EINSTEIN'S TERRIBLE TWINS

and Other Tales of Relativistic Woe

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Dedicated to Dayton Miller

Abstract

Einstein's Special Relativity is based on two fundamental assumptions, the so-called 'Einstein postulates'. The 'constant speed of light' postulate predicts that two inertial observers – for instance twins in spaceships free-floating in outer space – will each see the other's clock running slower than his own. The 'relativity' postulate says that both perceptions are equally valid, effectively correct. The logical incoherence of this makes a nonsense of the postulates, and by extension of Special Relativity itself. The positive 1887 Michelson-Morley result confirms this experimentally, falsifying both Einstein's postulates. In spite of which, more than a century later Special Relativity is still an official scientific doctrine, and Einstein a scientific genius. The first part of the article erives the technical aspects of Relativity. The second part looks at the historical, political, social and personal factors that led to the present situation. The approach is conceptual and 98% non-mathematical.

CONTENTS

INTRODUCTION

General

As most of us know, the Theory of Relativity is one of humanity's most outstanding intellectual achievements, and its creator Albert Einstein was an all-time scientific genius. For most of my life I accepted unquestioningly this piece of conventional wisdom. Till one day, somewhat unwittingly, I was led to query it. The following article is the result. It comprises:

– 1) Special Relativity, in simple non-mathematical terms
– 2) the basics of General Relativity
– 3) Einstein as a person
– 4) the social and political background

Readers not interested in the initial technical parts can skip lightly over them to the more entertaining later sections with little loss of continuity. Companion articles[1] look at the related topics of the aether and space-time.

On the practical side, to leave the main body of the text as uncluttered as possible, cross-references and 'asides' are placed in footnotes. The end-notes contain source references only. In the Internet case they comprise the main site name and the year and month of access in brackets .

Contrary to custom, quotations are not in general *de rigeur*, with all the (...)s and [...]s in the right places, but may be abridged or combined with others from the same source. Their meaning is however never consciously distorted. Whenever possible original source references are given.

Since the English language in its wisdom does not provide non-gender-specific pronouns, for "he", etc. in general read "he/she" etc. Due to the common ground between this and the 'aether' article[2], there is some duplication.

Thanks are due principally to Barry Cavell and Stan Heshka who read the original text and made many useful comments, most of which got incorporated. Also to Arthur Mather and Nick Landell-Mills who likewise gave valuable feedback.

MOTIONS

Inertial motion

Einstein created two Theories of Relativity. Special Relativity was published in 1905. General Relativity came ten years later in 1915. General Relativity is highly mathematical and complex, to the extent that Einstein once said that only twelve people in the world really understood it[3]. Special Relativity, on the other hand, is in principle very simple, requiring at the most high school algebra.

The "special" of Special Relativity is due to its restriction to so-called *inertial conditions*, where motion is at steady speed in a straight line with no acceleration or rotation:

inertial motion = at steady speed in a straight line

Because *gravity* is an acceleration – when one drops an object it accelerates towards the centre of the Earth – there can also be no effects of gravity.

A train travelling at steady speed along a straight level section of track moves inertially[a], Fig. 1a. One can walk around in it as if it was stationary. But when it suddenly brakes, or goes round a sharp bend, one cannot.

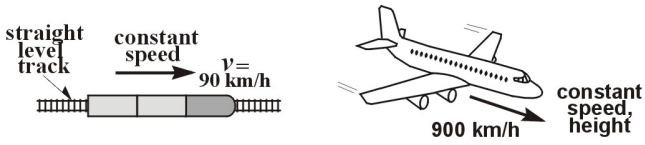

Fig. 1. Inertial motion.

The same holds for an airplane cruising at constant speed and height, Fig. 1b. One can walk around in it as if it was on the ground. But when it accelerates during takeoff, or brakes during landing, one cannot.

Special Relativity formalizes these relations by saying that:

the laws of mechanics are the same for all inertial observers:

The result of a mechanical measurement[b] is the same in any inertial system, independently of whether it is carried out on the ground; or in a train moving at a steady speed of 90 km/h; or in a plane cruising at 900 km/h.

Relative motion

The other 'motion' we need to look at is *relative motion*. Noting that the term 'relative' is in fact redundant, since *all* motion is inherently relative. Einstein wrote:

> "It has of course been known since the days of the ancient Greeks, that in order to describe the movement of a body, a second body is needed to which the movement of the first is referred."[4]

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[a] Gravity here acts perpendicularly to the motion, and has no effect.

[b] For instance, the time a dropped object takes to reach the floor.

When we talked of a train travelling at a steady speed of 90 km/h, therefore, that was strictly meaningless, because we didn't specify *with respect to what* the train's speed was measured.

In such cases we however evidently imply a *local default reference*, in this case the Earth's surface. With respect to a fixed object on the local Earth's surface – for instance the last station the train passed – it moves at a steady speed of 90 km/h, Fig. 2.

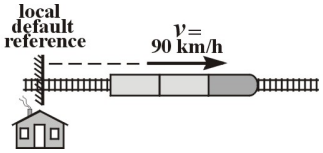

Fig. 2. 'Absolute' motion.

We will call such speeds 'absolute'. The single quotes mean that they are measured with respect to a local reference chosen for convenience, and not to some overall cosmic reference, should there be such a thing.

Consider two trains 'A' and 'B' travelling inertially along parallel sections of track at 'absolute' speeds of 90 km/h and 110 km/h respectively, Fig. 3a. Relative to train A, train B moves forward at 20 km/h, Fig. 3b. Relative to train B, train A moves backwards at the same speed, Fig. 3c.

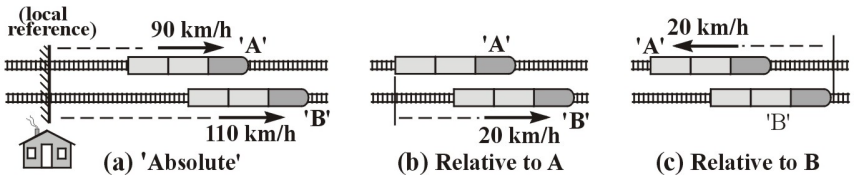

Fig. 3.Relative motion

The directions of the two relative velocities[a] are opposite. But their magnitudes are the same, in this case 20 km/h. For two bodies there is only one relative speed. The speed of A relative to B is inherently equal to that of B relative to A.

Now consider a similar situation, but with two spaceships free-floating in outer space, far from any gravitation[b]. To make the numbers more realistic, we have multiplied the speeds by one thousand.

With respect to planet Earth, the 'absolute' speeds of the spaceships are 90k[c] and 110k km/h respectively, Fig. 4a. Relative to spaceship A, spaceship B moves away from the Earth at 20k km/h, Fig. 4b. Relative to spaceship B, spaceship A moves towards the Earth at the same speed, Fig. 4c.

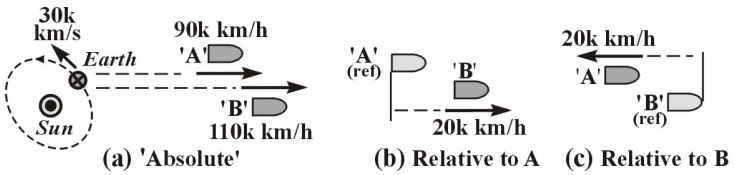

Fig. 4. Spaceships (1).

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[a] A 'velocity' is a *vector* with magnitude and direction. A 'speed' is a magnitude only.

[b] The definition of 'outer', or 'deep' space. For the spaceships to move inertially, their engines must be switched off.

[c] "k" = 1000.

In this case, however, the Earth is not a convenient reference, because it orbits the Sun at 30 km/s. Neither is the Sun itself, which moves at an even higher speed of ~250 km/s around the centre of the Milky Way galaxy[5].

In such situations only *relative speeds* are effectively meaningful. The most we can reasonably say is that relative to spaceship A, spaceship B moves at a certain speed in a certain direction, Fig. 5a. And that relative to spaceship B, spaceship A moves at the same speed in the opposite direction, Fig. 5b. The word "stationary" is here for practical purposes meaningless, Fig. 5c.

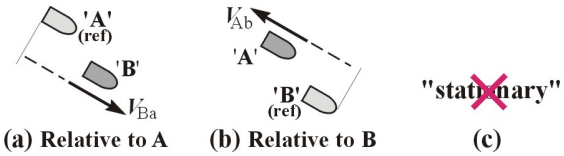

Fig. 5. Spaceships (2).

SPECIAL RELATIVITY

Galileo

A confusing aspect of the term 'relativity' is that it is used in two distinct senses. Galileo[a] noted that for someone in a windowless ship's cabin, no physical measurement can tell him whether his ship is docked in a harbour or sailing at steady speed on a smooth open sea. Newton[b] came to the same conclusion:

> "The motions of bodies in a given space are the same among themselves, whether that space is at rest, or moves uniformly in a straight line without any circular motion."[6]

This is *Galilean relativity*. It says that the *laws of mechanics* are the same for all inertial observers, i.e. in all inertial 'frames of reference'[c]:

the laws of mechanics are the same for all inertial observers

Einstein Postulates (1)

We on Planet Earth are in a Galilean situation. No mechanical measurement can tell us whether the Earth is at rest with regard to some hypothetical absolute cosmic reference, or moving at a steady speed relative to it.

Maxwell's[d] laws of electromagnetics, however, imply a 'luminiferous aether', a *physical medium* that light and other electromagnetic waves propagate through[e7]. This would be an absolute 'at rest' for those waves.

So mechanical phenomena don't require an absolute at-rest, but Maxwell's laws of electromagnetics do. Einstein saw in this a conflict. He realized that for mathematical consistency one or the other had to go. He chose to eliminate the aether, writing in his seminal 1905 Special Relativity paper *On the Electrodynamics of Moving Bodies*[8]:

> "The unsuccessful attempts to discover any motion of the Earth relative to the 'light medium' suggest that the phenomena of electrodynamics, as well as

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[a] Galileo Galilei (1564–1642), Italian polymath.
[b] Isaac Newton (1642-1727), English physicist.
[c] A 'frame of reference' is essentially an observer's point of view.
[d] James Maxwell (1831–1879), Scottish physicist.
[e] For present purposes defined as "the hypothetical medium that electromagnetic waves are conceived as propagating through".

> those of mechanics, possess no properties corresponding to an absolute rest[a9]. But rather that the same laws of electrodynamics are valid for all frames of reference for which the equations of mechanics hold good[b10]. We will raise this conjecture to the status of a 'relativity postulate'. And will introduce another, only apparently irreconcilable with the former, namely that light is always propagated in empty space with a definite velocity *c*, independent of the state of motion of the emitting body. The introduction of a 'luminiferous aether' will thus prove superfluous."[11]

He later amplified the last bit to:

> "Light *in vacuo* has a definite velocity of propagation, independent of the state of motion of the source *or of the observer*."[12] (italics ours)

In his 1916 Relativity article he added:

> "According to the theory of relativity, there is no such thing as a 'unique' (lit. 'specially favoured' or 'marked out') co-ordinate system to occasion the introduction of the æther idea. And hence there can be no æther-drift, nor any experiment with which to demonstrate it."[13]

The "unsuccessful attempts" he refers to are presumably the alleged 'null' result of the 1887 Michelson-Morley aether-wind experiment. We discuss it further below, and in detail in the companion 'aether' article[14].

These two assumptions form the *Einstein postulates*. The first 'relativity' postulate says that *all the laws of physics* – and not just those of mechanics[c] – are the same for all inertial observers:

– 1) *the laws of physics are the same for all inertial observers*

In contemporary relativistic jargon: no inertial observer is "privileged" or "preferred". This is 'absolute', or 'Einsteinian' relativity.

