

# Ambiguous Aether

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Talk presented at ANPA 2020: [https://www.youtube.com/watch?v=yWPI5WC\\_IV0](https://www.youtube.com/watch?v=yWPI5WC_IV0)

1. Einstein mistranslated from German into English
2. Einstein's wife probably coauthor of relativity and airbrushed out when could probably have clarified relativity
3. Einstein did not cite references for his ideas and so can't tie it into earlier physics dealing with relativity-related ideas.
4. Einstein kept changing his mind making his theory not properly defined
5. Galilean relativity (i.e. Galilean transformations) is nothing to do with Galileo.
6. Special relativity is a misnomer it is not a "relativity" theory.

All of this means is that his theory is ambiguous and such concepts as aether have been made ambiguous; with the connection between Newton and Einstein being mistaught to students.

# The Ambiguous Aether

**Roger J Anderton**

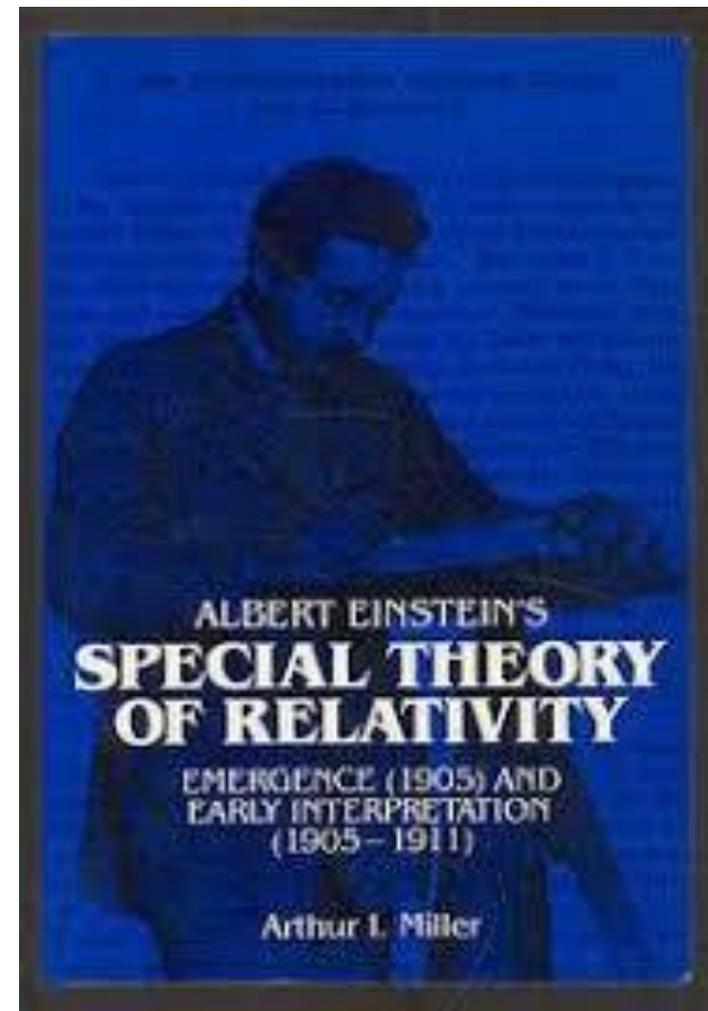
**ANPA Conference 2020**

**Picking up from last year's talk – I found that Einstein's 1905 paper on special relativity (SR) was mistranslated from German into English.**

**I am not unique in finding that it was mistranslated.**

**Arthur I Miller noted it was mistranslated in this book in 1981.**

**I think what happens is there is a mass of literature on relativity and issues like this get overlooked, and does not get to wider attention.**



**So, the issues become such things as why didn't Einstein become more aware that his theory had been mistranslated into English?**

**And I think the reason is possibly that his wife was a major contributor to the theory.**

**She would have been more concerned about the mistranslation as it might not have been in agreement with her understanding of relativity; whereas for Einstein for his understanding of relativity - the mistranslation did not make much difference.**

# The tragic destiny of Mileva Maric Einstein

Talk by Pauline Gagnon,  
CERN

Ref:

