

## Re: Big Bang Baloney....or scientific cult? [ scientific methods ]

**Source:** <http://sci.tech-archive.net/Archive/sci.physics.relativity/2004-07/4836.html>

---

**From:** Bill Hobba (*bhobba\_at\_rubbish.net.au*)

**Date:** 07/25/04

Date: Sun, 25 Jul 2004 03:45:54 GMT

"Ralph Hertle" <ralph.hertle@verizon.net> wrote in message  
news:4101342F.7090500@verizon.net...

> *Bill Hobba wrote:*

>

>

> [clip]

>>

>> *You do not prove definitions.*

>>

>

>

> *Who said that?*

A definition is saying something is something else ie giving it a name. As such it is unarguable. The only issue associated with it is the existence problem ie proving that what you define exists. Is that what you alluding to? If so the correct mathematical nomenclature is the existence problem.

>

> *That may be true for your science, and for some possibly Post Modernist physicists, however, all true genus and differentia definitions either have been, or should be, checked and verified by means of deductive proofs.*

>

> *If you were Ohm, and you discovered the concept of Ohm's Law,  $V=IR$ , wouldn't you be advised in the interest of checking your work to present in a paper on the matter to prove the concept?*

Ohms law is not a law – it is a mere tautology. What it says is that in substances that obey ohms law ohms law applies. Its physical content lies in the fact that substances that obey it to good approximation exist – the existence problem again. In fact it has been found that many of the 'laws' of physics are like that eg the law of conservation of energy is no more than a tautology about time symmetry or the conservation of momentum is no more than a tautology about spatial symmetry – see

<http://www.colorado.edu/philosophy/vstenger/nothing.html>. Because of this and other issues many people now think the word law applied to physics should not be used – its context is not well defined. For example ohms law has an entirely different physical basis than say Newton's second law or the superposition principle of QM.

- >
- > *You would:*
- > *demonstrate the idea in a physical experiment.*
- > *determine the conclusion of that work.*
- > *check the premises that necessarily lead to that conclusion.*
- > *check the accuracy of the formal logic involved.*
- > *and, present the verification in a comprehensible form, which would be a*
- > *syllogism.*

No, what you would do in the case of Ohms law is simply demonstrate quite a few objects obey it to good accuracy – but many do not obey it at all. The existence problem again.

- >
- > *Otherwise, the Dadaists, Post Modernists, Nihilists, Platonists,*
- > *Kantians, Surrealists and Pragmatists are going to occupy that*
- > *intellectual territory, and they will say that logic is irrelevant, and*
- > *that anything goes.*

The fact that the physicists I read, people like Landau, Dirac and Feynmann, are by and large ignorant (in the sense of relating them to physics – I have no doubt they know of them intellectually) of the philosophical positions you describe above shows to me the above is not particularly relevant to physics. If you believe otherwise can you detail the physicists that are influenced by the above?

- >
- > *Ohm's law without proof would be (the false),  $I=VR$ , and possibly, also*
- >  *$C=IR$ . Whatever works. Whatever.*
- >

Ohms law is a tautology. A tautology requires no proof other than to show it is a tautology.

- >
- > *Definitions are identifications of the facts of existents, or of the*
- > *substance, properties, potentials for change according to the thing's*
- > *nature, size, amount of mass, location, dimensional motion, and*
- > *relationships to other things. Definitions are formed by means of*
- > *induction as simple generalizations or as sophisticated identifications*
- > *of facts. E.g., the ball is blue,*

The statement the ball is blue is not a definition it is an observable fact. Saying we will call light with such and such a frequency blue is a definition or (less precisely) picking up an object and saying we will call

objects that have cooler blue is a definition.

- > *a tree is a plant, or,  $I=VR$ . They can*
- > *be ostensive definitions, they can be common dictionary definitions,*
- > *they can be scientific definitions, or they can be mathematical or*
- > *physical–mathematical identities, formulas, or equations.*
- >
- > *If you can't prove your definitions, you cannot be certain of the*
- > *validity of any of your knowledge, science, or mathematics.*

I think you are confused about proof – it requires no proof to define light of a certain frequency or range of frequencies to be blue other than we know such exists ie the existence problem.