The second 'speed-of-light' postulate says that the speed of light *c* in a vacuum is constant:

– 2) *the speed of light c in vacuo is invariant.*

Einstein held this to be the distinguishing characteristic of his theory:

> "The Special Theory departs from classical mechanics, not through the postulate of relativity, but through that of the constancy of the velocity of light *in vacuo*. "[15]

He made a further point of its logical consistency:

> "The chief attraction of the theory of Relativity is its logical unity. If *any single one* of its consequences proves to be inexact it must be abandoned. To modify it without destroying the whole structure seems impossible." (italics his)[16]

Clock slowing (1)

The second postulate of a constant speed of light for all inertial observers might at first sight appear contradictory. A wave[d] is not a material object. It is a time-dependent *event*,

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[a] Not a valid conclusion. The aether could be 'dragged along' by the Earth (the Stokes hypothesis). Or it could have zero speed at that particular point in the Earth's orbit, but not at others (Aether article).

[b] I.e. for all inertial observers (p.3).

[c] p.3.

[d] Here always *physical waves*.

a *disturbance* propagating through a *medium* at a *characteristic speed c* determined by the properties of that medium[a17]:

wave = disturbance propagating through a medium at a characteristic speed c

A physical wave *inherently implies* a physical medium that it propagates through. The idea of waves without a medium – pond or sea waves without water, sound waves without air, light waves without a hypothetical aether[b] – is senseless. For there to be a disturbance, *something* – some physical thing – has to be disturbed.

To say that the speed of light *c* is constant for all inertial observers, rather than through its medium, is thus like saying that the speed of sea waves relative to a boat is always the same, regardless of whether it sails upwind or downwind[c18]. And is apparently nonsensical.

"Aha!" said Einstein, the difference is that at so-called 'relativistic' speeds, comparable to that of light[d], firstly *clocks run slow* – so-called *time dilation.* And secondly, *lengths contract* proportionally in the direction of motion[e]. The speed of light that an observer measures, the ratio of the two[f], thus remains the same. He described his *eureka* moment:

> "I had discussed every aspect of the problem with a friend of mine, the Italian Michele Besso[g]. Returning home I suddenly I saw where the key lay. *Time* cannot be absolutely defined. Next day I said to him: 'Thank you, I've completely solved the problem'. With this new concept I resolved all the difficulties, and within five weeks the Special Theory of Relativity was completed."[19]

Einstein's reasoning was the following. Consider an observer A standing at a railroad station with a *photon clock*, a single photon of light[h] reflected vertically between two mirrors, that emit a "tick" every time the photon hits them, Fig. 6a[i]. If the mirrors were 1 m apart[j], for instance, and the speed of light was 1 m/s[k], the photon clock would tick once a second[l].

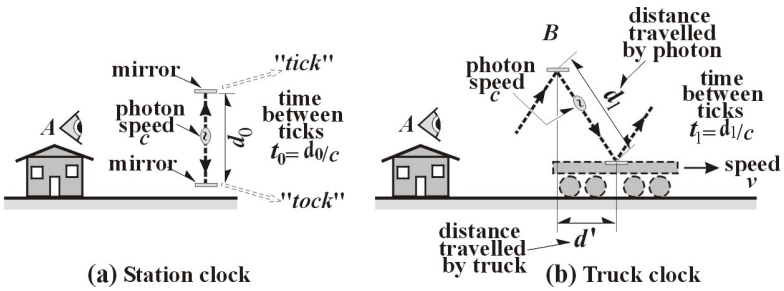

Fig. 6. Clock-slowing (1).

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[a] Discussed in detail in the Aether article.
[b] Cf p.5.
[c] Aether article.
[d] The definition of 'relativistic'.
[e] The Fitzgerald-Lorentz length contraction (below).
[f] Speed being distance divided by time.
[g] His long-term university friend.
[h] Here considering light as particles.
[i] A photon clock enables the 'constant speed of light' postulate to be used.
[j] d_0=1 m.
[k] c=1 m/s.
[l] t_0=1s.

Now consider a second individual B with a similar clock on a *railroad truck* moving at a steady speed *v*, Fig. 6b. During the time the photon takes to travel between the mirrors, the truck moves foreward a distance *d′* proportional to its speed[a]. Pythagoras' theorem and a little simple algebra[b] show that the distance d_1 the photon now has to travel is *greater* than its stationary value d_0 by a factor γ:

$$\gamma = \frac{1}{\sqrt{1-(\frac{v}{c})^2}} \qquad \text{(eq.1)}$$

called the *Lorentz factor* in honour of the Dutch physicist Hendrik Lorentz[c]. Fig. 7 shows the overall path of the truck photon through space.

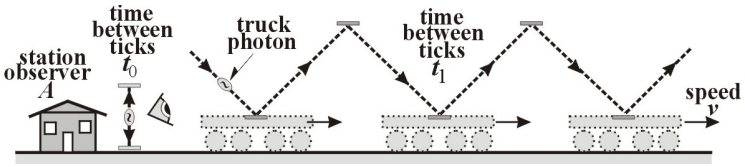

Fig. 7. Clock slowing (2).

The speed of light *c* being constant[d], the truck clock B *ticks more slowly* than the station clock A by the Lorentz factor γ. Meaning that *times* measured on it are shorter than those on the station clock by the same amount. Equivalent relations hold for observer B's return journey. We discuss the turnaround later.

At low truck speeds *v*, the Lorentz factor γ is approximately unity and can be ignored. At relativistic speeds, however, it increases rapidly, becoming infinite at the speed of light[e], Fig. 8.

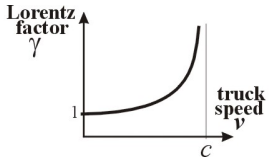

Fig. 8. Lorentz factor.

Clock absurdity (1)

If a travelling observer's clock runs more slowly than one at rest, so also do for him by implication physical events in general. Meaning that he *ages less* than when stationary. Einstein wrote in 1911:

> "A living organism placed in a box, after a lengthy flight at approximately the speed of light, could return in a scarcely altered condition, while corresponding organisms on Earth had long since given way to new generations."[20]

In the same year Paul Langevin[f] put this into its better known *twin form*. Twin A is an earthbound homebody, and twin B is an astronaut. Twin B undertakes a spaceship journey at near to the speed of light, returning to find he is younger than his earthbound brother, Fig. 9.

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[a] $d'=vt_1$.
[b] Appendix, p.67.
[c] Hendrik Lorentz (1853-1928), Dutch physicist.
[d] 'Relativity' postulate (p.6).
[e] Where $v=c$ and the bottom line of the Lorentz factor (eq.1, p.8.) becomes zero.
[f] Paul Langevin (1872–1946), French physicist.

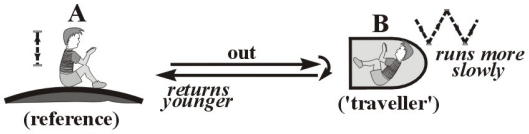

Fig. 9. Twins.

The same applies to two twins in spaceships, free-floating in outer space[a], Fig. 10. Twin A sees the travelling twin B's clock running more slowly than his own.

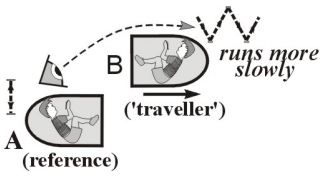

Fig. 10. Twin A's view.

The problem is that relative to twin B, *twin A* is the 'traveller'. Meaning that *his* clock runs slower and *he* ages less, Fig. 11. Because both twins are moving inertially, according to the 'relativity' postulate both their viewpoints are equally valid, effectively correct[b].

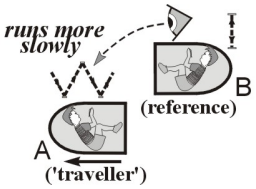

Fig. 11. Twin B's view.

Special Relativity thus predicts that two clocks can each run slower than the other:

SR predicts that two clocks can each run slower than the other

This is the essence of the so-called *clock paradox*[c]. Being rationally absurd, so also – on the philosophical *reductio ad absurdum* principle[d] – are the Einstein postulates, and by extension Special Relativity itself. This is resumed in Fig. 0-12[e].

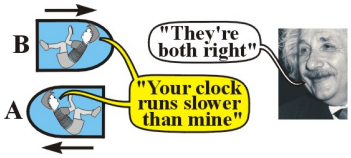

Fig. 0-12. Clock absurdity (1).

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[a] Moving inertially (p.3).

[b] Einstein doesn't in fact say that both twins' views are *correct*. He says that neither is "unique" or "specially favoured" (p.6). They could be either 1) both right, or 2) both wrong. Neither of these makes sense.

[c] The analogous 'twin paradox' is discussed below.

[d] Appendix p.71.

[e] These are *imaginary thought exercise* twins, unrestricted by practical considerations. Even at relativistc speeds, they can pass each other within a hairswidth without risking scratching their spaceships' paint. And their pilots can carry out complex scientific measurements in the twinkling of an eye. In one's imagination one can imagine anything one cares to imagine.

The clock absurdity alone is sufficient to falsify Special Relativity. Experimental refutations, of which there are many[a], are interesting but superfluous. A logical contradiction cannot exist in reality. One doesn't need experiment to show that there are no square circles. Special Relativity is its own *reductio ad absurdum*:

Special Relativity is its own reductio ad absurdum[b]

"**Paradox**"

A 'paradox' is defined in the dictionary as "a *seemingly* self-contradictory or absurd statement" (Italics ours). The classic example is 'Achilles and the tortoise', posed by Zeno of Elea[c]:

> "Achilles challenges the tortoise to a race. 'Ok', says the tortoise, 'But since you are ten times faster than me, give me a ten metre head start'. Achilles agrees and off they set. While Achilles covers the ten metres to where the tortoise started, the tortoise goes a further metre. While Achilles covers this, the tortoise goes another 10 cm. While Achilles covers this, the tortoise goes another 1 cm. And so on *ad inf*. Achilles never catches up with the tortoise."

The fallacy, of course, is that only *instants before* Achilles catches up with the tortoise are considered, effectively:

> "Considering only instants before Achilles catches up with the tortoise, he never catches up with it."

The apparent contradiction and the paradox are explained.

The clock so-called "paradox" is not, however, a *seeming* contradiction. It is a *real* one. Not conforming to the definition of a paradox, it should rather be called the *clock absurdity*.

We evidently need to redefine the term "paradox":

> "*Paradox*: 1) (common) a seeming contradiction that in fact is not; 2) (scientific) a real contradiction that makes a nonsense of a scientific theory, but it is not in Science's interest to admit that it does."

Clock absurdity (2)

An alternative form of the clock absurdity is shown in Fig. 13. The station observer A sees the travelling observer B's clock running slower than his own, as before.

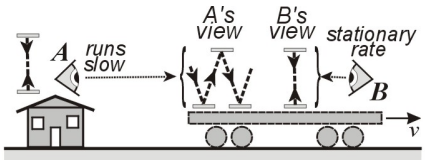

Fig. 13. Clock absurdity (2).

For the truck observer B, however, travelling together with his clock, its photon moves vertically between the two mirrors as if he were at rest. For him his clock ticks at its original stationary rate.

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[a] Starting with the Michelson-Morley experiment (below).

[b] In view of the bovine nature of what came out of it, unkind tongues have proposed that 1905 should be called Einstein's "*Anus mirabilis*".

[c] Zeno of Elea (490–430 b.c.), ancient Greek philosopher.

So each twin sees the travelling clock B running at a different rate. And again, because both are moving inertially, according to the relativity postulate both their views are correct.

Special Relativity thus further predicts that a single clock can run simultaneously at two different rates, which is equally absurd.

Twin absurdity

What we have discussed till now is the *clock absurdity*: each of two clocks running slower than the other. The 'twin' form proposed by Langevin[a] is slighty different, Fig. 14. Here the spaceship twin travels away from his earthbound brother for a certain time. Then comes the turnaround. Then he returns at the same steady speed.

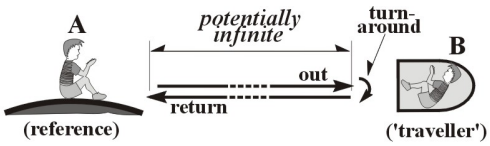

Fig. 14. Turnaround.