<https://paulinegagnon3.wixsite.com/boson-in-winter/public-talks>



**If can - would like to do a video clip here**





**Mileva Maric with Einstein.**

**She was studying physics with Einstein, and had a higher score in maths than him, leading to people saying she was a better mathematician than Einstein. She had a higher overall score in the degree course that she was doing with Einstein, but was failed while Einstein passed; not known why. It is thought they were borderline on the course.**

**So, proposal is that Maric was coauthor of relativity, and we only get one author's point-of-view about the theory. The other point-of-view might have been totally different.**

**Also there was the contribution of – Olympia Academy – group of Einstein’s friends.**

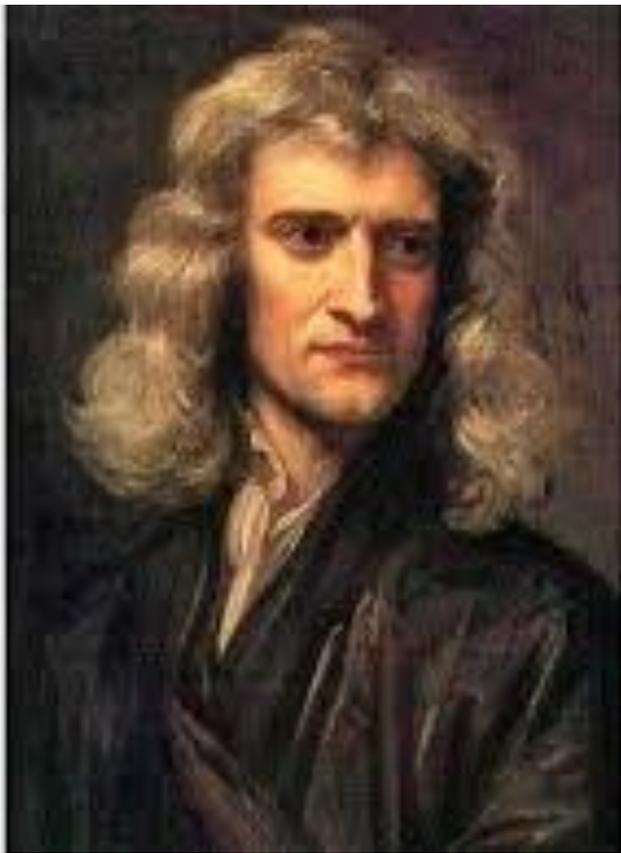
**Their reading list dealt with such things as Boscovich’s theory.**

**Conrad Habicht,  
Maurice Solovine, and  
Albert Einstein, *circa*  
1902-1903,**





**Boscovich's theory was point-atomism, so his aether would be made from particles.**



**From Newton it was a corpuscular theory of light i.e. light particle theory and from Boscovich it was development of that.**

**I contend that not just in his Photoelectric 1905 paper was Einstein dealing with particle theory of light, but he was also dealing with that in his relativity 1905 paper.**

**So, this link of development has not been properly appreciated.**

**“Boscovich (1711-1787) took an important step in the history of the particle concept. In contrast with Newton who did not analyse the actual impact of particle on one another, Boscovich, in his “Theory of Natural Philosophy” (1763), thought about the forces that must accompany the impacts in a way that was so modern as to make a real change.”**

**The Origin of Discrete Particles, Series on knots and Everything vol.42, 2009**

**T.Bastin and C.W.Kilmister**

**Moving now onto the issue of aether with Einstein.**

**Einstein in his 1905 paper says: “The introduction of a “luminiferous ether” will prove to be superfluous inasmuch as the view here to be developed will not require an “absolutely stationary space” provided with special properties, assign a velocity-vector to a point of the empty space in which electromagnetic processes take place.” (pass - on querying translation)**

**He also says: “unsuccessful attempts to discover any motion of the earth relatively to the “light medium,” suggest that the phenomena of electrodynamics as well as of mechanics possess no properties corresponding to the idea of absolute rest.”**

**Really aether is a type of substance for light waves and being using for an absolute frame (aether frame); not really clear if he is discarding both concepts. Unfortunately, often people take it to mean discard both concepts.**

**Einstein 1920 brings back aether (or at least some type of aether) : “Recapitulating, we may say that according to the general theory of relativity space is endowed with physical qualities; in this sense, therefore, there exists an ether. According to the general theory of relativity space without ether is unthinkable; for in such space there not only would be no propagation of light, but also no possibility of existence for standards of space and time (measuring-rods and clocks), nor therefore any space-time intervals in the physical sense. But this ether may not be thought of as endowed with the quality characteristic of ponderable media, as consisting of parts which may be tracked through time. The idea of motion may not be applied to it.”**

