

Debate on the scientific method on <http://forums.philosophyforums.com>. Quotations are in red and the responses by Probeman (John Donovan), Faustus (Brian Petersen) and Death Monkey (Kevin Dolan) are in black. Note that sometimes a quote (in red) contains a previous response. This is usually found at the beginning of the quoted portion (in red) and separated from the actual quote by a horizontal line. This is usually done to provide a context for the quote before responding to it.

Quote:

Originally Posted by **PhilW**

Pardon me, but science is the mode of thinking that assumes materialism as a hypothesis. How one then claim that science proves a hypothesis that it takes for granted?

No, that is incorrect. Science is the mode of thinking that assumes materialism as a *method*.

By Probeman (John Donovan)

Quote:

Originally Posted by **PhilW**

By "mode of thinking" the concept of method was meant to be implied. Whether it is accepted as a method or a total philosophy, science assumes materialism--any philosophy that claims to derive a conclusion about the truth of materialism based on the results of science is therefore circular.

Think about what you are saying:

"science assumes materialism" - yes, but only as a method.

"any philosophy that claims" - science is not a philosophy, it is a fallible but progressive epistemology.

"to derive a conclusion about the truth of materialism" - science does not make this claim.

You state your conclusion in your premise by defining science as a philosophy that assumes materialism as a philosophy. But this is simply wrong. It is clear that not all scientists are philosophical materialists. They don't have to be, they only have to be methodological materialists. There is a critical difference between philosophical materialism and methodological materialism. Therefore your argument is not only invalid, but also incorrect.

Try to understand the difference between philosophical materialism and methodological materialism and you will see your error. Philosophical materialism claims that everything is material, while methodological materialism does not. Remember, science cannot prove philosophical materialism correct. In fact, as DM points out, science can't prove anything with certainty. That, we leave to the metaphysicians.

By Probeman (John Donovan)

Quote:

Originally Posted by **PhilW**

You seem to be assuming that I am making a claim about science; sorry if I was unclear about this. I am making a claim about how specific results from science are used by people who are not necessarily scientists themselves to derive a philosophical conclusion. My claim is not, therefore, that science contains a philosophical conclusion about the truth of materialism. We are in agreement that this is absolutely a false conclusion; as you rightly point out, science and scientists don't necessarily have any philosophical pretensions. My original point was in response to the original poster's statement that his friend believes that science proves the truth of materialism. If science is just a method, it can't prove anything philosophical, and if it is not a method, but a philosophy as well, then it is materialism, and not something that establishes it. You and I believe it is the former, whereas some

people take it to be the latter--that's all I'm saying.

OK, no argument there.

And yes, I agree. Some scientists make philosophical claims about materialism; I might even be one of them. But I don't (and they shouldn't) claim that science supports that position. Science merely has no use for non-materialistic explanations.

In fact, non-materialistic explanations not only do not provide an explanation, they are a "science stopper" in that they end further scientific inquiry. By not allowing non-material "explanations", science forces scientists to investigate further. The result has been a continuous and progressively greater knowledge of the universe that is always fallible and yet, increasingly reliable.

Intuitively appealing supernatural or mysterian positions share the same problem of the "gaps". As science explains more about the universe and ourselves, non-material and religious "explanations" continue to shrink.

Look up Vitalism in the 19th century as a great example of this.
By Probeman (John Donovan)

Metacristi,

I don't see how you can argue that scientific knowledge can be based on non-empirical methods. Philosophers can certainly choose to accept as knowledge things which cannot be empirically tested, but that is not scientific knowledge. Scientific epistemology is based on empiricism.

I do not know of any modern example of a hypothesis which has not been empirically tested, being accepted as scientific knowledge. Even scientific theories which *can* be tested, are not considered to be scientific knowledge until *after* they have been extensively tested. Take the Higgs Boson, for example. Most physicist are pretty confident that it probably exists, but I do not know of any physicists in that field, who would claim their existence to currently be "scientific knowledge". Likewise for hypotheses which, in their current forms, are untestable, but may lead to later testable theories. Many physicists are fairly confident that String Theory, for example, is right way to solve the unification problem, but I do not know of any who would consider String Theory to be "scientific knowledge".