The steady speed out-and-return phases being of unlimited duration, however, for any given turnaround effect they can always be made sufficiently long for it to be negligible in comparison. The turnaround can thus be ignored, only the steady-speed out-and-return phases needing to be considered.

This gives the *twin absurdity* – each twin ending up younger than his brother:

each twin ends up younger than his brother

Twin "explanations"

In spite of the rational absurdity of the twin case, there have been no lack of so-called "explanations" for it. According to the *en.wikipedia*:

> "There have been numerous explanations, all based on asymmetry. Only one twin undergoes deceleration-acceleration, differentiating the two cases. In another version Max von Laue[b] argued that the travelling twin switches inertial frames, and this causes the difference. Einstein and others invoked gravitational time dilation to explain the aging."[21]

We will take the points one by one:

– 1) "There have been numerous explanations, all based on asymmetry. Only one twin undergoes deceleration-acceleration."

Whoever wrote that didn't understand the principle of relativity. Relative to the earthbound twin[c], the spaceship twin undergoes acceleration[d]. Relative to the spaceship twin, the earthbound twin – together with the Earth and everything on it – undergoes acceleration. The relativity principle[e] *inherently excludes* asymmetry. And thereby invalidates all "explanations" based on it.

– 2) "Max von Laue argued that the travelling twin switches inertial frames, and that this causes the difference."

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[a] Fig. 9.
[b] Max von Laue (1879–1960), German physicist and Nobel laureate.
[c] Seen by him.
[d] Deceleration and acceleration.
[e] No preferred reference.

But how? The station twin sees the travelling twin moving inertially on both the outward and return legs, meaning that the same clock slowing factor applies to each. And as just seen, the turnaround is irrelevant. Please explain yourself more fully, Dr von Laue.

– 3) "Einstein and others invoked gravitational time dilation to explain the aging."

Four separate points on this one:

– *a)* this is a *thought excercise*[a]. There are no experimental results to be explained. No twin ever demonstrably went on a spaceship journey and returned younger than his earthbound brother. Einstein is effectively saying:

> "My theory predicts that, due to the relative speed, the spaceship twin will return younger. This is explained by gravitational time dilation."

Make sense of *that* if you can!

– *b)* if clock slowing is in fact due to gravitational time dilation, then the previous 'relative speed' explanation was wrong. But why? True to form, Einstein doesn't say.

– *c)* gravitational time dilation forms part of *General Relativity*, and not the Special version being discussed here.

– *d)* to limit discussion to the allegedly "asymmetrical" case[b], is effectively to say:

"Considering only the asymmetrical case, the asymmetry explains it.".

> This is firstly a logical fallacy of 'Achilles and the tortoise'[c] form. And secondly, it disregards the 'symmetrical' case where both twins are in spaceships[d], and there is no conceivable asymmetry.

In spite of all of which:

> "Neither Einstein nor Langevin considered the twin case to constitute a challenge to the self-consistency of relativistic physics. Einstein only called it 'peculiar'."[22]

In 1916 he declared:

> "*No contradiction* to the foundations of Relativity can be constructed from the twin result."[23] (italics ours)

Oh yeah?!! Can you say that again please, Albert? Just to be sure it came from you.

Naturwissenschaften

As if the nonsensicality of the above twin "explanations" was insufficient, in 1918 Einstein published *yet another* in the German scientific journal *Naturwissenschaften*. He recognized the twin absurdity:

> "Even the devoutest adherents of the theory of Relativity cannot claim that for two clocks resting side by side, each one can be late relative to the other."[24]

And in reply produced an "argument" that can be summarized as follows (the verbatim version is in the appendix[e]):

---

[a] Einstein called it a thought *experiment*. But no replicable physical measurements are made.
[b] Of earthbound and spaceship twins. In fact not asymmetrical (point 1))
[c] p.10.
[d] Fig. 10, Fig. 11.
[e] p.70.

– 1) during the steady-speed out-and-return phases the travelling clock B runs more slowly, and loses time as before
– 2) at the turnaround, gravitational time dilation[a] causes it to *speed up* (*sic*)
– 3) "Calculation shows" that the time thereby gained is exactly twice that lost in the steady-speed phases
– 4) the travelling twin B ends up *older* (*sic*) than his earthbound brother
– 5) "This completely clears up the paradox"

Comments, again point by point:

– 1) ok.
– 2) this contradicts General Relativity where gravity/acceleration causes clocks to run *slower*. And also contradicts his previous 'gravitational' "explanation"[b]
– 3a) the steady-speed out-and-return and the turnaround phases being independent, – each can be as long or short as one likes – to say that the time gained during one is "exactly twice" that lost during the other, is nonsensical[c].
– 3b) "Calculation shows." *What* calculation, Albert? He unfortunately doesn't show the calculation that he says shows
– 4) this contradicts all the previous versions where the travelling twin returns *younger*
– 5) *how* does it clear it up, Albert? True to form he again doesn't elaborate.

Imagine a high school physics student producing an argument as full of holes as this in reply to an exam question! He would be hauled up to the front of the class and ridiculed by all.

And *Naturwissenschaften* is a highly respected scientific journal! One wonders what the editor thought when he read Einstein's submission. Maybe he didn't bother, seeing who it came from.

Most books on Einstein don't even mention the article as if it didn't exist. The few that do gloss over it. Einstein's semi-official biographer, Abraham Pais, in his 1982 *Subtle is the Lord*, goes into considerable detail on almost all other aspects of Einstein's work. But in this case he simply says:

> "In November 1918 Einstein published an article on the twin paradox."[25]

William S.[d] could have commented:

> "The biographer doth protest too little, methinks."[e]

Resuming, Einstein provided *three different* "explanations" of the twin "paradox", all contradictory, both internally within themselves and in relation to each other:

– 1) the original 'relative velocity' version[f]
– 2) the 'gravitational time-dilation' version. In both these the travelling twin B returns the younger.
– 3) the *Naturwissenschaften* version, a mixture of the two. The travelling twin B here loses time during the steady speed phases as in 1). But gains twice that at the turnaround. This firstly contradicts version 2). And secondly, causes the travelling twin to return *older*, contradicting both 1) and 2)

---

[a] Due to the acceleration.
[b] p.12.
[c] Like saying that the number of apples is always equal to the number of oranges, when each can be chosen independently.
[d] William Shakespeare (1564-1616), English poet, playwright and actor.
[e] Cf the famous *Hamlet* line: "The lady doth protest too much, methinks". (She wasn't protesting her chasteness, but could have been.)
[f] The organism in the box.

Researching mainstream physics journals and standard textbooks, Al Kelly[a] found no less than *fifty-four* different "explanations" of the twin "paradox", most implying that the others are wrong. They broke down into[26]:

– 8 say the differential aging is inexplicable, and a huge problem for Relativity (it sure is!)
– 4 say it is solely due to the acceleration
– 9 say the acceleration has nothing to do with it
– 4 say that General Relativity gives the sole explanation
– 3 say GR has nothing to do with it
– 2 say that jumping inertial frames explains it (but don't explain how)

More exotic and bizarre versions make up the remainder. These presumably include Einstein's own in *Naturwissenschafte*n. Of all the fatuous "explanations"– and there is no lack of them – this one from Albert E himself takes the biscuit. Should anyone *still* believe in Einstein's capacity for rational thought – check out his *Naturwissenschaften* "explanation" and think again!

In spite of ...

In spite of all of which, mainsteam physics[b] persists in insisting that Special Relativity is Revealed Scientific Truth. And that its creator Albert Einstein was an all-time scientific genius. David Goodstein[c]:

> "There are theories in Science which are so well verified that they become promoted to the status of fact. An example is the Special Theory of Relativity. Although still called 'theories', such things are in reality among the best established facts in all human knowledge."[27]

Clifford Will[d]:

> "Special Relativity has been confirmed by experiment so many times that it borders on the crackpot to say there is something wrong with it. The GPS wouldn't function if SR didn't work the way we thought it did[e]."[28]

Del Larson:

> "If we try to come up with theoretical arguments to show how Special Relativity is wrong, we will lose. SR has been studied and celebrated for generations now. If there was a theoretical flaw, it would have been found long ago[f]."[29]

Isaac Asimov[g]:

> "No physicist who is even marginally sane doubts the validity of Special Relativity"[30]

Lee Smolin[h]:

---

[a] Al Kelly (1926-2005), Irish engineer.
[b] University professors, editors of prestigious scientific journals, funding committee chairpersons, etc.
[c] David Goodstein (1939–), Caltech Professor.
[d] Clifford Will (1946–), Canadian physicist and Relativity crackpot.
[e] Not true, as we will see.
[f] It *was* found more than a century ago. The twin absurdity dates from 1911.
[g] Isaac Asimov (1920-1992), American professor and science fiction author.
[h] Lee Smolin (1955-), American theoretical physicist.

> "Cranks are a fact of life for working physicists. There seems to be a psychosis resulting in people believing they have disproved Relativity. Anyone in Relativity who is at all visible gets regular communications from such people."[31]

John Farrell[a]:

> "There's nothing like Einsteinian Relativity to bring out the doubters, cranks and outright crackpots. A burgeoning underground of self-described experts publish their theories on the Net, exchanging ideas in a great battle against the Temple of Relativity. According to them it is not only wrong, but an affront to common sense. And its creator Albert Einstein was no less than a cheat[b]. Their common themes are resentment of academic elites, suspicion of the peer-review process, and a deep-seated paranoia about government involvement in Science. They're always male – never female – normally professionals, and are always retired with years to spend on their pet theories. Their problem is that they often assume that Special Relativity is somehow wrong. When apart from numerous empirical tests, it is mathematically elegant and once fully understood is seen to be a true work of genius."[32]

None of these writers, however, addresses the central inconsistency of Special Relativity, namely the clock absurdity. Their arguments are all of the form:

> "Everyone knows that everyone knows that Relativity is correct. Therefore it is crackpot to question it."

But since when has popular opinion been a valid criterion for judging a scientific theory? (Good question!)

Remembering also that anyone who brands anti-Relativists as "deranged crackpots", should for consistency apply the same epithet to Albert Michelson, Charles Poor, Ernest Rutherford, Ernst Mach, Frederick Soddy, Hendrik Lorentz, Henri Poincaré, Herbert Dingle, James Maxwell, John Bell, Louis Essen, Max Born, Nicolas Tesla, Oliver Heaviside, Paul Dirac, Thomas See and Wolfgang Pauli – among many famous others – all of whom implicitly[c] or explicitly rejected Relativity[d].

Resuming:

– 1) the 'speed-of-light' postulate predicts that two observers in relative motion will each see the other's clock running slower than his own
– 2) the 'relativity' postulate says that both are correct
– 3) this being contradictory/absurd, so too are the Einstein postulates, and by extension SR tself

The postulates are discussed further in the appendix[e].

DISSIDENCE, EXPERIMENTAL

Michelson-Morley

Since the aether is discussed at length in a companion article[33], we will only summarize its principal findings here.

---

[a] John Farrell (??), Boston science writer.
[b] You can say that again, John!
[c] By accepting the existence of the aether, for instance, which directly refutes SR (below).
[d] Below.
[e] p.68.

Starting with the famous (some might say “infamous") Michelson-Morley experiment, observations were made over four days in July 1887, during an hour at noon and an hour at six o'clock in the evening[34]. M&M reported that:

> "The relative velocity the aether with regard to the Earth is probably less than one sixth of the Earth’s orbital velocity[a], and certainly less than one fourth"[35]

In 1998 Héctor Múnera reanalyzed their results using modern statistical methods. He found that they gave, at a 95% confidence level[b]:

– midday readings $v_{\in}$[c]=6.22+/-1.86 km/s
– evening readings $v_{\in}$= 6.8+/-4.98 km/s[36]

They are shown in Fig. 0-15.

