Examples of Relativists (believers in Einstein's relativity) moving goalposts

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Moving goalposts is not supposed to me used for a theory, but relativists (believers in Einstein's relativity) seem to do it all the time because their theory/theories are not properly defined. Examples are given of how they add things ad hoc to their theory to save it from being refutable.

According to Karl Popper a theory is scientific only if it is refutable by a conceivable event. [1] While moving goalposts is a method preventing a theory from being refuted; hence why frowned upon. Wikipedia describes it as [2]: "Moving the goalposts is an informal fallacy in which evidence presented in response to a specific claim is dismissed and some other (often greater) evidence is demanded. That is, after an attempt has been made to score a goal, the goalposts are moved to exclude the attempt. The problem with changing the rules of the game is that the meaning of the result is changed, too."

Despite the method being frowned/disapproved relativists (believers in Einstein's relativity) seem to use it a lot. Einstein himself seemed to have used the method when he moved from special relativity to general relativity, where general relativity can be looked upon as an updated from special relativity or rather as goalposts moved on from what special relativity was talking about.

Examples are now given:

Example #1

Mathpages seeks to debunk critic of Einstein's relativity Herbert Dingle [3], there is too much to complain about as being wrong by mathpages, and will concentrate just on the following claim that Dingle is wrong: "To elaborate on this point, the Lorentz transformation is $x' = (x-vt)\gamma$, $t' = (t-vx/c^2)\gamma$, and its algebraic inverse is $x = (x'+vt')\gamma$, $t = (t'+vx'/c^2)\gamma$, where $\gamma = 1/(1-v^2/c^2)^{1/2}$. These equations imply $t' = \gamma t$ at $x = 0$, and $t = \gamma t'$ at $x' = 0$. Dingle alleged that these two facts are mutually contradictory, because the first implies $t'/t = \gamma$ and the second implies $t/t' = \gamma$. However, these ratios apply to two different conditions, namely, $x = 0$ and $x' = 0$ respectively. Hence, contrary to Dingle's assertion, there is no contradiction, nor are these relations merely "appearances"."

BUT – Dingle was going by what was being said about relativity when he was alive, not by what mathpages website now wants to claim relativity 'is'. Mathpages moves the goalposts and doesn't

go by what was originally said about relativity. In my view Steven B Bryant [4] faces the same sort of problem; he can point out mistake(s) in what Einstein originally said, but relativists that come after Einstein want to move goalposts!

So, back to mathpages it says: "these ratios apply to two different conditions, namely, x = 0 and x' = 0 respectively."—which is false; that was not what was originally said!

For instance, Richard Tolman- respected authority of relativity writing on subject 1934 in his book "Relativity, thermodynamics and cosmology" [5] dealing with it as differentials (not what mathpages does) though makes no difference to point now making says: "Similarly we may determine how a time interval dt which can be measured on a single clock in a system S between two events, which occur at the same point in system S, will measure with the clocks of system S'. In this case since the two events occur at the same point in S' we have dx=0 and substituting in the fourth of equations (9.1) [me – i.e. Lorentz equations but written as differentials] immediately obtain dt' = $dt/(1{-}v^2/c^2)^{1/2}$
[me- actually uses capital V instead of small v, but means same.] Again we conclude that the time interval between two events which has the duration dt when measured with a given clock has a longer duration when measured by clocks relative to which the first clock is moving. The two situations [me- means for what says next in terms of time and length], in the case of the clocks as in the case of the measuring sticks, are symmetrical and in entire agreement."

Nothing being said By Tolman for what mathpages says of "these ratios apply to two different conditions…" Is thus an example of relativists (e.g. mathpages) wanting to move goalposts and say something different to what was originally said. As for poor maligned Dingle, he was going by what was originally said before the goalposts were moved!

Unfortunately, the defenders of Einstein's relativity have the comeback that what Tolman implicitly means is the same as what mathpages says; however, that is not explicitly said, so that is itself goalpost moving to try to find hidden meanings.

Example #2

Another example of relativists (believers in Einstein's relativity) having to move the goalposts:
The people below are going to deem*[-see note] that Einstein in his 1905 paper on special relativity makes a wrong prediction about clocks, and has to be compensated for from his 1915 theory (i.e. general relativity) – in other words moving the goalposts – what he says from special relativity is wrong, and goalposts have to be moved to general relativity.(*note - Actually, the situation seems more complicated than what these people deem. Einstein seems often to make several mistakes at the same time; but I will not be going into details about that and just treating here as Einstein did a wrong prediction in special relativity and had to compensate by general relativity.)

 Jeremy Bernstein [6] : "It is interesting to note that in his 1905 paper Einstein made a prediction about clock rates that is essentially wrong. He writes, "Thence we conclude that a balance clock on the equator must go more slowly, by a very small amount, than a precisely similar clock situated at one of the poles under otherwise identical conditions." If the experiment had been carried out in 1905, Einstein would have been surprised to learn that clocks go at sensibly the same rate. There is the effect of gravitation that Einstein did not know about in 1905. The equator clock is further from

the gravitation center—the earth bulges—than the pole clock and hence the gravitational effect is smaller. If the special relativity and gravitational effects are both taken into account, the rates of the two clocks are nearly identical, which is not what Einstein predicted. In fact all the identical clocks on the surface of the earth run at the same rate. One can only wonder what Einstein would have made of this result in 1905."