**All of this is causing confusion: does he mean there is no aether in context of special relativity , but there is in general relativity (?)**

**Does he mean space-time should be the new conception of aether (?)**

**Etc.**



**Kostro : “In 1905 A. Einstein banished the ether from physics in connection with the formulation of his Special Relativity. This fact is very well known but it is almost unknown that in in 1916 he reintroduced the ether in connection with his General Relativity. He denominated it „new ether” because, in opposition to the old one, the new one did not violate his Principle of Relativity.”**

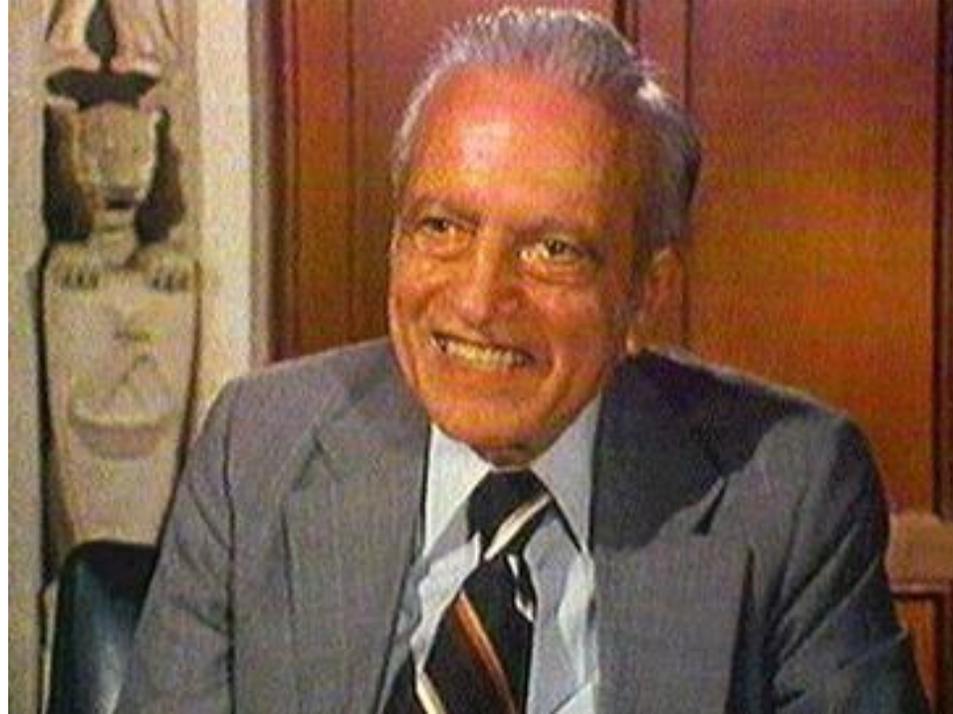
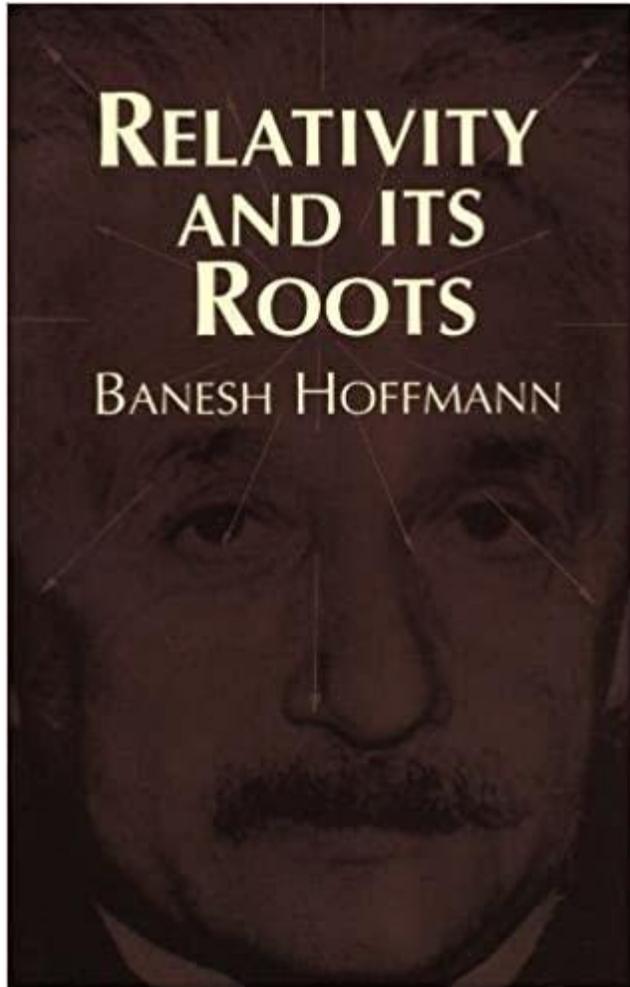
**<http://www.mathem.pub.ro/proc/bsgp-10/K10-KOSTRO.PDF>**

