

Why Science Badly Needs Philosophy

It isn't uncommon for scientists to try to use philosophers for target practice.

The trouble is that the ones who tend to know the least about what they criticize (which is most of them) end up shooting wide of the mark. Not only that, but philosophers tend to fire back.

Prominent scientists such as physicist Stephen Hawking, along with Bill Nye and Neil DeGrasse Tyson, take pot shots at philosophy on a regular basis.

At [Aeon](#), Subrena Smith, a philosopher at the University of New Hampshire, takes note of this problem. She teaches a course on the philosophy of science. But her students, she finds, don't see the relevance of philosophy to science at all:

"It is no wonder that some of my students are doubtful that philosophers have anything useful to say about science. They are aware that prominent scientists have stated publicly that philosophy is irrelevant to science, if not utterly worthless and anachronistic..."

Many of the young people who attend my classes think that philosophy is a fuzzy discipline that's concerned only with matters of opinion, whereas science is in the business of discovering facts, delivering proofs, and disseminating objective truths. Furthermore, many of them believe that scientists can answer philosophical questions, but philosophers have no business weighing in on scientific ones."

A philosopher of science asks questions like what constitutes

science and what doesn't? There are scientists who believe that a theory is scientific if it can potentially be falsified. Scientists doing certain kinds of work, such as multiverse theory and string theory disagree, since that definition would disqualify them.

Where science fits in the total scheme of things is not a question for the expert in science. It is a question for the expert in the total scheme of things. And that is a philosopher.

Another question is the legitimacy of induction, one of the chief forms of scientific reasoning. If every experiment testing whether copper conducts electricity has shown that it does, then it will always do this. It sounds good, but the underlying assumption is that the future will always be like the past. How can you know this scientifically?

This is a question of sound reasoning that can only be answered by experts in sound reasoning. Experts in sound reasoning are not scientists; they are called logicians. A logician is a kind of philosopher. Therefore, the question can only be answered by a philosopher.

It is the same with a host of questions which are necessary to science but are not scientific questions: What is the scientific method? What is cause and effect? What is a natural law? How do we know if a scientific conclusion reflects reality as it really is?

Though these are questions that scientists face, they are not scientific questions. They can't be resolved by conducting a laboratory experiment or using a math equation. They involve metaphysics. They are philosophical.

This is why some scientists don't like philosophers: because philosophers ask questions about science that scientists can't answer.