one? Yes, in my opinion it is, provided that the bulk of scientific claims meets the demands of rational inquiry and are true, or at least approximately true, and those that don't meet these standards can, through the prolonged process of scientific investigation, be identified and amended or discarded. That is why we can speak of the corpus of scientific knowledge as having transcultural validity and being more than received or local opinion.

The friction between science and the creation story is well-known, but it is not the only source of trouble for monotheism. Less well-known but just as significant is the friction between such religions themselves. A striking example of this, as I pointed out in my earlier article, is the status of Jesus Christ. While Christians revere him either as God in human form or as the Son of God, he enjoys no such status in the other two Abrahamic religions. For Islam, Jesus is one of the prophets or messengers of God, but neither the first nor the greatest—that role was reserved for Muhamad—and the account of his virgin birth and resurrection is simply absent. While Jesus was of Jewish ethnicity, he occupies no special place in Judaism, unless possibly as someone who for a time was falsely regarded as the "Messiah." These different views suggest the limitations of faith-based religions: they offer no non-question-begging way to deal with the issue of conflicting religious claims. They leave us with a set of incompatible claims like this one: "Either the traditional Christian story of Jesus is true in all major respects, or it is not." Not surprisingly, most Christians accept the first alternative, and

most Moslems and Jews the second. But nobody, as far as I know, accepts the view that both alternatives are literally true, in the realist sense of the term, for their incompatibility is only too obvious. You might as well say that, in literal truth, Jesus both is and isn't God.

Truth of the empirical variety has to match up with reality, just as an accurate and up-to-date map of the city must represent the current physical layout of the city. That is why the heliocentric theory is true and rival theories about the motion of the planets are false. In other words, science makes a claim to universality and objectivity, despite the fact that it also admits to fallibility. Is this combination of claims a possible one? Yes, in my opinion it is, provided that the bulk of scientific work meets the demands of rational inquiry and are true (or, as Sokal concedes, at least approximately true), and those that don't meet these standards can, through the prolonged process of scientific investigation, be identified and amended or discarded. Science is truth in the making, not truth in its final form.

5. Science and Pseudoscience

Science is often contrasted, not just with religion, but with pseudoscience. The philosopher Karl Popper (Popper, 1934) brought this issue to a head in his battle with logical positivism in the 1930s. The positivists were prone to claim that, in order to be cognitively meaningful, a proposition had to be either analytic or empirically verifiable. This criterion worked well enough for examples like "God is love" but stumbled on ordinary ones like "All humans are mortal," which in their generality refer not just to past and present but also to future humans, and so extend beyond the range of logical verifiability but are perfectly meaningful. To deal with this problem, Popper proposed to substitute the criterion of falsifiability. "All humans are mortal" is meaningful because it is logically falsifiable: it is open to the discovery of a single human who cheats death of its inevitability. Popper was concerned to demarcate scientific discourse from the unscientific kind, and the criterion of falsifiability seemed to him to serve this goal and also to show that theological and metaphysical claims are unscientific.

On Popper's view, only the conjectures of science have passed the test of falsifiability—they have been tried and not found guilty—whereas the conjectures of pseudoscience cannot even be brought to trial to assess their innocence or guilt, for they make no predictions which can be observed to be true or false. Not surprisingly, the criterion of falsifiability has been widely adopted by scientists and public intellectuals to distinguish between scientific and unscientific discourse, or even more generally between respectable and unrespectable discourse. But Sokal is wary of its complications. An hypothesis which fails the falsifiability test may fail to do so, not because *it* is false, but because it involves one or more false but untested assumptions. For instance, the theory that matter is composed of atoms is not falsified by naïve realism, which presupposes the false assumption that if something *looks* solid, then it *is* solid.

Instead of imposing a single criterion to distinguish between science and pseu-

doscience, Sokal proposes to use a continuum, ranging from well-established science at one end to pseudoscience at the other end. He places the atomic theory of matter at the former end, but he might just as well have cited the laws of motion, the periodic table of the elements, the theory of natural selection, or many other firmly entrenched scientific theories as examples. Not all science is well-established, of course. Near the science end but placed at increasing distances from it are cutting-edge science (neutrino collisions), speculative science (string theory), and shoddy science (N rays, cold fusion). While they are part of the periphery of science, they owe their status to their distance from meeting the high standards of successful science. We need not fear, then, that he treats the whole of science as a sacred cow.