**Gives three models of the new aether.**

**At elementary level of Physics will teach such things as-**

**as per Physics classroom says: "A wave can be described as a disturbance that travels through a medium from one location to another location." [Physics Tutorial: What is a Wave?](#)**

**It is the contradictory if at higher level it is taught there is no medium for light waves.**



**Banesh Hoffmann (1906-1986)  
collaborated with Infeld and  
Einstein etc, book published  
1983**

**I am going to criticize this->**

**Banesh Hoffmann: "Moreover, if light consists of particles, as Einstein had suggested in his paper submitted just thirteen weeks before this one\*, the second principle seems absurd: A stone thrown from a speeding train can do far more damage than one thrown from a train at rest; the speed of the particle is not independent of the motion of the object emitting it. And if we take light to consist of particles and assume that these particles obey Newton's laws, they will conform to Newtonian relativity and thus automatically account for the null result of the Michelson-Morley experiment without recourse to contracting lengths, local time, or Lorentz transformations. Yet, as we have seen, Einstein resisted the temptation to account for the null result in terms of particles of light and simple, familiar Newtonian ideas, and introduced as his second postulate something that was more or less obvious when thought of in terms of waves in an ether." Relativity and Its Roots, p.92**

**\*- i.e. Einstein's relativity 1905 paper**

**First off – would like to say the idea that light is not being treated as particles in 1905 SR paper, I think a misconception which one could take from the mistranslation of that paper; and I think of aether as being particle-based. (Also in usual translation Einstein says such things as: “Let a ray of light start at the “A time” ...” – that “ray” can be interpreted as a stream of particles.)**

**So, relevant part for this talk on aether is when Banesh Hoffmann says: "his second postulate something that was more or less obvious when thought of in terms of waves in an ether."**

**i.e. really should have been making the identification that SR was an aether theory despite what Einstein wrote 1905.**

**\*- issue will deal with again in next slides!**



**Mentioning James Peebles, says about old aether wrong, but there is a new aether: “The cosmic background radiation pervades all space, he said [Peebles] and hence could be used as a surrogate for the mythical absolute space envisioned by Newton and rejected by Einstein, but without violating special relativity. The cosmic background radiation would be a universal frame of reference against which absolute motion may be detected.” Wrinkles in Time p. 117**

**George Smoot won Nobel prize in physics 2006 for discovery of microwave cosmic background radiation, with John Mather**

**So, aether frame back (?) But it was Lorentz theory not Einstein 1905 theory that had aether. Both Lorentz theory and Einstein 1905 had Lorentz transformations, main difference is Lorentz had aether and Einstein didn't; so are they now saying Lorentz theory is special relativity (?) [i.e. it's a bit of word-play, and aether brought back by stealth.]**

**New Scientist often has such topics as bring back the aether, example:**

**Article entitled: “Einstein killed the aether. Now the idea is back to save relativity” New Scientist 30 October 2019**

**Brendan Foster: “The luminiferous aether has become a byword for failed ideas. Now it is being revived to explain dark matter and dark energy, and potentially unify physics”**

**Getting rid of the aether was just a big mistake and caused a lot of confusion.**

**Einstein's paper on Special Relativity 1905: "On the Electrodynamics of Moving Bodies" has no references/citations of what Einstein was working from, so can give the impression that it springs from Einstein's imagination alone through his thought-experiments. However, Max Born, friend of Einstein, tells us: "It gives you the impression of quite a new venture. But that is, of course, as I have tried to explain, not true."**