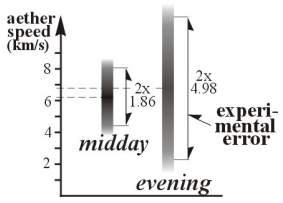

Fig. 0-15. Michelson-Morley results.

Both results were considerably less than the 30 km/s – the Earth's orbital speed around the Sun[d] – that Michelson had been expecting. But they were nevertheless *both definitely positive* in terms of their experimental errors.

Einstein was somewhat coy about the M&M experiment. On some occasions he said he hadn’t been aware of it when he wrote his Special Relativity paper[e37]. And on others that he had[f38]. Although as has been said, for a young physicist in 1905 not to have heard of the Michelson-Morley experiment, would be like an electrician never having heard of Ohm’s Law[39].

The aether’s existence is terminal for Special Relativity. It firstly provides a 'preferred' frame of reference for light waves[g], falsifying the first postulate. And secondly, it makes the speed of light invariant only in reference frames stationary in the aether, and in no others, falsifying the second postulate.

It is ironic that the experiment most often quoted as *supporting* Special Relativity – including by Einstein himself[h40] – is the one that most simply and directly *refutes* it.

We don't even need the clock and twin absurdities to refute Special Relativity. It was already done experimentally by Michelson-Morley 18 years before it was formulated!:

Special Relativity was refuted 18 years before it was formulated

Dayton Miller

The other principal interferometer experimenter was *Dayton Miller*[j]. His most important work was done during 1925-6 on top of Mt Wilson in California. Miller made a total of

---

[a] Of 30 km/s.
[b] A 95% probability of not being due to chance.
[c] Using the exotic symbol '∈' for the aether.
[d] Fig. 4a.
[e] E.g. in a 1952 letter.
[f] He freely refers to it in his 1916 book. There is evidence that he knew of it as early as 1899.
[g] The speed of light would be the same in all directions in that frame only, and in no other.
[h] Aether article.
[i] Dayton Miller (1866–1941), American physicist and astronomer.

12'000 sets of observations – as opposed to Michelson-Morley's 36. And he made them over the course of a year, something M&M had recognized needed doing but never did[a41].

Miller obtained a solar-system aether-wind speed of:

$$v_{S\in}{}^{b} = 8.22+/-1.39 \text{ km/s}$$

coming in from an approximately southerly direction[c42], that of the *Dorado* constellation in the Great Magellanic Cloud[43]. His results are summarized in Fig. 16[d44].

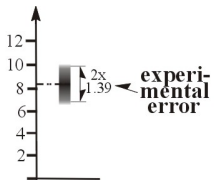

Fig. 16. Miller's results[45].

Miller's consistently positive results worried Einstein considerably, who wrote:

> "*Not for one moment* did I take Miller's results seriously. *I assumed* that they are based on a fundamental error. Otherwise the Special Theory of Relativity, and with it the General Theory in its current form, would both collapse like a house of cards. '*Experimentum summus judex*'[e]."[46] (italics ours)

He sent Miller a letter suggesting that his results were due to temperature variations.

Miller, however, was an extremely careful and meticulous experimenter, and had already spent two years in Cleveland doing an exhaustive series of control tests to eliminate just that possibility[f47]. He told a local newspaper:

> "The trouble with Professor Einstein is that he knows nothing about my results. He ought at least to give me credit for knowing about temperature differences. I am not so simple as that."[48]

So Einstein, having resoundingly declared that:

> "No amount of experimentation can ever prove me right. But a single experiment can prove me wrong."[49]

and that:

> "All the other fellows look not from the facts to the theory, but from the theory to the facts. They cannot extricate themselves from a conceptual net, but flop around in it in a grotesque way".[50]

when Miller came up with such an experiment, Einstein said no: my theory is right so the experiment must be wrong. We already noted his:

> "There *can be* no æther-drift, *nor any experiment* with which to demonstrate it."[g] (italics ours)

effectively:

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[a] Aether article.
[b] Of the Solar system with respect to the aether.
[c] Astronomical (α =5.2, δ=–67°). Cf the aether article.
[d] Somewhat higher than M&M's (p.16). Discussed in the Aether article.
[e] "Experiment is the supreme judge."
[f] Aether article.
[g] p.6.

> "My theory postulates that there is no aether. No experiment can therefore possibly demonstrate it".

Not much "*Experimentum summus judex*" here! But maybe rather: "*Mea theoria summus judex*" ('my theory is the supreme judge').

And who, pray, is in this case "Looking not from the facts to the theory, but from the theory to the facts" and "Unable to extricate himself from a conceptual net"? (Excellent questions!)

Thomas Huxley[a] spoke of:

> "The great tragedy of Science: a beautiful hypothesis slain by ugly facts."

Miller's[b] ugly facts resoundingly slew Einstein's "beautiful" Special Relativity hypothesis, confirming experimentally what the clock absurdity had already shown conceptually: that the Einstein postulates are incoherent and Special Relativity is wrong.

At Mt. Wilson today there is no record of the exhaustive ground-breaking work done there by Miller. But only a memorial plaque to Michelson and Einstein(!)[51]. Reginald Cahill[c] wrote:

> "It was an injustice and a tragedy that Miller's contributions to physics were not recognised in his lifetime. Not everyone is as careful and fastidious as he. He was ignored simply because it was believed then, as it is now, that absolute motion is incompatible with Special Relativity (it is!). It was accepted without evidence that his experiments must be wrong. This shows once again how little physics is evidence based – as Galileo discovered to his cost. Even today Miller's experiments attract a hostile reaction from the physics community."[52]

Hafele-Keating

A well-known modern so-called "experimental confirmation" of Special Relativity is the 1971 *Hafele-Keating*[d] *experiment*, carried out under the supervision of a U.S. government agency. Four caesium atomic clocks were flown twice around the world aboard commercial airliners, first eastward and then westward; and then compared with similar ground clocks at the United States Naval Observatory. Due to their height, the flying clocks needed a gravity adjustment, correctly given by General Relativity[e].

In his preliminary analysis published in *Nature*, Hafele wrote:

> "The standard answer – that moving clocks run slow – is almost certainly incorrect. The difference between theory and measurement is disturbing. Most people (myself included) would be reluctant to agree that the time gained[f] by any one of these clocks is indicative of anything."[53]

In his final report, published in *Science* in 1972, he however stated:

> "The theory predicted that, compared with the ground clocks, the eastward clock should lose 40 ns and the westward clock gain 275 ns. The values of 59 ns and 273 ns obtained provide an unambiguous empirical resolution of the famous 'clock paradox'."[54]

A 1972 *Nature* leader echoed this:

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[a] Thomas Huxley (1825–1895), English biologist.
[b] And also Michelson-Morley's.
[c] Reginald Cahill (1948-), Australian theoretical physicist.
[d] Joseph Hafele (1933-2014), American physicist.
Richard Keating (1941-2006), American astronomer.
[e] Below.
[f] *Sic*. SR says that moving clocks *lose* time.

"The agreement between theory and experiment was most satisfactory."[55]

So how could Hafele's initial "The difference between theory and measurement is disturbing" have subsequently become "The agreement between theory and experiment was most satisfactory", a complete about turn? According to the *en.wikipedia*:

> "In a frame of reference at rest with respect to the Earth's centre, the east-bound clock, flying in the direction of the Earth's rotation, moves faster than the one on the ground. And the westbound clock, flying against the Earth's rotation, moves slower. The outcome was in agreement with predictions of Relativity to a high degree of confidence."[56]

But wait a minute! A "frame of reference at rest with respect to the Earth's centre" *directly contradicts* Special Relativity, which specifically states that there is *no preferred 'at rest' reference*[a]. And that clock-slowing depends on the *relative speeds* of the *observers*, in this case the respective clocks.

Relative to the ground clock A, the speeds of the airborne clocks B_1, B_2 are the *same*, Fig. 17. Meaning that they should show *equal time lags*. To bring in the Earth's centre as a 'preferred at-rest' is a blatantly *ad hoc* and *relativity-contradicting fudge*[b].

Fig. 17. Hafele-Keating.

So how did H&K attempt to justify their 180-degree about turn? Their argument was that since the ground clock rotates together with the Earth, it is not inertial. And doesn't, therefore, satisfy the prerequisite of Special Relativity. Another reference frame had to be found, which turned out to be the Earth's centre[c57].

Exactly the same, however, applies to the flying clocks, which likewise rotate together with the Earth. On this basis the whole experiment is invalid as a test of Special Relativity. H&K's argument effectively ran:

– we carried out an experiment to verify Special Relativity
– the results refuted Special Relativity
– no problem, because the experiment wasn't a valid test of Special Relativity
– we found another, non-relativistic way of interpreting the results
– therefore Special Relativity is resoundingly confirmed"

And the prestigious peer-reviewed mainstream journals *Science* and *Nature* underwrote this travesty of logic and Science!

In their 1972 paper H & K didn't publish their original readings. When Al Kelly obtained them from the U.S. Naval Observatory, he found firstly that extensive undisclosed alterations had been made to the raw data. And secondly, that the accuracy of the atomic clocks used *no way* justified the conclusions[58]. The inventor of the atomic clock, Louis Essen[d], agreed that:

> "The clocks were not sufficiently accurate to detect the small effect predicted."[59]

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[a] p.5.
[b] Considering only the flying clocks B_1 and B_2, each should run slower than the other. This is the clock absurdity again.
[c] Or alternatively, the fixed stars.
[d] Louis Essen (1908-1997), English physicist.

And how did the H&K experiment "provide an unambiguous empirical resolution of the famous clock paradox". Taking a leaf out of Albert E's copybook[a], they didn't say. But simply proffered an unsubstantiated blanket declaration[b].

Far from unambiguously *confirming* Special Relativity, the H&K experiment unambiguously *refutes* it. Were the editors of *Science* and *Nature* incapable of seeing that? Al Kelly concludes:

> "The H&K experiment may well rate as one of the biggest hoaxes in the history of modern Science."[60]

GPS

Related to the H&K experiment is the *GPS* (Global Positioning System). Its functioning is shown schematically in Fig. 18. Points on Earth are located via the transit times t_a, t_b, t_c of signals from three[c] satelites A, B, C, whose positions are determined by ground stations using the same principle.

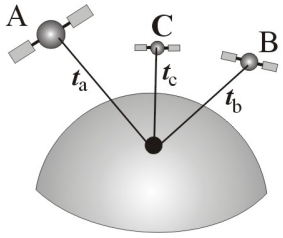

Fig. 18. GPS system.

All the clocks need to be highly accurately synchronised. Due to their altitude, the satellite clocks require a gravitational adjustment which is correctly given by General Relativity.

The satellite clocks also need velocity corrections, which according to the official documentation are calculated using Special Relativity. This is a lie. The GPS employs the "ECI" (Earth Centred Inertial) reference frame)[61], the same as the Hafele-Keating fudge. And this as seen directly contradicts Special Relativity.

The ground stations also need synchronizing signals. These are however found to travel at different speeds eastwards and westwards[62], again contradicting Special Relativity[d].

Clifford Will's:

> "The GPS wouldn't function if SR didn't work the way we thought it did"[e]

is therefore another blatant untruth. The communications specialist Ronald Hatch[f] wrote:

> "The GPS system flat out contradicts Einsteinian Relativity, which is clearly incorrect."[63]

Another writer is however more charitable:

> "When we say that the GPS contradicts the two basic principles of Special Relativity, we don't mean that *everything* in Special Relativity is incorrect. *Some* of its deductions have strong experimental support."[64] (italics ours)

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[a] Cf p.13, point 5).
[b] Cf his "*No contradiction* to the foundations of Relativity can be construed ..." (p.12).
[c] In practice four. The extra satelite provides a time check.
[d] The 'speed of light' postulate (p.6).
[e] p.14.
[f] Ronald Hatch (1938-), American physicist with 30 GPS patents to his name.

Even a stopped clock shows the right time twice a day, with admirable precision!

