

On Advanced triplethink in Einsteiniana

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This is a look at an article written by Pentcho Valev and posted by him on science forums. I will go over the issues raised with added further information to clarify the issues raised. The proposal is that Einstein's Relativity is Orwellian doublethink that has now progressed to triplethink; this is a result of Einstein's Relativity being a poorly defined theory by the mainstream. The example looked at will be the twin paradox, where numerous attempts have been made to understand the twin paradox from the context of Einstein's theory. This article will go over some of those attempts..

Introduction

For the sake of this article I will assume Einstein's relativity with its time dilation, and not question whether that math was derived correctly. [an issue dealt with in other articles]

There are various different versions of Einstein's theory in regard to trying to answer the twin paradox.

Version 1 – by Hardeep Aiden - the twin who feels the acceleration ages less than the one who does not. i.e. the astronaut ages less than the state-at-home twin. --- This is the usual one adopted by mainstream at moment.

Version 2 various different versions - I am going to lump as version 2 which existed before version 1 was adopted.

Version 3 accelerated twin's age relative to the other twin depends upon their velocities measured to an absolute standard of rest [personally I think "absolute" inappropriate, and it should be with respect to a datum frame, because rest is relative.]

As Pentcho Valev would interpret it this would all just be lies, and that the mainstream uses double think now advanced to triplethink in the Twin Paradox-

Lie 1

Lie 2

Lie 3

What we really have is an ill-defined theory due to Einstein. The various different versions of the twin paradox explanation I lumped as version 2 which needed update to version 1; where version 1 is the usual explanation at present and even that is not good enough, and it requires update to version 3.

Version 1

Version 1: The greater youthfulness of the travelling twin is due to acceleration (Einstein's 1918 explanation):

From Hardeep Aiden a mathematician graduated from Imperial College, London:

<http://plus.maths.org/issue36/features/aiden/index.html>

"This is the story of twins Peter and Paul. Paul makes a round trip in a high-speed spaceship and leaves his brother Peter on Earth. With the help of his telescope, Peter watches Paul whizzing through space. As a result of time dilation, Peter sees that Paul is aging more slowly than he. But, just as Alice and Bob both thought that the other was experiencing time more slowly than themselves, shouldn't Paul observe Peter aging more slowly than he? This would mean that each twin thought the other one was aging more slowly. In fact, the situation is not symmetrical: only the twin who stays at home is in an inertial frame. Paul experiences acceleration (that is, changes in velocity) as his rocket leaves Earth, turns around and comes back. In general, accelerated clocks (or clocks in gravitational fields) will go slow relative to unaccelerated clocks (or clocks feeling no gravitational fields). So the twin that feels the accelerations will age more slowly than the one who doesn't."

Version 2

I am now going to emphasize some of the various versions that arose before version 1, from wikipedia at 2009-09-15:

http://en.wikipedia.org/wiki/Twin_paradox

says: "Starting with [Paul Langevin](#) in 1911, there have been numerous explanations of this paradox, all based upon there being no contradiction because there is no symmetry — only one twin has undergone acceleration and deceleration, thus differentiating the two cases. One version of the asymmetry argument made by [Max von Laue](#) in 1913 is that the traveling twin uses *two* inertial frames: one on the way up and the other on the way down. So switching frames is the cause of the difference, not acceleration *per se*." [see note (C)]

So the points to note – there have been numerous explanation attempts; and version 1 might not be strictly correct; it might be switching frames is the cause of the difference in ages of the twins not the acceleration per se. [note (C)]

On Einstein it says: "In his famous work on [special relativity](#) in 1905, [Albert Einstein](#) predicted that when two [clocks](#) were brought together and synchronized, and then one was moved away and brought back, the clock which had undergone the traveling would be found to be lagging behind the clock which had stayed put. Einstein

considered this to be a natural consequence of special relativity, not a paradox as some suggested, and in 1911, he restated and elaborated on this result in the following form:

“If we placed a living organism in a box ... one could arrange that the organism, after any arbitrary lengthy flight, could be returned to its original spot in a scarcely altered condition, while corresponding organisms which had remained in their original positions had already long since given way to new generations. For the moving organism the lengthy time of the journey was a mere instant, provided the motion took place with approximately the speed of light. (in Resnick and Halliday, 1992)”

From this it might be thought that Einstein did not appreciate at the time that there was a conversion going on from a symmetrical setup to an unsymmetrical setup as follows:

When the twins are separated by a constant velocity then the twins each observe the other as younger because the Principle of relativity requires symmetry for this setup. When the astronaut twin goes on a journey and returns to the stay at home twin then there is not this symmetry and the astronaut will be the younger. i.e. this is version 1 – which Einstein might not have appreciated initially.