I agree with a lot of the things you say about science, and the scientific method, but the notion that a hypothesis which has not been empirically tested (whether it is because it cannot be, or just because it has not been yet), could be considered to be scientific knowledge, runs completely contrary to what science is, and how it works.

By Death Monkey (Kevin Dolan)

Quote:

Originally Posted by metacristi

What you fail to see is that the actual (minimal) scientific method is not 'set in stone' (it is accepted as openly fallible;as matter of fact we can only say that it is still progressive,as the norm,in what regards fecundity) and is not restricted only to an entirely empirical method,involving Mill's methods and intersubjectivity.It indicates also,using nonempirical arguments,what hypotheses should be chosen as the standard of knowledge [even] in the extreme case that there exist more equally valid,on empirical grounds,hypotheses.Nothing forbids now the proposal,in the future,of a [unitary] scientific dualist hypothesis,equally valid on all empirical grounds.

Metacristi, I don't want to send any more water under your wheel, but I agree with DM. I sometimes read what you write (as above), for example that science is progressive and can also obtain ideas to test, from intuitive or subjective sources and I completely agree with such banal statements. But then at other times, you go on and seem to make strange claims, for example, that dualism could have empirical data in support of it.

Dualism is defined as having a non-material component, and therefore can NEVER be a scientific concept. Yes, it's possible that new forces or physical effects that explain the mind could be detected, but then they would be material effects and hence not dualistic. Yes, as DM said above in response to Monroe, it's possible that there are undetectable (in principle) attributes to the mind, but in that case they can have no physical effects and hence are completely worthless to science.

As Don Pedro said to Leonardo In "Much Ado About Nothing", "You amaze me!"
By Probeman (John Donovan)

Quote:

Originally Posted by **metacristi**

...The best approach I've seen so far is the 'reliabilist' account of scientific quest (a form of the fallibilist account of knowledge), the lakatosian view extended to the whole of science. We can still grant an (openly fallible) epistemological privilege to a minimal method (doing also justice, in the best manner, to ALL scientific practice, historical and current) based on its fecundity, the previous 'success' of the Mill's methods (as the norm) + the fact that the knowledge gained using them is stable on very long time. And not lastly because of the absence of another, progressive, alternative method. But this in no way entitle us to believe that the science of tomorrow should cling stubbornly to the actually accepted standards.

Once again, you make many reasonable statements that no one will disagree with. But, there is nothing "realist" about your call for accepting non-material explanations in science. Your fallacy: being open minded to the testing of new ideas and intuitions, does not equate to being open minded to untestable ideas or intuitions.

By Probeman (John Donovan)

Quote:

Originally Posted by **Monroe**

If we explain how turning one gear makes another far away gear turn by a system of gears, the thing we are explaining has the same kinds of properties as the thing by which we explain it. And that's not circular.

The example you used is not sufficiently parallel to the case here. If you are trying to explain how consciousness is produced, and your explanation consists of appeals to elements that are still conscious, then you've merely postponed the job you claimed to have set out to do. It would be as if someone asked, "How do gears work?" and was supposed to be satisfied with an explanation that went like, "Through the operation of their gear-ly powers."

Quote:

Originally Posted by **Monroe**

Truth and falsity are not relevant to science?

You utterly ignored my point. Of course the truth or falsity of a model is important to science. But what we call representations in brains fooled by Matrix technology is not.

Quote:

Originally Posted by **Metacristi**

Indeed it is enough for example a sound corroboration of some variant of 'quantum consciousness' hypotheses regarding of how can quantum effects affect consciousness (they are also fully compatible with all previous discoveries in neurology or AI).

The quantum consciousness hypothesis is New Age nonsense with not one shred of evidence in support. Why you would bring it up in a discussion that is supposed to be about the efficacy of modern, mainstream neuroscience is beyond me.

Quote:

Originally Posted by **Metacristi**

Also you should know that there is a brand of dualism labeled interactionist dualism (of the type advocated by Eccles for example) which is still viable (potentially) though we do not have now a scientific interactionist-dualist hypothesis.

In what sense would Eccles' theory still be "viable"? It was never taken seriously by any by a small, fringe group of folks who were—like Eccles himself—motivated not by science, but by their own religious beliefs. If his theory is still viable, then so too are astrology, creationism, phlogiston, ether, and the spontaneous generation of mice from dirty rags.