Doeppler effect

A further experimental refutation of Einstein's 'invariant speed of light' postulate is the following[a65] . *Sound* is a pressure disturbance propagating through the air at a characteristic speed *c*=1240 km/h, determined by the properties of the air medium, Fig. 19a.

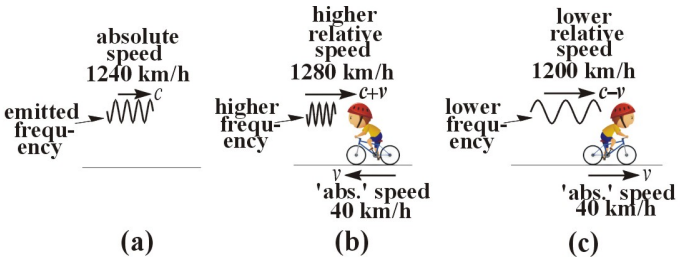

Fig. 19. Sound waves.

A cyclist pedalling in the opposite direction to the sound waves experiences them as 'bunched up', with a higher frequency than if he were stationary, Fig. 19b[b]. Similarly, when pedalling in the same sense as the sound waves, he experiences them as 'spread out', with a lower frequency than when he is at rest, Fig. 19c.

This is the so-called *Doeppler effect*. And is seen to depend on differing speeds of the *waves relative to the observer*[66]. Were this speed invariant – as Einstein maintains for light – there would be Doeppler effect.

That light *does* in practice show a Doeppler shift[c], then means that its speed relative to the observer *cannot* be invariant, again refuting Einstein's second postulate.

DISSIDENCE, THEORETICAL

Dingle

The aether wind refutes both Einsteinian postulates experimentally. A number of physicists have challenged Special Relativity theoretically.

In Germany in 1931 the editors of a booklet entitled "*100 Autoren gegen Einstein*"[d], collected contrary publications from a large number of mainly German sources. While simultaneously protesting the "scientific terrorism" currently being practiced by fundamentalist Einsteinians[67].

A prominent English anti-relativist was *Herbert Dingle*[e]. President of the Royal Astronomical Society, and Professor Emeritus of the History and Philosophy of Science at London's University College, he was an acknowledged authority on Relativity. He published two books on the subject, one of which was a standard text in English and American Universities for over 30 years. He also wrote the respective sections in the *Encyclopaedia Britannica*.

Later in his career he came to doubt the official "explanations" of the twin "paradox", and published an article in *Nature* to that effect. It was replied to by the eminent English

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[a] A more detailed analysis is in the Aether article.
[b] Assuming no wind.
[c] That of distant galaxies, for instance.
[d] "*100 Authors against Einstein*".
[e] Herbert Dingle (1890–1978), English physicist.

astrophysicist Sir William McCrea[a]. But when Dingle wrote an answer to McCrea, neither *Nature* nor any other scientific journal would print it. As far as the public debate was concerned, McCrea was seen to have had the last word[68].

To have his say, Dingle published a book *Science at the Crossroads*. In it he accused the scientific community of:

> "A conscious departure from rectitude"[69].

Rather than stimulating discussion, however, the book was printed in few copies, and soon became practically unavailable. In spite of his eminence and qualifications, Dingle was from then on branded a crank.

Commenting on Dingle's book in *The Times* in 1971, Bernard Levin[b] gave three reasons why he as a layman supported Dingle:

> "– 1) in disputes between the orthodox scientific theory and its challengers, the orthodoxy has usually been proved wrong, and has defended its wrongness with deplorable methods. This seems to be the present case.
> – 2) Dingle couches his arguments in beautifully lucid prose. Whereas his opponents use language that is often incomprehensible even to those familiar with the subject
> – 3) I see in Dingle a man who stands *unus contra mundum*, battling almost alone in his belief that Einstein is wrong. This is the strongest element in my feeling."[70]

We can formalize the second point as the 'Bernard Levin intelligibillty principle':

he who understands explains understandably;
he who doesn't doesn't

A corollary is the advice given by Niels Bohr[c]:

> "Never express yourself more clearly than you can think."[71]

Essen

Another eminent English theoretical anti-relativist was *Louis Essen*[d]. Head of the National Physical Laboratory, and the inventor of the atomic clock[e], he became interested in Special Relativity and repeated Michelson-Morley's experiment using radio waves. He disagreed with the 'null' interpretation:

> "No one attempted to refute my arguments", he wrote, "But I was warned that if I persisted I was likely to spoil my career and pension prospects."[72]

In 1988, safely retired and able to express his views, he wrote an article entitled *Relativity – joke or swindle?* In it he said:

> "A common reaction of physicists to Relativity is that, although they don't understand it themselves, they think it is so widely accepted that it must be correct. Until recently this was my own attitude. But Relativity has always had its critics. Ernest Rutherford[f] called it 'a joke'; and Frederick Soddy[g] 'an arrogant swindle'. Today, however, the theory is so rigidly held that young scientists dare not express their doubts."[73]

He concluded:

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[a] William McCrea (1904-1999), English mathematician and astronomer.
[b] Bernard Levin (1928–2004), English journalist.
[c] Niels Bohr (1885–1962), Danish physicist and founding father of quantum physics.
[d] Louis Essen (1908-1997), English physicist.
[e] p.19.
[f] Ernest Rutherford (1871–1937). New Zealand physicist and chemist
[g] Frederick Soddy (1877–1956). English radiochemist.

> "Special Relativity is not a theory. But simply a number of contradictory assumptions together with actual mistakes. I don't think Rutherford would have regarded it as a joke if he had realised how much it would retard the development of Science."[74]

Others

Like Miller, neither Rutherford nor Soddy were scientific lightweights. Rutherford discovered the atomic nucleus[a], for which gained a Nobel prize and became known as "the father of nuclear physics". It is said that when Wilhelm Wien[b] once tried to impress him with the splendours of Relativity, and failing, exclaimed in despair:

> "No Anglo-Saxon can understand Relativity!".

Rutherford guffawed and replied:

> "No. They've got far too much sense!"[75].

Frederick Soddy was a one-time co-worker of Rutherford's, and likewise a Nobel laureate. At a gathering of Nobel prize winners in June 1954 he declared Relativity to be:

> "A swindle, an orgy of amateurish metaphysics."[c][76]

Another English Relativity doubter was the self-taught electrical engineer Oliver Heaviside[d]. A loner who spent most of his life at odds with the scientific establishment, he nevertheless changed the face of mathematics and Science for years to come[77]. He too thought Einstein had to be joking:

> "Relativity doesn't agree with me. It is the most unnatural and difficult way of representing the facts that could be imagined. I really think that Einstein is a practical joker, pulling the legs of his enthusiastic followers, each more *einsteinisch* than he. He knows the weakness of his theory, and only propounds it to annoy."[78]

A further well-known dissenter was the Serbian electrical engineer Nicola Tesla (1856-1943), the inventor of alternating current (a.c.) which is today the standard form of electric power. In a 1935 *New York Times* interview he called Relativity:

> "A mathematical garb which fascinates and dazzles, blinding people to its underlying errors. It is a beggar clothed in purple, whom ignorant people take to be a king."[79]

And Albert Michelson[e], according to Thomas See[f]:

> "Openly rejected Relativity on the grounds that it does not account for the transmission of light, but holds that the aether should be thrown overboard"[80]

Michelson never gave up his belief in the aether to his dying day[g][81] – obviously, since his own experiment had demonstrated it. He said he regretted having unwittingly helped

---

[a] In 1909.
[b] Wilhelm Wien (1864–1928), German physicist.
[c] His comments were later "edited out" of the official report.
[d] Oliver Heaviside (1850–1925), English engineer and mathematician.
[e] Of Michelson-Morley fame.
[f] Thomas See (1866–1962), American astronomer. His attacks on Einsteinian Relativity led to his being fired from both the observatories he worked at. He ended his professional years in an island outpost in California.
[g] In spite of being a religious agnostic!

create "the monster of Relativity"[82].

The Nobel prize judge H. Nordenson:

> "People express astonishment that Einstein was not awarded the Nobel prize for Relativity, considered by many to be one of the most outstanding achievements of this century. I do not hesitate to declare that it is not only among the most sensational fancies, but is also one of the most serious logical incoherencies in the history of Science."[83]

Cahill

In 2002 Reginald Cahill re-examined the Michelson-Morley and Miller interferometer data. He found that both had failed to take into account:

– 1) the FitzGerald-Lorentz *length contraction*[a]
– 2) the *refractive index* of the medium, in this case air

The FitzGerald-Lorentz contraction refers to a *vacuum*. But the Michelson-Morley and Miller experiments were carried out in *air* where the speed of light is somewhat lower. In this case the two effects *don't* exactly cancel out. But leave a *small residual*, which is what Michelson-Morley, Miller and others were measuring. After making the necessary corrections, the M&M and Miller experiments give aether speeds of 258 and 374[b] km/s respectively.

In 2006 Cahill made his own aether-wind measurement using a coaxial cable and two atomic clocks linked by optic fibre. He obtained a value of ~400 km/s, compatible with the corrected M&M and Miller results[c]. He wrote:

> "It is now belatedly understood that numerous experiments, beginning with Michelson-Morley's, have always shown that the Einstein postulates are false; that there is a detectable 'space'[d]; and that motion through it has been repeatedly observed since 1887. In denying such obvious empirical facts Special Relativity is just silly. Michelson died not realising that he had observed absolute motion[e]. Ironically, he received a Nobel prize for reporting that he hadn't observed what in fact he had[f]."[84]

Lorentz Aether Theory

Once the nonsensical Einstein postulates are abandoned, therefore, and the existence of the aether is recognized, everything falls neatly into place. The result is the *Lorentz Aether Theory* (LET). Although it comes in various versions[g], for present purposes we will define it simply as:

Lorentz Aether Theory = there is an aether

The 'aether' again being defined as "the hypothetical medium that light waves are conceived as propagating through"[h].

On this approach light is a standard physical wave propagating through a physical medium at a characteristic speed *c* determined by the properties of that medium. The

---

[a] Known by Miller, but not by M&M at the time of their experiments.
[b] p.16.
[c] This is discussed at length in the aether article.
[d] The aether. One of his ways of avoiding using the "unspeakable ae-word".
[e] Ditto.
[f] Not quite true. Michelson reported a positive aether wind. *Others* subsequently nullified it for him.
[g] Presumably attempting to minimize its conflict with Einsteinian Relativity.
[h] p.5, note.

"physical" here being *electromagnetic*, as opposed to the 'mechanical' of water and sound waves.

Clock slowing

Returning to the station and truck observers[a], the station observer A is now stationary in the *aether*. And the travelling observer B's speed *v* is *through the aether*, rather than relative to observer A. The speed of light is similarly invariant *though its medium*, the aether, as opposed to relative to an observer.

The speed of light though the aether being invariant, the station observer A sees the truck clock B running slower than his own as before, Fig. 20a.

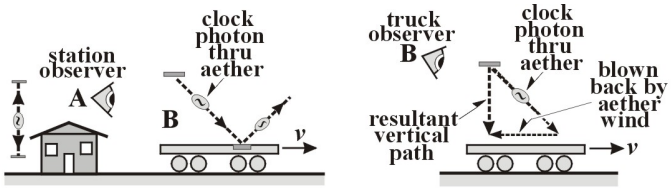

Fig. 20. Lorentz Aether Theory (1).

Due to the truck's motion, the observer B experiences an *aether headwind*. To compensate for it, his clock photon has to head upwind somewhat[b], Fig. 20b, which gives a clock slowing factor γ[c].

So the stationary[d] observer A here sees the travelling[e] clock B running *slower* than his own, as before. And the travelling observer B sees the stationary clock A running *faster* than his own. There is no clock absurdity.

The travelling clock time *t* in terms of the stationary clock time t_0 is then:

$$t = \frac{t_0}{\gamma} \qquad \text{(eq.2)}$$

Length contraction

Length contraction is likewise a function of the speed through the *aether*, rather than relative to an observer. It can be considered an *experimental result*, demonstrated by the null results of vacuum interferometer measurements[f85].