Version 3:

Latest update is that the astronaut twin gets older not younger under certain conditions:

<http://www.physorg.com/news163738003.html>

"Just when you thought you were beginning to understand the twin paradox (maybe), scientists have found something new to ponder. In the original version of the famous thought experiment on time dilation, one twin stays on Earth while the other twin takes a rocket at nearly light speed into space, and returns to find that he is younger than his twin on Earth. But a new version of the story now shows that the twin who experiences an acceleration can be older than the twin who doesn't accelerate, under slightly different conditions."

The explanation the article goes into is as follows:

“Physicist Marek Abramowicz of Goteborg University in Sweden and astronomer Stanislaw Bajtlik of the Nicolaus Copernicus Astronomical Center in Warszawa, Poland, have proposed the surprising new version of the twin paradox, which at first seems to run contrary to the traditional version. However, the scientists show that the traditional version is actually a specific case of a more general concept.”

“In the best known version of the twin paradox, the twin who is accelerated is younger,” Abramowicz and Bajtlik told PhysOrg.com. “In the version discussed by us the accelerated twin is older. It is quite surprising. It is almost as to say that ‘the older twin is younger.’”

“In 1905, [Einstein](#) described the ideas behind the twin paradox to demonstrate the effects of time dilation according to special relativity. In 1911, physicist Paul Langevin turned the concept into a concrete story involving two hypothetical twins. Ever since then, scientists have offered various explanations for exactly why this aging paradox occurs, and whether it is even a true paradox at all.”

“As Abramowicz and Bajtlik note in their study, it is often claimed that the twin paradox can be explained by the acceleration of the travelling twin that occurs when he turns around to go back to Earth. Abramowicz and Bajtlik show, however, that it is not the acceleration that causes the age difference in most cases. By presenting a scenario in which the accelerated twin is older at the reunion, the scientists show that the final time difference between the twins often depends only on their velocities as measured with respect to an absolute standard of rest, and not on acceleration.”

“In the new scenario, both twins are in circular orbit at different velocities around a large body, with the velocities measured by observers rotating with zero angular momentum with respect to the sky. Abramowicz and Bajtlik considered what happens when twin A stops moving, and so has a velocity of zero, and therefore a non-zero acceleration. Twin B continues to orbit at a set velocity corresponding to Keplerian free orbit and therefore has zero acceleration. Twin A is the accelerated twin, and twin B is not accelerated. As the scientists calculate, contrary to the classical version of the paradox, twin B is younger.”

There is further explanation, but I think it highlights the modification. The existing setup is not to consider acceleration effect on the stay at home twin. This new setup considers acceleration differences on both twins. So that – the old version of acceleration causing age difference is now to be replaced by the accelerated twin’s age relative to the other twin depends upon their velocities measured to an absolute standard of rest. Personally I think “absolute” inappropriate, and it should be with respect to a datum frame, because rest is relative.

Double think explained:

Looking at this situation from Pentcho Valev’s perspective - we need to know what doublethink is, so from:

<http://www.liferesearchuniversal.com/1984-17.html#seventeen>

George Orwell: "Doublethink means the power of holding two contradictory beliefs in one's mind simultaneously, and accepting both of them. The Party intellectual knows in which direction his memories must be altered; he therefore knows that he is playing tricks with reality; but by the exercise of doublethink he also satisfies himself that reality is not violated. The process has to be conscious, or it would not be carried out with sufficient precision, but it also has to be unconscious, or it would bring with it a feeling of falsity and hence of guilt. Doublethink lies at the very heart of Ingsoc, since the essential act of the Party is to use conscious deception while retaining the firmness of purpose that goes with complete honesty. To tell deliberate lies while genuinely believing in them, to forget any fact that has become inconvenient, and then, when it becomes necessary again, to draw it back from oblivion for just so long as it is needed, to deny the existence of objective reality and all the while to take account of the reality which one denies - all this is indispensably necessary. Even in using the

word doublethink it is necessary to exercise doublethink. For by using the word one admits that one is tampering with reality; by a fresh act of doublethink one erases this knowledge; and so on indefinitely, with the lie always one leap ahead of the truth."

Pentcho Valev interpretation on this situation in Relativity of there being lots of versions of attempts to answer the twin paradox is that sometimes "the lie one leap ahead of the truth" degenerates (or progresses) into "the lie one leap ahead of another lie". When Einsteinians explain the absurdity called the twin paradox, they oscillate between lies.

Conclusion

What Pentcho Valev interprets as lies in Relativity, is a deep crisis in Einstein's Relativity. The attempts to find answer to the twin paradox within the context of Einstein's Relativity has generated numerous tries as wikipedia notes, and we have the latest attempt by Abramowicz and Bajtlik (version 3) which would be a modification of our present understanding (version 1).