**M. Born, Physics in My Generation, p. 193 (London: Pergamon Press, 1956).**

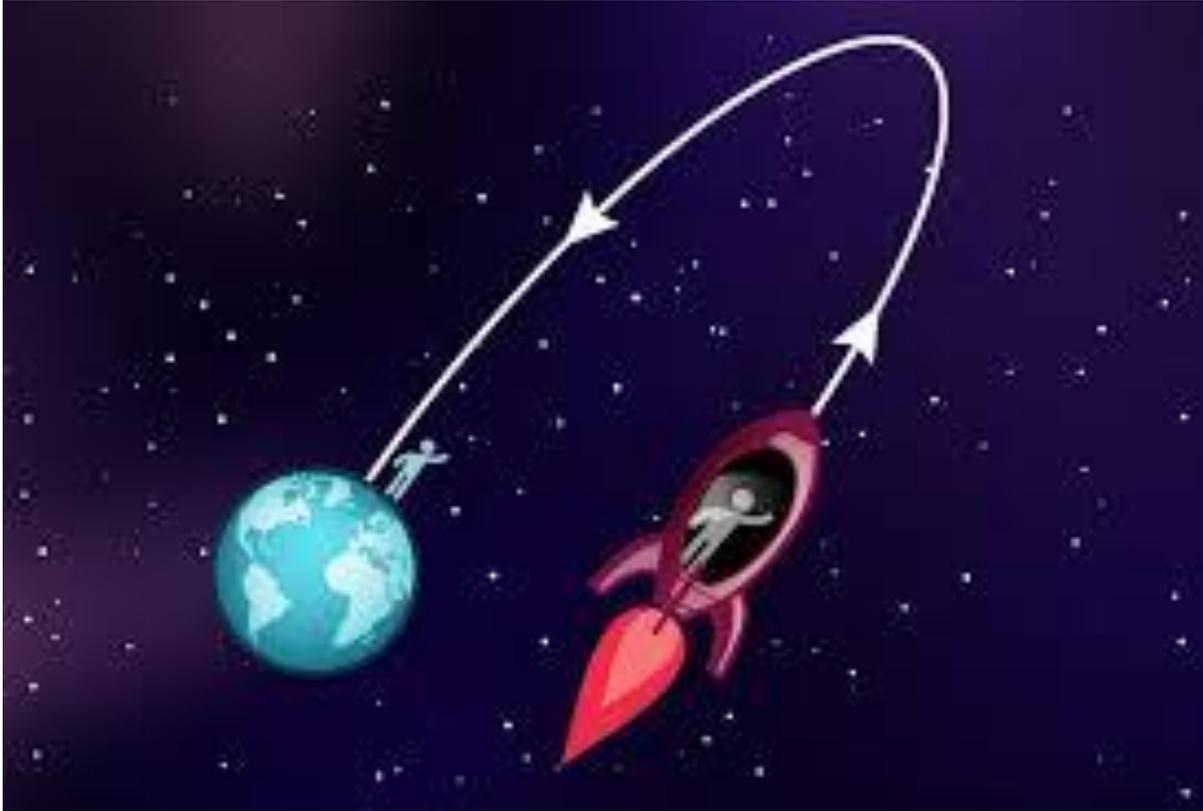
**i.e. he admits Einstein was working from an earlier tradition of relativity.**



**Max Born 1882 – 1970**

**i.e. SR should really been looked at as to how it fitted into earlier tradition about aether etc.**

**And how SR should been modified as Einstein changed his mind about such things as aether!**



## **Twin paradox**

**Usual way it is presented is as astronaut twin leaves his stay-at-home twin and goes on a round trip in outer space returning to his home-based twin.**

**Being treated as idealization that motion only relative between twins being considered, so not taking into account motion of earth.**



**Before journey.**

**After journey.**

**Then the space traveller is younger than the stay-at-home twin.**

**There are several things I would like to complain about e.g. I think its really about clocks being different not about ageing; but pass on that.**