A stationary observer A sees a travelling observer B's lengths contracted by γ as before. An observer B, travelling through the aether, and with a contracted measuring rule, then sees a stationary observer A's lengths as *longer* than his own. Again, there is no contradiction.

The travelling observer B doesn't however see *his own* lengths as contracted, since both they and his measuring rule are shortened equally.

A travelling length *l* in terms of its stationary value l_0 is then:

$$l = \frac{l_0}{\gamma} \qquad \text{(eq.3)}$$

---

[a] Fig. 6.

[b] When swimming across a fast-flowing river, one has to head upstream somewhat and takes longer to cross.

[c] eq.2 (p.25). See also the Aether article.

[d] In the aether.

[e] Through the aether.

[f] For instance the Illingworth, Joos and LIGO results (Aether article).

Mass increase

Mass increase is similarly a function of the speed *through the aether* rather than relative to an observer. It can be seen via the following argument – not particularly rigorous, but sufficiently so for present purposes.

Imagine a force applied to a massive body. As its speed increases, its length decreases correspondingly[a], till at the speed of light *c* it becomes zero. There being no such thing as a 'negative length', there can therefore be no further acceleration. And the only way for a finite force acting on a body to result in zero acceleration is for the body to have infinite mass[b].

Mass must therefore increase with speed by a factor that is unity when at rest in the aether. and infinite when travelling at the speed of light *c* through it. This is evidently our old friend the Lorentz factor γ[c].

The relativistic mass *m* of a body of rest mass m_0 moving through the aether at speed *v* is then:

$$m = \gamma m_0 \qquad \text{(eq.4)}$$

General

The above relations are born out experimentally. Clock-slowing is demonstrated by *muons*, subatomic particles produced by cosmic rays hitting the Earth's outer atmosphere. Being unstable with an at-rest half-life of 1.5 ms, in theory few should reach the Earth's surface.

In fact far more than expected do. The reason is that, travelling through the aether at 99.4% of the speed of light, their Lorentz factor is γ=9 which increases their half-life to 9x1.5=13.5 ms[d], enabling the observed number to arrive.

The FitzGerald-Lorentz length contraction is confirmed by vacuum interferometer experiments[e].

Mass increase is seen in cyclotrons[f]. The velocity of particles orbiting through the aether at speeds close to that of light cannot be increased significantly. An additional energy input thus adds to their *mass*, requiring a stronger magnetic field to keep them in orbit. Its magnitude enables the particles' mass to be calculated.

Resuming

Resuming, Special Relativity is:

– 1) *nonsensified*[g] by the clock absurdity
– 2) *falsified* by:
  – *a*) a wide range of aether-wind measurements, starting with Michelson-Morley's
  – *b*) the Hafele-Keating experiment

The Einstein postulates being logically incoherent[h], they cannot *both* be right. In fact both are wrong. Interferometer and other aether-wind experiments demonstrate the

---

[a] eq.3 (p.25).
[b] Newton's 2nd law (F=ma).
[c] Fig. 8.
[d] eq.1 (p.8).
[e] p.24.
[f] Circular particle accelerators.
[g] Made a nonsense of.
[h] Leading to the clock absurdity (p.9).

existence of the aether, falsifying both[a]. The cosmic microwave background (CMB) provides a 'preferred at-rest'[b][86], re-falsifying the first.

When Einstein chose to reconcile mechanics and electromagnetics by abolishing the aether[c], he made the wrong choice.

GENERAL RELATIVITY

Equivalence principle (1)

Special Relativity is restricted to inertial motion with no acceleration. After this Einstein turned his mind to *gravity*. To put the relations into mathematical form, however, he first had to learn a new technique, tensor calculus, which took him eight years[87].

The outcome was his 1915 *General Relativity*. As everyone knows, it is highly complex and mathematical, comprising:

> "A set of ten coupled hyperbolic-elliptic nonlinear partial differential equations, known as the Einstein field equations, which take many pages to write down – and a deep breath just to say."[88]

The basic idea is however again very simple. Einstein recounted how after two years of excrutiating mental torment, his *eureka* moment – what he later called "the happiest thought of my life" – came while sitting in his office in Bern:

> "Suddenly a thought struck me. A man falling freely from the roof of a house doesn't feel his own weight."[89]

In space-age terms, an astronaut in a windowless space capsule cannot distinguish between being:

– 1) free-floating in deep space, Fig. 21a
– 2) in free fall in a gravitational field, Fig. 21b

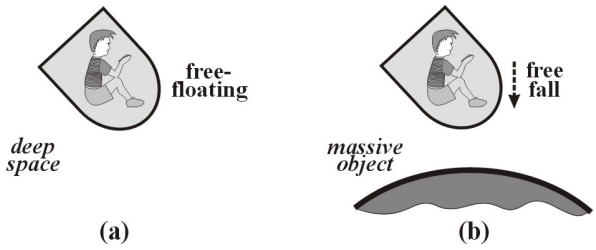

Fig. 21. Equivalence principle (1).

And correspondingly between being:

– 1) at rest on the surface of a massive object, Fig. 22a
– 2) in deep space accelerated by the capsule's engines, Fig. 22b

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[a] Providing a preferred at-rest (1st postulate) and implying a not-constant speed of light (2nd postulate).
[b] Spacetime article.
[c] p.5.

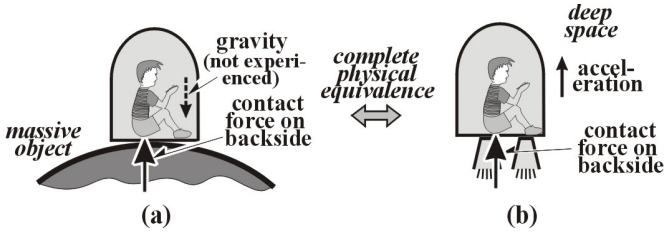

Fig. 22. Equivalence principle (2).

Einstein called this the *Equivalence Principle*:

> "We assume the *complete physical equivalence* of an accelerated reference frame and a gravitational field[a]."[90] (italics ours)

He saw in it the means to extend Special Relativity to include gravitation[91].

Unfortunately, however, Einstein failed to distinguish between *individual subjective* and *collective objective* realities. True, an astronaut in a windowless space capsule cannot differentiate between the conditions of Fig. 21a,b. But we-the-rest-of-us looking on from the outside can. And should the free-falling astronaut[b] hang in there long enough, he too will eventually discover that he isn't free-floating in deep space. Or maybe better: there will no longer be any 'him' to discover that he isn't.

The same applies to Einstein's "A falling man doesn't feel his own weight". True, he doesn't. But that doesn't mean that gravity isn't acting on him. When sitting on a chair, I also don't feel my own weight. But only the compressve force between the chair and my bum. But that doesn't mean gravity isn't pulling me down.

In fact, the conditions of Fig. 21a,b *aren't* exactly equivalent. In a gravitational field there is a *tidal force*, a somewhat stronger gravity at the bottom of the capsule than at the top, Fig. 23a. The difference is normally minimal. But it exists, and with sufficiently sensitive instrumentation can be measured. This force causes objects in a gravitational field to become *elongated*, Fig. 23b. On Earth it is responsible for the *tides* – hence the name.

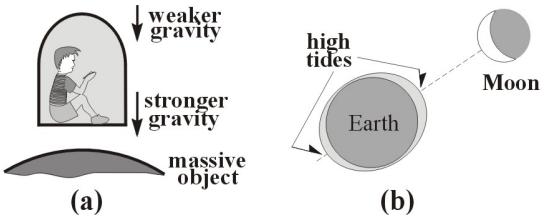

Fig. 23. Tidal force.

Equivalence principle (2)

Einstein continues his above quote:

> "Whenever an observer detects the presence of a force acting on all objects in proportion to their mass, *he is in* an accelerated reference frame[c]."[92] (italics ours)

Here am I, sitting quietly down here on Planet Earth minding my own business, and fondly *imagining* that I am inertial, not subject to any acceleration[a].

---

[a] The equivalence symbol in Fig. 22b.
[b] Fig. 21b.
[c] Ditto.

But since I detect a force acting on my backside in proportion to my mass, according to Einstein I am accelerating away from the Earth at g=9.81 m/s^2, Fig. 24. Given that the Earth continues in intimate contact with my bum through the intermediary of my chair, it too must be correspondingly accelerating.

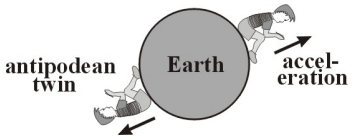

Fig. 24. Antipodean twins.

Exactly the same, however, applies to my antipodean twin. Meaning that the Earth must be accelerating simultaneously in opposite directions. The rational absurdity of this constitutes an *antipodean twin absurdity*, that correspondingly nonsensifies the Equivalence Principle.

Apart from the further consideration that, accelerating at this rate, both I and my antipodean twin would within a short time surpass the speed of light, prohibited by Special Relativity.

Noting that Einstein doesn't say that it is "as if" an observer experiencing a force proportional to his mass was in an accelerated frame. He asserts that "he is" – i.e. *actually is*.

Likewise in the equivalence principle[b]: he doesn't say that when in a gravitational field it is "as if" one was accelerating. He asserts the "complete physical equivalence" – i.e. that one *actually is accelerating*.

Equivalence principle (3)

Einstein continues further his quote, Fig. 25:

> "A freely falling man does not feel his own weight because there exists – at least in his immediate surroundings – no gravitational field. In his reference frame a new gravitational field cancels that due to the Earth".[93]

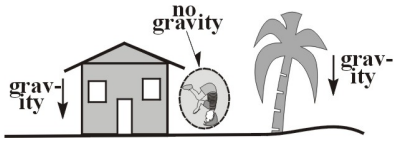

Fig. 25. Falling man.

The only known source of gravity is however *mass*. Einstein is effectively saying that the act of falling instantaneously creates a mass equal to the Earth's, that instantaneously vanishes when the man hits the ground.

But how does this new gravitational field act only on the falling man, and not on the objects in his vicinity? Einstein doesn't say. And how does the instantaneous creation and extinction of this new mass conform to the conservation of mass/energy? Again, he doesn't elaborate.

Rather than creating a mass equal to the Earth's, maybe falling men are instantly surrounded by rings of gravity annihilating fairies (he doesn't say what happens to falling women).

---

[a] Ignoring the minimal acceleration due to the Earth's rotation.
[b] p.28.

Spacetime (1)

In 1907 Einstein's old Zurich maths teacher Hermann Minkowski[a] considered a photon moving at the speed of light c from a point 'a' to a nearby point 'b' in 3-d space, taking time d*t*, Fig. 26.

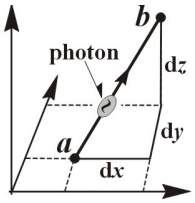

Fig. 26. Minkowski space-time.

For incremental axis displacements d*x*, d*y*, d*z*, Pythagoras' theorem gives:

$$\mathrm{d}x^2 + \mathrm{d}x^2 + \mathrm{d}z^2 = (c\,\mathrm{d}t)^2 \qquad \text{(eq.5)}$$

Based on this simple piece of high school geometry, Minkowski resoundingly declared that:

> "Henceforth space by itself, and time by itself, are doomed to fade away into mere shadows. Only a union of the two will preserve an independent reality."[94]

To which Einstein added:

> "For us physicists the distinction between past, present and future is only an illusion, however persistent."[95]

Well, Albert, maybe for you physicists. But for us ordinary people the distinction is very real. The past is a *memory*, neural traces in our present brains. The future is *our present idea* of how things could conceivably come to be, likewise neural traces in our present brains. The only reality we ever actually physically experience is that existing right here right now.