Effectively it is "advanced triplethink" as Pentcho calls it.

If we try to be charitable and not call it "lies" then we have to recognise that Einstein's Relativity is a confused and confusing subject. Part of this confusion is caused by the split of Einstein's Relativity between SR and GR. So when it comes to a problem like the Twin Paradox it becomes very unclear how to deal with that problem a theory split in two parts- because then part of the problem is dealt with in SR and part in GR and part gets lost in the blurry gap between SR and GR.

For two twins travelling apart there is velocity involved, there is acceleration involved. We can consider just a constant velocity setup but that ignores what happens if the astronaut twin goes on a journey returning to the stay at home twin. And then extra issues arise as to should we consider effect of acceleration on just one twin or both etc. So how precisely the Twin paradox is setup under what specific conditions depends the different answers that Einstein's Relativity gives.

Both the theory itself and the questions asked it (such as the twin paradox) have not been clearly defined.

Postscript

This paper is based on following through after accepting Einstein's Relativity gives time dilation as to trying to understand what that means; and the illustration in this paper is that it leads to different attempts to understand what that means among Relativists i.e. they do not have a clear agreed understanding of this issue; same as other issues in Einstein's Relativity. If we look at the reasoning behind the introduction of time dilation by Einstein, we might disagree with those reasons; and that is an issue of other papers.

Notes

(A)

Unfortunately, Pentcho Valev looked at David Morin's book: Introduction to Classical Mechanics: With Problems and Solutions, Cambridge University Press 978-0-521-87622-3 and misunderstood it as giving the greater youthfulness of the travelling twin is not due to acceleration. Actually it is closer to version 1 of the twin paradox.

From: <http://www.people.fas.harvard.edu/~djmorin/chap11.pdf>

p. 44: "11.19. Modified twin paradox. Consider the following variation of the twin paradox. A, B, and C each have a clock. In A's reference frame, B flies past A with speed v to the right. When B passes A, they both set their clocks to zero. Also, in A's reference frame, C starts far to the right and moves to the left with speed v . When B and C pass each other, C sets his clock to read the same as B's. Finally, when C passes A, they compare the readings on their clocks..."

and Pentcho's claim of the previous version of David Morin's textbook there was the following additional text:

"This form of the twin paradox loses a bit of the punch of the usual statement of the problem, since we don't compare the ages of the same two people before and after the journey. But on the other hand, THIS VERSION OF THE PROBLEM DOES NOT INVOLVE ACCELERATION."

Pentcho in error interpreted it as meaning that the astronaut was more youthful from the stay at home twin not due to acceleration.

David Morin was not considering situation of astronaut going out and returning to frame of the stay at home twin for this particular bit. When he does consider that – the astronaut is the younger.

The usual understanding is that – the stay at home twin observes the astronaut twin as younger when constant velocity separates them, but this is symmetrical in SR and the astronaut twin observes the stay at home twin as younger also. When acceleration is involved so that the astronaut goes on a journey and returns to the stay at home twin's frame then he is younger.

(B)

John G. Cramer at <http://www.npl.washington.edu/AV/altvw38.html>

tries to reconcile two arguments that have been used in the twin paradox and which becomes the version 1 above.

He says:

Much of the confusion surrounding the twin paradox can be traced to two specious arguments. **Argument 1**, which might be called the **symmetry argument**, usually

goes like this:

"An observer Ernest who remains behind and at rest will observe that astronaut Sam on board the ship travels away at a speed v and then returns at the same speed. But Sam also observes that the stay-at-home observer Ernest travels away from **him** at speed v and then returns at that speed. Sam is just as good an observer as Ernest, and since each observes the other having the same velocity relative to himself, there can be no difference in the readings of Ernest's clock and Sam's clock when the two clocks are compared at the end of the trip."

Argument 2, which might be characterized as the **know-nothing argument**, usually goes like this:

"The Lorentz transformations of special relativity only apply to objects travelling with **constant** speeds. But space ships must accelerate and decelerate in their operation. From the equivalence principle of general relativity we know that acceleration is equivalent to the effects of gravity and that gravity must be handled with the elaborate mathematical machinery of general relativity. Therefore, the twin paradox cannot be analyzed with special relativity alone, and we can't simply use the Lorentz transformations to say what the two clock readings will be after the trip. If there **is** any difference in the clock readings, it arises strictly from general relativity effects."

And he says: "Both of these arguments are wrong." – see his article for more..

(C)

The issue of is there a difference between "switching frames" and "acceleration" is another issue of confusion and will not be considered here, other than note: Those following Einstein's Relativity have difference of opinion on this as well.

c.RJanderton2009-09-15