Priyamvada Natarajan [6]: "Jeremy Bernstein is right to note that Einstein himself, using his theory of special relativity, got the prediction of clock speeds wrong in 1905. He incorrectly predicted that due to the earth's rotation, a clock at the equator would run slower than one at the poles. Einstein did not anticipate his own theory of general relativity, which he would need to get it right—this would come in 1915. In a 2005 article in *Physics Today* titled "A Small Puzzle from 1905," the physicists Alex Harvey and Engelbert Schucking pointed out that Einstein made this error by failing to take into account an effect of general relativity positing that clocks more deeply embedded in a gravitational field would run slower. Clocks run slightly faster at the equator compared to the poles because the earth's rotation produces a slight bulge at the equator. However, the earth is also rotating faster at the equator. These two effects compensate for each other exactly, causing clocks to actually run at the same rate in both locations. Harvey and Schucking give another explanation for why the rates of polar and equatorial clocks must be the same. They write that in the moving earth frame, both clocks are at rest, and since both clocks are at the same effective gravitational potential, they tick at the same rate."

So, based on these types of relativists, they spot a mistake by Einstein and correct him to what they think he should have said; in other words, move goalposts. Also, there is the issue of when one theory stops working then replace it by another theory, and claim the new theory is update of the old; going to the new theory constitutes moving goalposts.

Example #3

Wikipedia [7] tells us the usual thing about special relativity being based on two assumptions/postulates: "Special relativity is a theory of the structure of spacetime. It was introduced in Einstein's 1905 paper "On the Electrodynamics of Moving Bodies" (for the contributions of many other physicists see History of special relativity). Special relativity is based on two postulates which are contradictory in classical mechanics:
   1. The laws of physics are the same for all observers in any inertial frame of reference relative to one another (principle of relativity).
   2. The speed of light in a vacuum is the same for all observers, regardless of their relative motion or of the motion of the light source."

   If look at book "The six core theories of modern physics" (1995) by Charles F Stevens (Professor at Salk Institute, member of the National Academy of Sciences etc.) [8] starts with special relativity's two postulates and then says: "From the first postulate we have (in addition to the assumption that the relevant spaces are Euclidean) two fixed facts to base the [Lorentz] transformations...."So, two postulates/assumptions were not enough he had to add an extra assumption of Euclidean geometry/space. i.e. moved goalposts! The whole basis of relativity is to keep moving the goalposts.

Example #4

As New Scientist 30 October 2019 article "Einstein killed the aether.... " [9] - explains Einstein killed the aether in 1905 with special relativity but goes on to say: "But relativity has run into difficulties of its own. Its failure to explain the behaviour of the universe at the smallest scales suggests that some more fundamental theory is waiting to take its place. Einstein's universe is also plagued by dark forces that his theory cannot cast out."

and the article's solution is the proposal to bring back the aether; that's moving the goalposts—special relativity kills aether then follow that by move the goalposts and bring it back again. (note: Einstein thought about bringing aether back as well. [10])

Conclusions

Moving goalposts technique as applied to Einstein's relativity by relativists has been in examples given:

(i)   Read implicit meanings into texts on relativity that are not explicitly stated.
(ii)   Spot what are thought mistakes by Einstein and amend Einstein's relativity accordingly.
(iii)   Einstein for special relativity gave two assumptions, but when this is deemed not enough then add extra assumptions ad hoc.
(iv)   Einstein discarded certain concepts and when need arises bring them back ad hoc.

All of these steps are taken to make Einstein's relativity irrefutable, but according to Popper such a theory is then not scientific.

Skeptics have pointed out that those who believe in the various religions use the same sort of methods as moving goalposts, that brings Einstein's relativity in line with those ideologies.

References

[1] Stanford Encyclopedia of Philosophy: Karl Popper, by Stephen Thornton 2018
https://plato.stanford.edu/entries/popper/

[2] https://en.wikipedia.org/wiki/Moving_the_goalposts 17 July 2020

[3] What happened to Herbert Dingle
https://www.mathpages.com/home/kmath024/kmath024.htm

[4] Twist- episode 2 proving Einstein's theory of relativity wrong, Steven B. Bryant

https://stevenbbryant.com/2017/01/twist-episode-2-proving-einsteins-theory-of-relativity-wrong/

Steven B Bryant claims that Einstein did not deal properly with a spherical wave. Summarising what was being said and hopefully not simplifying it too much as to distort the gist: Einstein seems to have transformed a sphere into a distorted sphere using Lorentz transformations and still called that a sphere, when the transformed sphere doesn't really fully fulfil the properties of a sphere. The moving goalposts approach of relativists would be to probably redefine what was meant by a sphere in the context of Einstein's relativity.

[5] "Relativity, thermodynamics and cosmology" Richard C Tolman 1934 p. 24, my copy: Dover 1987 ISBN 0-486-65383-8

[6] When Einstein Was Wrong, Jeremy Bernstein, reply by Priyamvada Natarajan https://www.nybooks.com/articles/2014/12/04/when-einstein-was-wrong/

[7] https://en.wikipedia.org/wiki/Theory_of_relativity at 17 July 2020

[8] The six core theories of modern physics, 1995 ISBN 0-262-19359-0 by Charles F Stevens

[9] New Scientist 30 October 2019 article "Einstein killed the aether. Now the idea is back to save relativity" by Brendan Foster

[10] Einstein: Ether and Relativity https://mathshistory.st-andrews.ac.uk/Extras/Einstein_ether/