- >
- >
- >
- > *[clip]*
- > >
- > > *The development of mathematical expertise is part of every physicists*
- > > *training but not of the type used in philosophy which is along the lines*
- > *of*
- > > *formal logic.*
- > >
- > >
- >
- > *Math is an essential part of physics.*

Is that not what I said above? In fact it is the language of physics. I will go further and say what makes a great physicist is the ability to translate the physics into the mathematics and the mathematics into the physics. Those that can do this in a way beyond the ken of others, to the point where it is scary, are the greats of physics. Regarding Feynman it has been written:

'At twenty–three ... there was no physicist on earth who could match his exuberant command over the native materials of theoretical science. It was not just a facility at mathematics (though it had become clear ... that the mathematical machinery emerging from the Wheeler–Feynman collaboration was beyond Wheeler's own ability). Feynman seemed to possess a frightening ease with the substance behind the equations, like Einstein at the same age, like the Soviet physicist Lev Landau – but few others.'

It is this 'frightening ease with the substance behind the equations' that makes a great physicist – not philosophy

- >
- > *There is a system of deductive operational notation used in logic that*
- > *is entirely symbolic. It is an attempt to mathematicize logic.*
- >

An attempt? It is part of mathematics. Have you actually read a book on modern mathematics? For the basics see for example the Shaum outline series on set theory.

- > *In some*
- > *case the physical identities are dropped, and the work has no*
- > *relationship to the physical world, and in other cases the the*
- > *operational aspects and unique notation are more important. Nonetheless,*
- > *that is merely a translation of, or an overlay upon, conceptual and*
- > *definition-based Aristotelean syllogistic logic. Interestingly, the*
- > *moderns do not treat inductive logic using the same symbolic methods,*
- > *and in this connection we can note that Aristotle's book on Induction*
- > *was lost in history.*
- >
- >
- > >>
- > >>.....
- > >>
- > >>*There is more.*
- > >
- > >
- > > *Sure – but, beyond simple answers to such questions, part of philosophy –*
- not
- > > *science.*
- > >
- > [*clip*]
- >
- >
- >
- > *There are two senses of meaning for each of the concepts of science and*
- > *of philosophy.*
- >
- > *One branch of philosophy is science. That it is in the context of all*
- > *knowledge. That classification would include physics, biology, and*
- > *mathematics, for example. A sub-classification of science would be the*
- > *philosophy of science, and the context would be the study of the*
- > *specific methods that are specific to the science or sub-science being*
- > *discussed, for example, the Scientific Method(s), experimental design to*
- > *provide valid results, and the basic concepts of science and*
- > *mathematics, i.e., concepts of number, counting integers, and the series*
- > *of number concepts that are powers of integers.*
- >
- > *On the other hand, philosophy is a science.*

No it is not. Science accepts a certain method – that of test, hypothesize, test, hypothesize over and over. That such is a valid way of gaining knowledge is a philosophical issue, but the practicing of that method is not philosophy – it is by definition science.

- > *That is, it is a science in*
- > *the context of the methods and the uses of the broadest concepts to*

> *identify the facts of the universe.*

For it to count as science it must make predictions that can be checked against experiment. Philosophy does not follow that method. Eg philosophy will discuss if the scientific method itself is a valid way of looking at the world – science itself never doubts it because it is what science is all about. The scientific method is not itself subject to scientific investigation. You either accept it as the way you will approach the world or not – the choice is yours.

>

> *Whether one says that this is that, or that that is another thing, which  
> statements of identity are always definitions, context prevails. One may  
> define a concept one way or another depending on what specified context  
> is appropriate to the task.*

Science is concerned only with correspondence with experiment. Issues like the above are purely in the domain of philosophy. The best spokesman I know of for what science is is Feynman. Here are a few of his thoughts:

"Physics is like sex. Sure, it may give some practical results, but that's not why we do it."

"I can live with doubt and uncertainty and not knowing. I think it is much more interesting to live not knowing than to have answers that might be wrong."

"The first principle is that you must not fool yourself – and you are the easiest person to fool."

"If we will only allow that, as we progress, we remain unsure, we will leave opportunities for alternatives. We will not become enthusiastic for the fact, the knowledge, the absolute truth of the day, but remain always uncertain... In order to make progress, one must leave the door to the unknown ajar."

You can know the name of a bird in all the languages of the world, but when you're finished, you'll know absolutely nothing whatever about the bird... So let's look at the bird and see what it's doing – that's what counts. I learned very early the difference between knowing the name of something and knowing something.