**Given a simple scenario for instance:**

**Clock of stay-at-home twin records 10 years passing and astronaut clock records 1 year passing.**

**Now, there are several things that don't seem to be mentioned by the relativity texts (maybe deliberately ignored):**

**First: its not obeying relativity: laws of physics the same in all (inertial) frames of relativity.**

**If obeying relativity then each twin would be saying 1 year passed for themselves and 10 years for the other twin. Not both agreeing 10 years for the stay-at-home twin and 1 year for the astronaut twin.**

**Several excuses are given: that astronaut not in inertial frame, is accelerating while stay-at-home twin not accelerating.**

**But that means have preferred frame scenario, and many relativists deny preferred frame; I think they have messed up their words.**

**What is preferred frame but another word for aether frame, so stay-at-home twin being treated as if in a preferred/aether frame.**

**Typical example of a bad recent paper dealing with this issue is:**

**“Moving Clocks and Special Relativity Rest Reference Frames,” Vivian Robinson**

**Says: “There is no absolute rest reference frame. All motion is relative....”**

**Typically--does not define what he means by an “absolute rest reference frame”  
IS before denies it exists.**

**I at least define what it means to me in the context of the twin paradox – it is the  
frame of the stay-at-home twin; and it exists!**

**(It’s simple enough to do when dealing only with two frames; with more frames  
of course it becomes more complicated.)**

**Next given:**

**Clock of stay-at-home twin records 10 years passing and astronaut clock records 1 year passing.**

**They are not going to agree about lightspeed surely. As they measure light:**

**Stay-at-home twin says light travels distance 10 light years in 10 years.**

**Astronaut twin says light travels distance 1 lightyear in 1 year.**

**So, stay-at-home twin says according to my frame light is travelling 10 times faster for you.**

**And astronaut says according to my frame light is travelling tenth slower for you.**

**This is never pointed out.**

**They are not agreeing lightspeed is  $c$ .**

**So, Einstein's relativity has been misunderstood, and several reasons for this:**

**1.No references in his papers, hence no proper connection been made as to how fits to existing tradition**

**2.Mistranslation of the theory into English**

**3. His wife probably a major contributor to the theory, and what she could have said been airbrushed out of history.**

**4. Einstein's changes of mind not properly taken into account.**

**We don't have to stop there with the mess that has been made with relativity; we could just carry on->**

Often the route into teaching Einstein's relativity starts with this->

Galilean transformations    versus    Lorentz transformations

$$x' = x - vt$$

$$y' = y$$

$$z' = z$$

$$t' = t$$

$$t' = \gamma \left( t - \frac{vx}{c^2} \right)$$

$$x' = \gamma (x - vt)$$

$$y' = y$$

$$z' = z$$

**Gets presented as**

**Galilean relativity v. special relativity**

**But that is false as presented by: Galilean relativity was not proposed by Galileo.**

**As pointed out by K.M. Browne, American Journal of Physics 88, 207 (2020)  
Galilei proposed the principle of relativity, but not the “Galilean transformation”**

**Says: “Galileo Galilei was the first scientist to hypothesize a universal principle of relativity, but he neither proposed, nor limited his principle to, the so-called “Galilean transformation.” “**

**He proposes should be called: Euclidean space-time transformation.**

## Galilean transformations versus Lorentz transformations

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**Not Galilean relativity**

**However, the problems just get worse:**

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**As per Klaus Hentschel - Machians had serious trouble with the postulate of the constancy of light  $c$  in vacuum, the second axiom of special relativity.**

**He says: “You can often find their claim in letters to Einstein and other physicists, but also in their publications, that a properly understood theory of relativity should not contain absolute independent of observers. They demanded the complete relativization of all physical quantities”**

**And they openly rejected an absolute magnitude like  $c$ .**

**(n.b. Hentschel thought they were wrong.)**

**Philosophical Interpretations of Relativity Theory:  
1910-1930 Klaus Hentschel**

**So, why is there a constant  $c$  in a relativity theory?**

**Answer is: its not a relativity theory**

**calling Einstein's theory a relativity theory is a misnomer, as people like Johannes Koelman notes (citing Tony Rothman):**

***"[The term] 'special relativity' is probably the greatest misnomer in the history of science"***

**What's Wrong With 'Relativity'? Johannes Koelman December 26th 2010  
[https://www.science20.com/hammock\\_physicist/whats\\_wrong\\_relativity](https://www.science20.com/hammock_physicist/whats_wrong_relativity)**