Pseudoscience, at the other end of the continuum, is another story. That is where Sokal places the secular and religious ideologies mentioned earlier. Nearby but a short distance from them is homeopathy. I take it that this is by no means an exhaustive list of pseudosciences but just enough to illustrate the application of the concept. What the examples seem to have in common is two major features: 1) They ignore the demands of rational inquiry and proceed by alternative methods, such as the appeal to authority, revelation, *a priori* suppositions, intuitions, traditions, folklore, naïve reliance on testimony or reception of facts, and so on; and 2) By and large, these methods are generally inadequate, as compared with those of rational inquiry, and the results delivered by them are unreliable and subject to error. (I have ignored "faith" because it can hardly be counted as a method.) In short, pseudoscience fails to satisfy the demands of rational inquiry and so, at the very least, it cannot be relied on as a source of truth.

In Sokal's view, there are two salient differences between genuine science and pseudoscience. The first has to do with truth. Science aims at the truth whereas pseudoscience aims only at the semblance of truth, something that claims to be true but, lacking sufficient warrant, cannot be trusted. The second has to do with methodology. Well-established science satisfies the demands of rational inquiry: the rigorous testing of hypotheses by means of observation and experiment, the insistence on the role of prediction in confirming or disconfirming an hypothesis, the presence of a professional community sharing a common concern for the truth in their area of jurisdiction, and the importance of the "critical spirit" and ongoing peer review.

What is curious about pseudoscience in general is that, unrealistic and impractical as its theories often are, in comparison with those of science and technology, the people who embrace them tend to live their everyday lives in a far more realistic and practical manner. The devout Christian leaps out of the way of speeding vehicles, no less than the religious skeptic, and the tyro astrologist is as careful to get his birthday date and time exactly right as is his prospective biographer. A fanatical terrorist may master the controls of a jet airplane and use it as a flying bomb, facing certain death, all for the sake of his God and the promise of enjoying the favors of seventy virgins afterwards. If this gap between theory and practice is correct, it suggests that the advocate of pseudoscience operates

with a kind of double standard: a lax one at the theoretical level, and a more cautious one for everyday affairs.

6. Pseudoscience and Religion

Should religion be regarded as a pseudoscience? This may sound like a purely academic question but it is not, for two reasons. First, caution is required in discussing a topic on which people tend to have strong feelings and to make hasty judgements. Once a subject-matter is denounced as pseudoscience, the temptation is to ignore its claims and the people who accept them. That is what has happened, for example, with astrology. But there are hundreds of millions, if not billions, of people who take their religion very seriously, and some of them are fundamentalists, who are prepared to use intimidation or violence, if necessary, to protect their faith. Calling their faith pseudoscience will not only antagonize them, but it will also alienate religious "moderates," who may be prepared to enter into dispassionate discussion of religion and science if religion is not dismissed at the outset by a pejorative label. In a world where some nations are both nuclear-armed and religion enjoys broad public support, it is not helpful to lump religion into the same class as astrology.

The second reason for broaching this topic is that, as the comparative study of religion shows, there are many religions and not all of them are monotheistic or even theistic. And while some forms of monotheism are incompatible with the worldview of modern science, we find many people today who see no need to choose between science and belief in God. Whether we are believers or nonbelievers, religion can hardly be dismissed as "pseudoscience." As the *O.E.D.* defines the term, pseudoscience is "a pretended or spurious science, a collection of related beliefs about the world mistakenly regarded as being based on scientific method or as having the status that scientific truths now have." The *Stanford Encyclopedia of Philosophy*[5] offers an extensive and scholarly study of the concepts of science and pseudoscience, without mentioning religion. Other dictionaries I have consulted also associate pseudoscience, as the very term suggests, with science. To associate it with religion is a step too far.

Sokal seems to take for granted that the cosmology and methodology of monotheism are inferior to those of established science or even of those areas of science which fall short of its exacting standards, but that may only be because religion is not in the same line of business as science. While I am sympathetic to this kind of critique, I don't find it compelling. Yes, monotheists are concerned, amongst other things, with the world we live in, but only in a general sort of way, where their primary concern is with God. Unlike scientists, who struggle to understand the world in more and more detail, monotheists are interested in the big picture, not the fussy details. That is why the laws of motion and the periodic table of the elements are part of science and not part of religion.

[5]If a natural being is one subject to the laws of nature, we could think of a supernatural being as one not subject to the laws of nature but sometimes claimed to be the "author" of those laws.

Many people think that, if God exists, he must be a *supernatural* being[6], and that there are good reasons to believe in his existence, apart from science. That is a large set of claims, to be sure, but it may help to explain why science has found little or no evidence for this outlook. Western science tends to take methodological naturalism for granted: the domain of science is limited to those things that can be investigated by scientific method. Since the hypothesis of the existence of one or more supernatural beings cannot be investigated by scientific method, it is no surprise that, if they exist, their existence cannot be confirmed or disconfirmed by science. They are outside its jurisdiction. While that is a possible reply to critics of monotheism, I leave it to others to assess its tenability, for I know of no decisive reason to accept it or reject it.