By Faustus (Brian Petersen)

Quote:

Originally Posted by **metacristi**

*No. You just did not understand my point(s) of view, I find futile to continue this discussion. I only advocated that currently there are no known limitations to the possibility that some dualist **scientific** hypotheses (such as those belonging to the interactionist brand, **even in genuine dualistic in the approach I presented previously**) could prove more successful (or at least equal) than a broad variant of the 'brain only' theory at some further time, **on empirical, testable, grounds** (though they probably make additionally other, forever non testable predictions)...*

I'm not sure, but having read much of your writing, and agreeing with much of it (for example, that science is not "set in stone"; when did DM or I ever claim that?), I think it's not your English, but some other of your ideas that I do not understand.

For example, your continued (and futile) claim that untestable (in principle) "genuine dualistic" ideas should be part of science. Non-material ideas can never, in principle, add to scientific understanding. Maybe there are non-material aspects to the brain, but exactly because they are non-material, they can never be a part of science. Can they be part of metaphysics or the supernatural? Yes, but not science. As a working scientist, I completely understand "theoretical" concepts- I understand what apparently you do not: that they are supported by empirical evidence.

All we can say is that untestable supernatural or metaphysical ideas do not add to scientific understanding exactly because there can never be empirical data for them, therefore there is no motivation for advocating them, other than religious or metaphysical reasons. If your "interactionist" dualism has material effects (why even call it dualism in that case?), then it will be possible to test for it using science.

Science has made and is continuing to make impressive progress in the scientific understanding of brain and consciousness, so why posit untestable, non-material ideas?

DM already said it very well, so let me quote his words:

"Science says nothing about metaphysics. Scientific theories will not tell us whether monism, dualism, materialism, idealism, or any other metaphysical position, is correct. What science can do, or at least try to do, is explain consciousness using scientific epistemology. So far, it is doing a very good job of

this, and so far, the indication is that consciousness is something which our brains do."

Quote:

Originally Posted by **metacristi**

...still there is no reason to think that a greatly improved interactionist dualistic method could not become scientific sometime in the future. Even arriving to win the empirical battle with all alternatives at that time...

Does this mean that you are dropping "genuine dualism" from your list of scientific possibilities? Again, I don't know how an "interactionist" dualism can even be considered dualism if it materially interacts with the brain.

And your characterization of "infallible, set in stone" science is a total strawman, so please drop it. Science isn't infallible just because it declines to accept untestable metaphysical or supernatural ideas with no evidence in support of them.

In fact, if science ever accepts untestable metaphysical or supernatural ideas, then we will have your "infallible science", exactly because these types of ideas can never be falsified!!! Can't you see that?

By Probeman (John Donovan)

Quote:

Originally Posted by **metacristi**

No one say that the actual version of Eccles conjecture is even acceptable as a scientific hypothesis, still there is no reason to think that a greatly improved interactionist dualistic method could not become scientific sometime in the future. Even arriving to win the empirical battle with all alternatives at that time...

Can you--or do you even want--to distinguish this claim from parallel claims, such as that a greatly improved theory of astrology, creationism, phlogiston, etc might one day become scientific in the future?

By Faustus (Brian Petersen)

metacristi,

Quote:

You might be amazed of my alleged 'claims', your right (I really wonder based on what rational justification?), but I am even more amazed by the fact that the average scientist have, sorry to say so bluntly, at least very little awareness of the philosophical implications of the 'scientific method', having its roots in epistemology, therefore outside mere empiricism. I'm afraid the picture is way broader than you think... naive empiricism (as Lakatos' put it well) is far from being enough to characterize the scientific quest...

I'm not sure what you are trying to say here. It is certainly true that the scientific method has its roots in epistemology. Knowledge is a true justified belief. Epistemology is concerned with determining how beliefs can be justified, thereby making them knowledge. The scientific method is the method by which scientific epistemology determines which beliefs are justified, and which or not. The justification criteria it uses, is empirical testing.

This is not "naive empiricism", this is the philosophical basis of the scientific method. Empiricism is the *only known* method of justifying beliefs which is demonstrably reliable. That is what gives it its so-called "epistemological privilege". That reliability comes from the fact that it is based on empirical testing.