Spacetime (2)

Gravity, according to Einstein, is not a force acting between massive[b] objects. It is caused by the *curvature of spacetime*:

> "Einstein showed that rather than objects pulling on each other, gravity is best understood as a warping of spacetime. Objects move along *geodesic*s, the shortest distance between two points on a curved surface. The Moon appears to curve as it orbits the Earth. But in reality it follows a straight line in curved spacetime."[96]

This curvature is visualized in 2-d terms as a massive object distorting the space around it to form a 'gravitational well' such as that due to a heavy ball on a trampoline, Fig. 27a. A small object passing in the object's vicinity is deflected by the deformation of the surface.

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[a] Hermann Minkowski (1864-1909), German mathematician.
[b] Having mass.

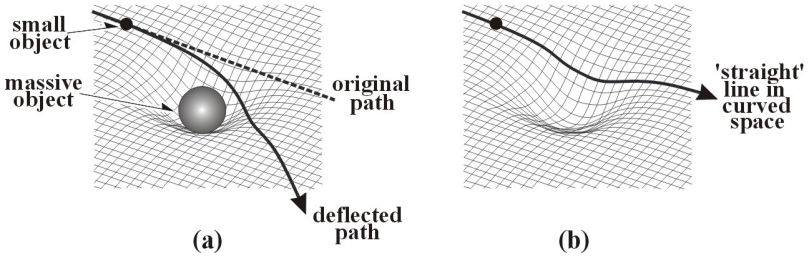

Fig. 27. Curvature.

A 'straight line on a curved surface' would however be that of Fig. 27b. The actual path of Fig. 27a requires an *additional downward gravitational force* on the small object. But which according to Einstein doesn't exist, gravity being fully represented by the curvature of the surface. The trampoline model thus requires gravity to explain gravity, making it nonsensical:

the curved space model requires gravity to explain gravity

The same considerations apply to planetary orbits, as in the above:

> "The Moon appears to curve as it orbits the Earth, but in reality follows a straight line in curved spacetime." [97]

shown in Fig. 0-28a.

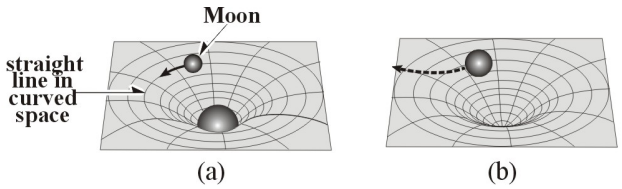

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Fig. 0-28. Moon/Earth.

For the Moon to follow this path, however, again requires a downward gravitational force. Otherwise centripetalism will cause it to fly upwards and outwards as in Fig. 0-28b. This case likewise requires gravity to explain gravity, making it a nonsense.

These diagrams are further almost invariably drawn for a *small light body* being deflected by a *large massive one*. How would it look for two binary neutron stars, each forming its own gravitational well, while simultaneously falling down the well caused by the other? The case is normally assiduously avoided.

In spite of such diagrams being regularly trotted out to "explain" the 'curvature' model for gravity, in practice they simply don't work, i.e. don't represent what actually happens.

And when physicists purport to "explain" a complicated mathematical concept in terms of a simple physical analogy; and one finds that the simple analogy simply doesn't make sense; one wonders whether the same doesn't also apply to the original mathematical concept.

Such diagrams are also invariably drawn in terms of 2-d *space*. General Relativity, however, talks of "curved *spacetime*", defined as:

> "Any *mathematical model* that combines space and time into a single interwoven continuum."[98] (italics ours)

In the present 2-d case, a 'spacetime' location would comprise two spatial position variables (x,y) and one time variable (t) combined into a single mathematical function $f(x,y,t)$.

This is however a *mathematical abstraction*, symbols on a piece of paper. The question then being: how can a *material object* like the Moon follow *any* kind of line, straight or curved, in a mathematical abstraction?

how can a material object follow a line in a mathematical abstraction?

This is another excellent question, to which Relativists to date have provided no convincing answer. .

Physicists might argue that by "curved" what they *really* mean is *mathematically curved*. But mathematical curvature also being an abstraction, this likewise doesn't answer the question.

Einstein on his own admission couldn't conceive of 'space':

> "We entirely shun the vague word 'space', of which – we must honestly acknowledge – we cannot form the slightest conception."[99]

And if he couldn't even conceive pseudo-physical space[a][100], how much less the mathematical abstraction 'spacetime'?[b][101]

Reginald Cahill:

> "Spacetime is a mathematical construct with no ontological significance."[102]

Back in 1920 Thomas See was already lamenting:

> "One cannot but reflect that astronomical theories were perfected by Newton, Laplace and Besses, before such confusing terms as '4th dimension space-time manifolds' were introduced."[103]

And a contemporary blogger asks:

> "Are we being taken to the cleaners by spacetime physicists?"[104]

The answer would seem to be a resounding "Yes".

Aether

Returning to the aether, in his 1905 Special Relativity paper Einstein summarily dismissed it:

> "The introduction of a 'luminiferous aether' will prove to be superfluous, since the view to be developed here will not introduce an absolute 'stationary space'."[c]

But in his 1920 Leiden address[d] he resoundingly brought it back again:

> "Recapitulating, we may say that according to the General Theory of Relativity space is endowed with physical qualities. In this sense there exists an aether. Space without an aether is unthinkable. Not only would there be no propagation of light, but also no standards of space and time."[105]

He tried to slide out of the implicit contradiction by adding:

> "The aether may not be thought of as a ponderable media, and the idea of motion may not be applied to it."[106]

This makes no sense. If something "exists and is endowed with physical qualities", then it is *by nature* a physical object to which the idea of motion can be applied.

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[a] Spacetime article
[b] Also discussed in the SpaceTime article.
[c] p.5.
[d] On receiving an academic chair created especially for him by Lorentz.

Einstein goes on to say:

> "The aether of the General Theory of Relativity is a medium without mechanical or kinematic properties, that co-determines mechanical and electromagnetic events."[107]

This too is meaningless. How can something with no mechanical properties co-determine mechanical events? True to form, Einstein does not explain.

Robert Laughlin[a]:

> "It is ironic[b] that Einstein's most creative work, the General Theory of Relativity, should boil down to conceptualizing space as a medium, when his original premise was that no such thing exists."[108]

Inertial/gravitational mass

Another strange idea of Einstein's (and also of others) was of separate "inertial" and "gravitational" masses. He wrote in his 1916 Relativity paper:

> "The same quality of a body manifests itself, according to circumstances, as 'inertia' or as weight (lit. 'heaviness'). The gravitational mass of a body is equal to its inertial mass."[109]

It has even been formalized as the 'Weak Equivalence Principle'.

The distinction, however, makes little sense. Mass is defined in terms of the standard 1 kg platinum-iridium block kept in Paris[c]. It is not defined as "inertial mass"; nor as "gravitational mass". But simply as "mass".

The fundamental 'MKS' mechanical units are mass (kg), length (m) and time (s). *Force* not being one of these, it has to be defined in terms of them via Newton's second law. If a force applied to the standard 1 kg mass results in an acceleration of 1 m/s^2, then its value is by definition 1 N[d].

This then allows the masses of other objects to be determined. If a force applied to some body gives an acceleration a; and the same force applied to the standard 1 kg mass gives an acceleration a_1; then the body's mass is by definition $M=a_1/a$.

In possession of operational procedures for measuring force and mass, Newton's gravitational constant G can be determined experimentally. And is indeed found to be 'constant'[e] .

And that's it. No separate inertial and gravitational masses. Simply mass.

Photons, gravity (1)

Atomic clocks depend on the emission frequency of caesium atoms. Imagine an observer out in deep space with such a clock, and another on the Earth's surface, Fig. 29.

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[a] Robert Laughlin (1950-), Stanford University, Nobel Laureate in Physics.
[b] A delicate way of putting it.
[c] Or its more modern equivalent.
[d] Newton.
[e] So to speak (below).

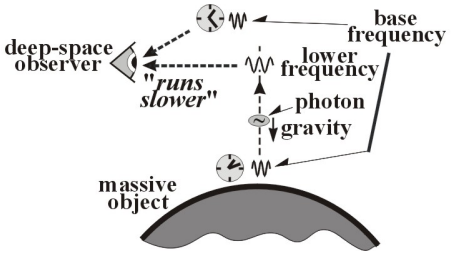

Fig. 29. Gravitational clock-slowing.

Photons are subject to gravity[a]. Consider a photon emitted by the earthbound clock. As it climbs up into space, the downward pull of gravity causes it to *lose energy*, reducing its frequency[b].

The deep-space observer then sees the earthbound clock *running slower* than his own – *gravitational clock slowing*. Correspondingly, the *speed of light* is slower in a gravitational field – the *Shapiro effect*.

Noting that clock slowing depends on the gravitational *potential*, the energy required to remove a photon into outer space; rather than the gravitational *field*.

Photons, gravity (2)

The gravitational deflection of light is one of the fundamental theses of General Relativity. Einstein's argument was the following[110]. Consider an elevator cage with a small hole allowing a light photon to enter. With the elevator stationary, the photon travels across it in a straight line, Fig. 0-30a. But should the elevator be accelerating, the photon follows a *curved path*, Fig. 0-30b.

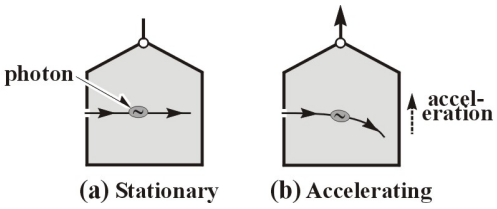

Fig. 0-30. Photons, gravity.

Einstein correctly deduced from this that a *linear trajectory* in an inertial frame corresponds to a *curved trajectory* in an accelerated frame. Based on the equivalence of acceleration and gravity[c], he concluded that light photons are subject to gravity, writing in his 1916 paper:

> "It can easily be shown that a ray of light transmitted rectilinearly with the velocity c with respect to a Galileian (inertial) reference frame, is no longer a straight line with reference to an accelerated reference frame. From this we conclude that rays of light are propagated curvilinearly in gravitational fields."[111]

His argument was effectively:

– accelerated frames correspond to curved trajectories
– gravity is an acceleration
– therefore photons are subject to gravity

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[a] Behaving 'as if' they had relativistic mass (appendix p.70).
[b] On the $E=h\nu$ principle.
[c] Equivalence principle (p.28).

This is however firstly *logically invalid*, being of the form:

– Fido is an animal
– cats are animals
– therefore Fido is a cat

And secondly, it implies that *massless objects* are likewise subject to gravity, contradicting Newton's inverse square law. Whether photons are subject to gravity is a question for *experiment*, and not abstract geometry[a].

In his 1916 paper[b] Einstein states that:

> "According to General Relativity, a ray of light will experience a curvature of its path when passing through a gravitational field. Half of this deflection is produced by the Newtonian field of attraction of the Sun. And the other half by the geometrical modification ('curvature') of space caused by the Sun."[112]

According to General Relativity, however, there is *no such thing* as Newtonian gravity, the *whole deflection* being caused by the curvature of spacetime[c]. Einstein seems to have got a bit mixed up here too.

All in all, General Relativity is about as conceptually screwed up as its Special counterpart. The fundamental error again being the "postulate" (for which read "unsubstantiated assumption") of an invariant speed of light in all inertial reference frames[d]. This as seen is firstly conceptually incoherent[e]. And is secondly refuted experimentally by a whole series of aether wind measurements using widely differing techniques, starting Michelson-Morley's in 1887.

Given that the whole of modern relativistic physics[f] is based on this – as Flann O'Brien would say[g] – "unlicensed premiss", Relativity is for practical purposes *Science Fiction*, pertaining to the entertainment industry, but not serious Science[h]:

Relativity is Science Fiction

Photons, gravity (3)

The idea of gravitational light deflection dates back to well before Einstein. Newton proposed it as a corollary to the corpuscular theory of light, writing in his 1704 *Opticks*:

> "Do not bodies act upon light at a distance, and by their action bend its rays?"[113]

John Michell[i] in 1783, and Pierre-Simon Laplace[j] in 1795, independently reasoned that the gravity of some stars could be so strong as to prevent light escaping from them. Effectively postulating *black holes*, a concept Einstein never accepted to his dying day, even though it is a direct consequence of his theory[k114].