In any case, there are forms of religion other than monotheism. For example, Unitarianism is widely considered to be a liberal religion, but its members include theists, agnostics, and atheists. Buddhism counts as a religion, but in its austere form, based on the sayings attributed to the Buddha, it directs its followers to focus, not on distracting metaphysical questions, but on how best to live. As such, Buddhism is more a way of life than an orthodox set of doctrines. While Christianity and Islam attach for more importance to orthodoxy, they too have an orthopraxy aspect. The good Christian is not just someone who professes belief in Christian doctrines, but someone who regularly follows the most cherished ideals of Christianity. He may even be an agnostic or an atheist. When I asked a friend whom I admired about his religion, he answered "I am a Jewish *atheist.*" In other words, he did not subscribe to the religion of Judaism but identified himself with an ethnicity having its roots in that religion. Almost certainly, he would have been offended by the suggestion that he was not really a Jew. There are religions, then, whose members are quite comfortable, as he was, with the worldview of modern science.

7. Conclusion

To judge from his examples of religion, Sokal's conception of religion is that of traditional monotheism. While that form of religion is, as he claims, incompatible with the worldview and methodology of modern science, monotheism is only one of many forms of religion. As a result, his critique of monotheism is not necessarily true of other religions. They must be judged on their own merits. It is also worthy of note that many monotheists today see no conflict between belief in God and belief in science, and they try to live their lives in the light of the cherished ideals of religion, without demanding orthodox belief.

Judged by the standards of established science, traditional monotheism falls short of these standards, but it doesn't follow that it is a pseudoscience, for it doesn't claim to be a science or to meet the same standards as science. To the extent monotheism rests on divine revelation, it follows that, if there is no God, then it is based on a faulty premise. In that case it would be better to call it a

[6]If a natural being is one subject to the laws of nature, we could think of a supernatural being as one not subject to the laws of nature but sometimes claimed to be the "author" of those laws.

pseudo-revelation than a *pseudo-science*, for it is clear that monotheism is not a science nor is it based on scientific methodology.

Important as it is to understand the natural and social world, it would be folly to insist that this kind of investigation should be the goal of any public-supported discipline, and that if it is not, then that discipline must be a pseudoscience. Consider mathematics, technology, and history. Math—the darling of physics and applied science or technology—is not conducted with that goal in mind, for it is a formal or *a priori* science, developed largely by abstract thinking, independent of physical observation and experiment. We know that there is an infinity of numbers, not because we have scoured the universe and found no highest number, but because of the thought that any number whatever can be increased by the addition of one. Without math and the tools of measurement, natural science could not be developed beyond a primitive stage. To dub math a pseudoscience would be ludicrous.

Technology or applied science has a double role to play. On one hand, it is the use of scientific information to serve human needs and desires, leading to the invention and production of countless devices and services, from airplanes to the Internet, that improve the safety and ease of human life. Since the peoples of the world are often in conflict, however, note that technology also provides tools for the killing of humans and destruction of property on a vast scale. While modern medicine saves countless lives, nuclear and biological weapons threaten to destroy them. On the other hand, technology can be used to carry out the goal of science itself. The Supercollider Cyclotron in Geneva is used to enlarge our understanding of the nature and working of subatomic particles, and spacecraft like the James Webb Telescope allow astronomers to peer into the universe as never before. Technology is thus not merely the popular servant of science but also one of the tools of science itself, like the telescope and the microscope. In neither case can it be regarded as a pseudoscience.

History is another domain where knowledge of people and events in the past is reconstructed from records, documents, photographic images and other artefacts. Science undoubtedly plays a role in this process. Historians would scoff at someone who maintained that President Lincoln flew *by airplane* from Washington, D. C., to Gettysburg, and would be right to do so. But it would be extravagant to call history a science. For, while it makes liberal use of observation and inference, it does not pursue the goal of understanding the laws of nature. Just as science uses math and logic to extend its knowledge of the natural and social world, and just as technology uses science to serve human needs and interests, history can be said to use science and technology to understand the past. As this sketch suggests, science does not stand alone in its attempt to understand the world in all its diversity and significance for humankind. While the notion of pseudoscience has some application, its use is limited and should not be applied to anything that falls outside the sphere of natural science.

I have not tried to address the question whether there are, in fact, one or more supernatural beings responsible for the existence of the universe. While it seems

unlikely, I know of no compelling evidence one way or the other. Perhaps, as the Buddha suggests, we should endeavor to lead good lives and not be distracted by questions that may lie beyond our natural powers.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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