You want to allow subjective criteria like the elegance of an explanation, or how intuitively compelling it

is, to be used as justification criteria for scientific epistemology. Those criteria are known to be unreliable. Incorporating them into scientific epistemology would render it unreliable. Science's epistemological privilege would be lost.

Honestly, I see absolutely no sense in using criteria for justifying beliefs, which are known to be unreliable. Logically speaking, if the criteria you have used to justify the belief is not reliable, then the belief is not justified.

Quote:

It is not my primary goal to change your opinions,there is no need to read what I write,but you should be aware that the scientific method,even in DM acception,do accept theories containing purely theoretical constructs which prove indispensable for the empirical success of the theory,as a whole,even if,from all we know at a certain moment,they are not even potentially testable in isolation.Nothing impedes from all we know now,in principle,the construction of a dualist scientific hypothesis,containing such constructs,making predictions about the material world also which to prove more successful (where it can be tested) than a purely physicalist theory,containing only physical theoretical entities.

Any dualistic theory, and indeed any metaphysical theory, can be replaced with a completely epistemological theory which is simpler. The scientific method is an epistemological method. Metaphysical claims are not a necessary part of any epistemological explanation of a phenomenon. They can always be removed without changing the epistemological content of the theory. Likewise, metaphysical beliefs *cannot ever be justified empirically*. A metaphysical claim simply cannot be considered scientific knowledge.

Quote:

The fact that its non material predictions might never be corroborated is irrelevant.Neither it is impossible that scientists themselves will change the method if the actual method becomes stagnant or degenerative one day in the problem of consciousness (yes the scientific method is based on empiricism but is much more than careful observations,Mill's methods and intersubjectivity).

It is certainly possible that, in the future, society as a whole will modify the definition of scientific epistemology such that beliefs can be justified, and thus considered to be knowledge, by means other than empirical testing, but to do so would be a big step backwards. It was not so long ago that many metaphysical assumptions about the world were accepted as scientific knowledge. Scientists learned a very hard lesson when reality turned out to be nothing like their intuition and preconceptions told them it would be. For the most part, they have learned that lesson. Beliefs based on anything other than empirical testing, simply are not reliable.

Quote:

Also you should know that there is a brand of dualism labeled interactionist dualism (of the type advocated by Eccles for example) which is still viable (potentially) though we do not have now a scientific interactionist-dualist hypothesis.Even more some 'genuine dualist' variants are still viable from all we know now (the immaterial substance does not interact usually with matter).Indeed,as I've said before in one thread here,no matter why or how,there is still possible that the immaterial substance of the soul transform directly in usual matter at levels we cannot put in evidence now,maybe never.

The scientific method does not require metaphysical materialism. It is quite compatible with metaphysical dualism, idealism, and pretty much any other metaphysical position which does not explicitly violate the epistemological axioms of science. But by the same token, none of these metaphysical positions can ever play any role in scientific theories. This should be clear from the fact that any scientific theory which does make some set of metaphysical claims, could always be replaced with any number of other theories which make different metaphysical claims, but have exactly the same epistemological content. This means that the epistemological content, specifically the empirical predictions, are not logically dependant on the metaphysical claims, which in turn means that the metaphysical claims cannot possibly be justified by empirical testing.

Quote:

I don't think you have really understood my point of view,I find futile to try to explain it again and again (it is somewhere between the 'hard line',you also advocate,and that of feyerabendists;one too dogmatic,the other too loose in my opinion).Here is a last try.It is a documented fact in history that some ad hoc hypotheses are sometimes accepted inside science,that non empirical criterions have played an important role in science,here I

find the feyerabendist approach much more appropriate as a description of scientific practice than the 'hard line' account you advocate. The problem is that as a whole it is too loose, advocating the existence of many scientific method(s) (as I said the scientific method indicate also which enunciations deserve to become part of science).

It is true that metaphysical claims have been accepted into science in the past. It is also almost universally recognized by scientists that doing so was a mistake. The scientific method, and scientific epistemology itself, has changed considerably over the last 100 years or so. Scientists have learned a lot from the mistakes of previous generations of scientists. One lesson we have learned is that science's reliability comes from empiricism, and that things like intuitiveness, or elegance of a theory, are not reliable criteria upon which to base scientific conclusions.