**Tony Rothman, book: *"Everything's Relative - And Other Fables From Science And Technology"***

**Johannes Koelman: It was not Einstein but Max Planck, who introduced the term 'relativity theory'. That was in 1906, the year following Einstein's annus mirabilis. Despite Einstein's opposition, the name stuck. Years later Einstein surrendered, and from 1911 onward he started to use the term 'relativity theory' himself. But he never felt comfortable with the term, and in his writings he always put the words in quotes.**

**'Relativity theory' deals with the description of physical phenomena in space-time, and the shadows these phenomena cast in space as well as in time. These shadows is what we tend to perceive, yet they are not absolute, but rather dependent on one's point of view. However, by quantifying these phenomena not in terms of these shadows, but in terms of an objective space-time formulation, an absolute description emerges.**

**So, the strength of 'relativity theory' is that it identifies space-time invariants, absolute values independent of point of view. It is for this reason that 'space-time invariants theory' would have been a much better description for Einstein's brainchild.**

## Galilean transformations versus Lorentz transformations

$$x' = x - vt$$

$$y' = y$$

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$$t' = t$$

$$t' = \gamma \left( t - \frac{vx}{c^2} \right)$$

$$x' = \gamma (x - vt)$$

$$y' = y$$

$$z' = z$$

With  $c = \text{constant}$

**Not** Galilean relativity

**Not** special relativity



**Einstein's thought  
experiment travelling  
on a beam of light.  
However-**

**Example of what Olympia Academy studied:  
An artistic rendition of the Filon-Pearson  
demon, a colleague of Maxwell's demon, with  
"intensified acuteness", that is able to run both  
at the speed of light and faster than the speed  
of light, conceived in large part by French-born  
English applied mathematician Louis Filon in  
circa 1898; and elaborated on by his mentor Karl  
Pearson in 1900; a thought experiment read by  
Albert Einstein in 1902, who states that he had  
contemplated a similar "running along side a  
beam of light" thought experiment in 1895.**

## **Filon-Pearson demon**



<http://www.eoht.info/page/Filon-Pearson+demon>

**i.e. there are thought-experiments on relativity by Einstein. But there seem thought-experiments on relativity-related issues pre-Einstein that get ignored.**



## **John Wheeler school of relativity**

**Most relativists come via general relativity as taught from what John Wheeler set-up.**

**Dr C Y Lo says the Wheeler school have got relativity wrong.**

**“Rectification of General Relativity, Experimental Verifications, and Errors of the Wheeler School” ref: [https://www.worldscientific.com/doi/abs/10.1142/9789814504782\\_0014](https://www.worldscientific.com/doi/abs/10.1142/9789814504782_0014)**

## Example of problem with general relativity:



This is Peter Bergmann. In 1942, Bergmann published the first textbook on general relativity, *Introduction to the Theory of Relativity*, with a foreword by Einstein.

Wikipedia says: “Peter Bergmann did not agree with Einstein, but left the dispute out of his earlier book in 1942 to get Einstein's endorsement. After Einstein died Bergmann wrote a new book in 1968 claiming that vector light velocity could change direction but not speed.”

So, example of Revision!

## Semiotics

**Signifier**

→ **Signified**

**[word]**

→ **[concept that word means]**

## **Semiotics**

**Signifier**

**→ Signified**

**Galilean relativity**

**→ Euclidean space-time transformation theory**

**Special relativity**

**→ Space-time invariants theory**

## **Semiotics**

**Signifier**

**→ Signified**

**Galilean relativity**

**→ Euclidean space-time transformation theory**

**Special relativity**

**→ Space-time invariants theory**

**Aether**

**→ ????**

**And so on.....**

## **Conclusions**

**Should Einstein's relativity be rigorously defined OR be flexible?**

**It seems at the moment to be very flexible; with people saying conflicting things about it; and that flexibility has been its strength in stopping it being overturned.**

**Some people add such things to relativity as aether, preferred frame...etc when they feel the need; while others are saying there is no aether, no preferred frame... etc.**

**According to Peirce a sign can never have a definite meaning, for the meaning must be continuously qualified.**



**Thankyou for listening.**

**See Dragoslav Stojiljkovic's talk  
From Boscovich's theory to Modern  
quantum theory at:**

**<https://www.youtube.com/watch?v=w1vi0yk7BvU>**

**FIN.**

c.RJAndertonSeptember2020