

On 20 Things you didn't know about Relativity

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Surprisingly an article appeared in a science magazine Discover and does not always cast Einstein in the usual propaganda. I wish to add my comments.

From the article “20 Things You Didn't Know About Relativity”, by Susan Kruglinski in the Discover magazine March 2008 issue, published online February 25, 2008 [1]

- 1 Who invented relativity? Bzzzt—wrong. Galileo hit on the idea in 1639, when he showed that a falling object behaves the same way on a moving ship as it does in a motionless building.

That is not so, as pointed at out a math page for relativity [2] :

“There have been many theories of relativity throughout history, from the astronomical speculations of Heraclides to the geometry of Euclid to the classical theory of space, time, and dynamics developed by Galileo, Newton and others.”

Although the writer's point at that mathpage - is that most people would say Einstein and forget the other relativity theories, because it says:

“However, when we refer to the “theory of relativity” today, we usually mean one particular theory of relativity, namely, the body of ideas developed near the beginning of the 20th century and closely identified with the work of Albert Einstein.”

So what most people mean by relativity is Einstein's relativity not those others relativity.

Back to Kruglinski:

- 2 And Einstein didn't call it relativity. The word never appears in his original 1905 paper, "On the Electrodynamics of Moving Bodies," and he hated the term, preferring "invariance theory" (because the laws of physics look the same to all observers—nothing "relative" about it).

But he did relent and call it relativity, else he would not have called his books on it as relativity e.g. . "Relativity: The Special and General Theory", Einstein (1916) and "The Meaning of Relativity", Einstein (1956).

- 3 Space-time continuum? Nope, that's not Einstein either. The idea of time as the fourth dimension came from Hermann Minkowski, one of Einstein's professors, who once called him a "lazy dog."

The issue here is that Minkowski thought he had a better theory than Einstein's and Lorentz's. So do we recognise it as improvement on Einstein or not; do we stick to Einstein or update to Minkowski. Typically popular writers and science educators like to be obscure on this or ignore the issue.

- 4 But Einstein did reformulate Galileo's relativity to deal with the bizarre things that happen at near-light speed, where time slows down and space gets compressed. That counts for something.

And according to my articles he messed that up.

- 5 Austrian physicist Friedrich Hasenöhl published the basic equation $E = mc^2$ a year before Einstein did.

- 6 Never heard of Hasenöhl? That's because he failed to connect the equation with the principle of relativity. Verdammt!

It means $E = mc^2$ can be derived without Einstein's Special Relativity; contrary to many promoters of the myth of Einstein that the equation comes from Einstein's theory alone.

Comments 7 -8 are trivial mentioning Einstein as Swiss patent clerk, and that he was generally a teetotaller.

- 9 Affection is relative. "I need my wife, she solves all the mathematical problems for me," Einstein wrote while completing his theory in 1904. By 1914, he'd ordered her to "renounce all personal relations with me, as far as maintaining them is not absolutely required for social reasons."

That means it was a joint theory; and if earlier comment by his professor is correct about him being lazy (from point 3), then maybe he did not make much contribution in that joint venture. Which would then mean that Relativity theory being promoted as coming from Einstein, would not have been the genius he was portrayed but really

instead someone who didn't really know what they were talking about. (That could cause a bit of confusion.)

10 Rules are relative too. According to Einstein, nothing travels faster than light, but space itself has no such speed limit; immediately after the Big Bang, the runaway expansion of the universe apparently left light lagging way behind.

But matter is embedded in space and if space were going faster than light then matter would go along with it that speed as well; contrary to assumption of Special Relativity. So General Relativity (GR) really abandons the basis of Special Relativity (SR).

Surprising Smolin who appears to be an Einstein follower almost says similar:

“Special relativity was the result of 10 years of intellectual struggle, yet Einstein had convinced himself it was wrong within two years of publishing it. He rejected his theory, even before most physicists had come to accept it, for reasons that only he cared about. For another 10 years, as the world of physics slowly absorbed special relativity, Einstein pursued a lonely path away from it.” [4]

Unfortunately with Einstein he kept changing his mind a lot. But it seems - Einstein's final opinion on that matter was – that his Special Relativity was wrong. and needs replacing by General Relativity. Sadly many Einstein followers don't believe that.

11 Oh, and there are two relativities. So far we've been talking about special relativity, which applies to objects moving at constant speed. General relativity, which covers accelerating things and explains how gravity works, came a decade later and is regarded as Einstein's truly unique insight.

12 Pleasure doing business with you, chum(p): When Einstein was stumped by the math of general relativity, he relied on his old college pal Marcel Grossmann, whose notes he had studied after repeatedly cutting class years earlier.

Einstein had to go into joint venture with someone else after dumping his wife.

13 Despite that, the early version of general relativity had a major error, a miscalculation of the amount a light beam would bend due to gravity.

Also a major error was made in the calculation of light bending within context of Newtonian physics, because that was twice as much as to what its popularly said to be. (Dealt with in my articles.)

14 Fortunately, plans to test the theory during a solar eclipse in 1914 were scuttled by World War I. Had the experiment been conducted then, the error would have been exposed and Einstein would have been proved wrong.

So if his theory had been tested in 1914 it would have been testing the wrong value of light deflection.

15 The eclipse experiment finally happened in 1919 ... Eminent British physicist Arthur Eddington declared general relativity a success, catapulting Einstein into fame and onto coffee mugs.

16 In retrospect, it seems that Eddington fudged the results, throwing out photos that showed the “wrong” outcome.

So not a fair comparison of Newtonian physics was made with Einstein. Einstein being declared genius was premature.

17 No wonder nobody noticed: At the time of Einstein’s death in 1955, scientists still had almost no evidence of general relativity in action.

And what debate has there been on - whether there really was a need to transfer from Newtonian physics to GR? Answer - none as far as I know. Newtonian physics predicts same light bending effect as GR; that gets ignored. They just let GR stand on the false experimental data of 1919 that was suppose to prove it, but really didn’t.

18 That changed dramatically in the 1960s, when astronomers began to discover extreme objects—neutron stars and black holes—that put severe dents in the shape of space-time.

Massive objects are allowed in Newtonian physics. Some Einstein promoters try to pretend Blackholes this is some sort of advance on Newtonian physics; when it isn’t.

19 Today general relativity is so well understood that it is used to weigh galaxies and locate distant planets by the way they bend light.

Not well understood by everyone. If proper debate had been allowed in 1919 instead of prematurely declaring Einstein a genius then it would have been pointed out by Silberstein that Einstein’s relativity was really same as what Newtonian physics gave.

20 If you still don’t get Einstein’s ideas, try this explanation reportedly from The Man Himself: “Put your hand on a hot stove for a minute and it seems like an hour. Sit with a pretty girl for an hour and it seems like a minute. That’s relativity.”

That’s a joke, and sadly Einstein’s relativity is a joke.

The article by Susan Kruglinski goes some way in staining the image of Einstein but does not go far enough; and the hero worship of Einstein continues despite small cracks in that worship. The hero worship is used to block any attempt to tidy up the mess that Einstein left us.

References

[1] <http://discovermagazine.com/2008/mar/20-things-you-didn.t-know-about-relativity>

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[4] Einstein's Legacy -- Where are the "Einsteinians?" by Lee Smolin
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