Quote:

I am at base a quasi-lakatosian (unlike him I advocate that we can still define a fallible standard of knowledge on short run, in the periods of crises, even if more, equal empirically, conjectures exist, based on non empirical facts such as compatibility with all previous, not disproved yet, knowledge+Occam's Razor). But I realized that Feyerabend is right too, at least partially, this is why I think a merger of lakatosian ideas with some ideas of Feyerabend, loosening even more the method, but not too much, is the best approach; doing also justice to scientific practice, whilst keeping however the unity and the rationality of the resulting (minimal) method.

You seem to recognize the role of Occam's Razor in science. Isn't it clear that including any metaphysical claims into a scientific theory is a violation of that principle?

Quote:

Indeed science is not only a continuous addition of new knowledge, building over the existing one, non trivial changes do occur, contradicting even the knowledge gathered using Mill's method and very careful, even direct, scientific observations at a certain time. Moreover the history of science proves clearly that if we had followed a dogmatic line then some rapid 'advances' of science would have been delayed if not lost forever.

You keep suggesting that my position somehow makes science dogmatic, but exactly the opposite is true. Accepting claims which have not been empirically tested as scientific knowledge, is dogmatic. Just look at things like GR and QM. The scientific evidence contradicted people's preconceptions about how the world worked. Because of their dogmatic belief in things like determinism, locality, and absolute time, many refused to accept the evidence. Progress in physics was greatly impeded by this effect.

There is absolutely nothing dogmatic about responding to a question whose answer cannot be determined empirically with "I don't know". It is, however, dogmatic to claim to know something when you also know that your justification for that belief is unreliable.

TecnoTut,

Quote:

Well, I certainly don't know of any scientific theories which hold that interactionism is false, but there are most definitely scientific theories holding that the mind is brain activity.

The only theories I've heard claiming mind and body are identical are philosophical and/or metaphysical ones, e.g. type identity theory, token identity, teleo-functionalism, etc.

Scientific theories are philosophical, technically speaking. Specifically, they are epistemological. They are not metaphysical.

Quote:

There is absolutely no reason that science should be able to cause a human being to know what it is like to be a bat. As I have already pointed out in this thread, knowing what it is like to have an experience, is not an example of knowing abstract facts about the world, which is what science can provide us with. Knowing what it is like to be a bat means both experiencing being a bat, and possessing the memories of having been a bat. Knowing all of the facts about those experiences and memories, is not going to magically cause those brain processes to occur in your brain.

But of course knowing what it is like to be a bat is a type of knowledge. It is knowledge of a certain type of bat-like experiences.

Certainly you can *call* it a type of knowledge, if you like, but it is not the type of knowledge which physicalism claims that science can provide. Nor is it the type of knowledge which is referred to by epistemology. Knowledge, in that sense of the term, is a justified true belief. It is a fact about the world, which you believe, and which you are justified in believing. Knowing what it is like to be a bat, simply does not fit this definition of knowledge. Simply labeling it as knowledge does not magically cause physicalism to fail.

Quote:

Saying that physicalism requires that science should be able to let me know what it is like to be a bat, is like saying that it requires that a scientific description of a car should cause a real car to appear in my driveway. It is pure nonsense, derived from the conceptual confusion between the thing being described, and its description.

We're not even talking about physicalism right now. We're talking about whether consciousness is can be scientifically studied. In some senses, it can. For example, I can know that C-fibers firing in humans causes pain. In other senses, it cannot -- e.g. science cannot study a bat's mental experiences.

The fact that knowing a full scientific description of a car is not going to cause a real car to appear in front of me, does not imply that cars cannot be scientifically studied. By the same token, the fact that knowing a complete scientific explanation of an experience is not going to cause those brain processes to occur in my brain, does not mean that consciousness cannot be studied. What you are essentially saying is both true, and trivial. Science cannot study consciousness in the sense you have described. Nor does it claim to be able to. Nothing can be studied in that sense. Knowledge of facts about the world does not cause objects to appear, or processes to occur.

By Death Monkey (Kevin Dolan)