"Science is the belief in the ignorance of experts. "

"We cannot define anything precisely! If we attempt to, we get into that paralysis of thought that comes to philosophers, who sit opposite each other, one saying to the other, 'You don't know what you are talking about!' The second one says 'What do you mean by know? What do you mean by talking? What do you mean by you?', and so on."

"...far more marvelous is the truth than any artists of the past imagined it. Why do the poets of the present not speak of it? What men are poets who can speak of Jupiter if he were a man, but if he is an immense spinning sphere of methane and ammonia must be silent?"

(On pseudoscience) "...there is one feature I notice that is generally missing in 'cargo cult science'... It's a kind of scientific integrity, a principle of scientific thought that corresponds to a kind of utter honesty -- a kind of leaning over backwards... For example, if you're doing an experiment, you should report everything that you think might make it invalid--not only what you think is right about it... Details that could throw doubt on your interpretation must be given, if you know them."

- >
- > *Definitions and proofs are hotly denied by scientists of some*
- > *philosophical persuasions, and their primary means of attack is upon*
- > *context, or by means of context switching.*
- >

Please tell me those scientists that mix philosophy and science? The ones I read, people like Weinberg, Feynman, Landau, Dirac, Rindler and Wald rarely if ever discuss philosophy and they are among the best scientists that ever lived. Einstein did a bit but he was the exception rather than the rule. Indeed the most common attitude I can find is what Feynman said above namely "We cannot define anything precisely! If we attempt to, we get into that paralysis of thought that comes to philosophers, who sit opposite each other, one saying to the other, 'You don't know what you are talking about!' The second one says 'What do you mean by know? What do you mean by talking? What do you mean by you?', and so on."

- >
- > *The relationships of science and philosophy classify knowledge of*
- > *different types in different ways depending on the context. Without a*
- > *specified context one could switch from framework to framework and seem*
- > *always to be right, and yet be totally wrong when more than one*
- > *framework is simultaneously evaluated in the context of identifying a*
- > *universal concept.*

My claim is not that philosophy is not relevant to science – clearly it is as it is relevant to any other area of endeavor – my claim is beyond simple notions it is unimportant to science.

- >
- > *Context switching is a fallacy of logic, and that is unscientific.*
- >

It is a fallacy of logic – nothing to do with science whose basis is correspondence with experiment – you are the one context shifting here. Wittgenstein and Turing had a big debate about the issue of if theories need to even be consistent – I side with Turing and believe they must be – but the issue is not clear cut.

- > *Without valid contexts being established definitions cannot be written*
- > *that are distinguishable from one another in a logical system or theory*
- > *of knowledge. Without valid, that is, proved, definitions there can be*
- > *no valid means of knowing whether or not any identifying concept has*
- > *anything to do with the facts of the universe at all. Chance accident of*
- > *arriving a correct definition or identity is a most unreliable means of*
- > *knowledge. Misuse of contexts is one of the basic means of destroying*
- > *the validity of human reason,*

Certainly arbitrary context shifting is a standard technique of the crank and crackpot; as a lot of what people like me who argue with these idiots know only too well. However its use by legitimate scientists such as the ones I mentioned above would seem very rare indeed. Do you have any examples of such?

- > *and an example of that would be the*
- > *substitution of social acceptance as the final arbiter of fact.*

Legitimate scientists do not do that. Correspondence with experiment is all that counts or it is not science.

- > *Social agreement has nothing to do with science.*

True with some caveats. You might like to acquaint yourself with the famous Turing–Wittgenstein debates of if theories need to even be consistent. The issue is not clear cut but I will not go into the detail here unless you wish – see [http://www.royalinstitutephilosophy.org/articles/w\\_wrigley.htm](http://www.royalinstitutephilosophy.org/articles/w_wrigley.htm). Also the DETAILS of the language used to communicate scientific ideas is a social agreement ie that the symbol 0 means zero, 1 means one etc.

- > *The whims and wishes of*
- > *back-patting societies and social intimidation systems have nothing to*
- > *do with science or fact, and if anything they are destructive to science.*

Instead of suggesting things that I have never come across in the many physics texts I have read can you perhaps give some examples relevant to physics?

- >
- > *Definitions must be proved in the context of an overall logical system*
- > *of knowledge.*

The only issue with definitions is the exultance problem.

Thanks  
Bill