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[a] Photons *are* in fact deflected by gravity. But this does not validate Einstein's argument.
[b] Under the heading "Deflection of Light by a Gravitational Field".
[c] p.30.
[d] The second SR postulate (p.6).
[e] p.7.
[f] Black- and worm-hole theory, for instance.
[g] In his 1939 *At Swim Two Birds*.
[h] This is not to say that black holes don't exist. There is convincing evidence that they do. But GR being wrong, they are unlikely to have the properties it "predicts".
[i] John Michell (1724-1793), British clergyman and amateur astronomer.
[j] Pierre-Simon Laplace (1749–1827), French mathematician and astronomer, aka "the French Newton".
[k] He even wrote an article proving there could be no such thing.

The amount of solar photon deflection was calculated independently by Henry Cavendish[a] in 1784 and by Johann von Soldner[b] in 1801. The latter obtained an angle of 0.9"[c][115]. Both however used a *purely Newtonian* model that did not take gravitational clock slowing into account[116]. Whereas General Relativity gives the correct 1.75", twice the Newtonian value, Fig. 31.

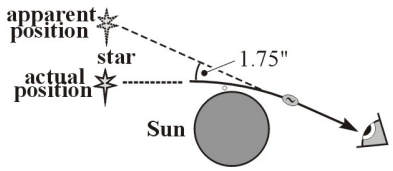

Fig. 31. Gravitational light-deflection..

The true amount of solar light deflection thus came to be seen as an experimental test of General Relativity. Due to the Sun's brilliance, however, the apparent shifts in stars' positions can only be observed during a *solar* eclipse.

There was to be one in May 1919, visible in Sobral in northeast Brazil and on the island of Principe off the coast of West Africa. Expeditions to both places were planned by the English Astronomer Royal Sir Watson Dyson[d].

Eclipse show (1)

There is a background to the story. In 1917 wartime England enacted military conscription, and the then 34-year-old Cambridge University astronomer Arthur Eddington[e], a personal friend of Einstein's, was eligible. As a devout Quaker he was however a conscientious objector – it was their common pacifism that had originally drawn him and Einstein together.

Current English opinion was strongly opposed to conscientious objectors. It was a social disgrace even to be associated with one. Fearing adverse publicity, Cambridge University approached the Home Office arguing that it was not in the public interest that such a distinguished scientist as Eddington should be conscripted. As a result, and with the personal intervention of Dyson, Eddington was deferred. But with the express stipulation that should the war have ended by then, he would head the May 1919 solar eclipse expeditions.

It was therefore essential for Dyson, Cambridge University and Eddington personally that the expeditions be deemed a success. The results were announced triumphantly on 6th November 1919 in London at a joint meeting of the *Royal Society* and the *Royal Astronomical Society*, convened solely for the purpose. An eye witness recounts:

> "It resembled more a coronation than a scientific conference."[117]

Alfred Whitehead[f] was present. He wrote:

> "The intense atmosphere was that of a Greek drama. We the audience were the chorus, commenting destiny's decree on a supreme event that was to be revealed. Newton's portrait in the background reminded us that after two centuries the greatest of all scientific generalisations, the theory of gravity, was about to receive its first modification."[118]

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[a] Henry Cavendish (1731–1810), English scientist.
[b] Johann Georg von Soldner (1776–1833), German astronomer.
[c] 0.9 seconds of arc.
[d] Watson Dyson (1868-1939), English astronomer.
[e] Arthur Eddington (1882-1944), English astronomer.
[f] Alfred Whitehead (1861–1947), English philosopher.

The paper was however only received by the Royal Society on October 30th, a week before its presentation, and was unlikely to have been seriously peer-reviewed. The audience was also not shown the original photographic plates. When Charles Poor[a] subsequently obtained and analyzed them, he found that *no way* did they substantiate Eddington's claims:

> "Of the thirty-three plates showing star images, only seven even approximated Einstein's predictions. And to make these fit, one is forced to invoke the aid of the Sun to distort the camera in a particular way and by just the right amount."[119]

Maurice Allais[b]:

> "There can be no clearer scientific fraud than what went on in the tropics on May 29, 1919. Eddington was in no way interested in testing Einstein's theory, but only in confirming it. He fudged the data correspondingly. Some stars were indeed displaced in the required direction. But others were displaced in a transverse, and still others in the opposite direction to that predicted. Non-conforming data, 85% of the total, were simply discarded as due to 'accidental error'. By a strange coincidence the remaining 15% 'good' data were those consistent with Einstein's theory. This was surely one of the biggest scientific hoaxes of the 20th century. Thanks to this fraud, based on a handful of data points massaged more thoroughly than a side of Kobe beef, Einstein became a world celebrity surrounded by an aura of scientific infallibility."[120]

In his 1830 book *Reflections on the Decline of Science in England*, Charles Babbage[c] described the principal forms of scientific dishonesty:

– *trimming*: smoothing irregularities to make the data look precise
– *cooking*: retaining only those results that fit the theory
– *forging*: inventing some or all of the data, and even reporting experiments that were never performed[121]

Eddington may not have indulged in forging. But he was no stranger to trimming and cooking.

In fact there seems to be an item missing from Babbage's list. In line with the culinary metaphor, we can call it *stewing*:

– *stewing*: hailing as confirming a scientific theory an experiment that in fact refutes it

Examples of scientific stewing we have met so far are the Hafele-Keating experiment and the GPS system. Both are said to resoundingly *confirm* Special Relativity. In fact they both resoundingly *refute* it.

In spite of the ample demonstration of the eclipse expedition's fraudulence, as late as 1999 the eminent English physicist Stephen Hawking[d] could write:

> "The curvature of spacetime was confirmed in spectacular fashion in 1919, when light was bent as it passed the Sun, giving direct evidence that space and time are warped."[122]

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[a] Charles Poor (1866-1951), American astronomer and Columbia University Professor of Celestial Mechanics.
[b] Maurice Allais (1911–2010), French physicist and economics Nobel laureate.
[c] Charles Babbage (1792-1871), Cambridge University mathematics professor and "prophet of the electronic computer".
[d] Stephen Hawking (1942– 2018), English physicist and popular author. .

Wait a minute, Stephen! Firstly, the results *do not* confirm General Relativity *as such*: the ten coupled hyperbolic-elliptic nonlinear partial differential equations. But only a very minor aspect of it, the deflection of photons by a massive body.

And this is equally well explained by classical gravitation and gravitational time dilation[123] – both ideas that have been around since Newton – without invoking General Relativity at all. Even less do they evidently confirm the "warping of spacetime", a conceptual nonsense found only in warped minds[a].

To make such a statement, one would have to be either:

– 1) *ignorant*: still unaware of the fraudulence of the eclipse experiment; or
– 2) *mentally challenged*: unable to recognize the nonsensicality of 'warped spacetime'; or
– 3) *bullshitting*: "My profession, right or wrong"

The first two being unlikely, we are left with the third as a further example of a famous physicist spewing out bovine excrement, presumably assuming that we-the-general-public will unquestionly swallow it because he is a famous physicist and we aren't.

The last word on gravity has however to rest with a busty 1950s Hollywood actress. Asked by a newspaper reporter what kept her frontally-plunging backless strapless evening gown in place, she replied gravely:

> "Gravity. The gravity of the situation that would arise if it fell down".

EINSTEIN

Plagiarist

Turning to Einstein himself, the characterizing features of his 1905 Special Relativity are:

– 1) clock-slowing[b]
– 2) length contraction[c]
– 3) mass increase[d]
– 4) 'absolute' relativity (no 'at rest')[e]

Later in the same year he published a further paper on the:

– 5) mass-energy equivalence ($E=mc^2$)

Einstein always insisted that he arrived at his results independently. In fact they had all without eception been previously published and were available in the scientific literature of the time.

Taking first *length contraction*, in 1888 Oliver Heaviside showed from Mawell's equations that movement though the aether alters electric fields by the Lorentz factor γ[f][124]. The following year George FitzGerald[g] used this, and the *ad hoc* hypothesis that intermolecular forces are electrostatic, to derive the length contraction relation, thereby explaining the alleged 'null' result of the Michelson-Morley experiment:

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[a] p.30.
[b] eq. 2 (p.25).
[c] eq.3 (p.25).
[d] eq.4 (p.26).
[e] p.5.
[f] p.8.
[g] George FitzGerald (1851–1901), Irish physicist.

> "The forces binding the molecules of a solid might be modified by motion through the aether such that the base of the interferometer is shortened, neutralizing the optical effect."[125]

In 1892 Lorentz, independently and more rigorously, arrived at the same conclusion:

> "There will be a contraction in the direction of motion proportional to the square of the ratio of the velocities of translation and of light, such as to annul the effect of aether drift in the Michelson-Morley interferometer."[126]

Whence its name: the 'FitzGerald-Lorentz' length contraction.

In 1897 Joseph Larmor[a], again independently [127], derived the same relation. In the same year he showed that motion through the aether retards physical processes in the same proportion, giving the *clock-slowing* relation:

> "Individual electrons describe orbits in times shorter than the 'at rest' system in the FitzGerald length contraction ratio."[128]

In 1899 FitzGerald arrived at the same conclusion. As did also Lorentz:

> "The time of vibrations of oscillating electrons in the frame of a moving observer is γ times as great."[129]

With regard to *mass increase*, J.J. Thompson[b] proposed in 1881 that mass increases with velocity[130]. It was confirmed experimentally for electrons by Walter Kaufmann[c] in 1901[131]. In 1904 Lorentz showed mathematically that the factor involved is again γ[132].

The term "principle of relativity" was first used in 1900 by Henri Poincaré[d]. He defined it as:

> "The principle according to which the laws of physical phenomena must be the same for a stationary observer as for one carried along in uniform motion."[133]

Einstein's first postulate is simply a rewording of this. Writing to Poincaré in 1904, Lorentz agreed with him that:

> "It would be more satisfactory to show that electromagnetic actions are entirely independent of the motion of the system."[134]

This is again Einstein's first postulate.

In contrast to Einstein (who was apparently congenitally averse to crediting anyone except himself with anything), Lorentz openly attributed the absolute relativity principle to Poincaré:

> "I have not established the principle of relativity as universally true. Poincaré, on the other hand, obtained a perfect invariance of the electromagnetic equations, and formulated the term 'postulate of relativity', which he was the first to employ."[135]

Lorentz later commented:

> "Einstein simply postulated what we had already deduced from the fundamental equations of the electromagnetic field."[136]

In fact, the idea of absolute relativity wasn't even Poincaré's. Back in 1763 Roger Boscovich[a] had written:

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[a] Joseph Larmor (1857-1942), Irish physicist.
[b] J.J. Thompson (1856–1940), English physicist.
[c] Walter Kaufmann (1871-1947), German physicist.
[d] Henri Poincaré (1854-1912), French scientist.

" We cannot obtain an absolute knowledge of local modes of existence, nor yet of absolute distances or magnitudes. Just as it is impossible to transfer a fixed length from one place to another, so with a fixed interval of time."[137]

Turning to the $E=mc^2$ mass/energy equivalence, according to the *en.wikipedia*:

" Einstein is best known for his mass/energy equivalence formula $E=mc^2$, dubbed 'the world's most famous equation'."[138]

The July 1946 edition of *Time* magazine carried on its cover a photo of Einstein together with the equation inscribed onto a mushroom cloud[139].

Fig. 32. $E=mc^2$.

Once again, however, no way was the equation "Einstein's". Newton had already wondered about the equivalence, writing in his 1704 *Opticks*:

"May not Nature change bodies into light, and light into bodies? She seems delighted with transmutations."[140]

The quantitative relation was first proposed in 1875, thirty years before Einstein, by Tolver Preston[b]:

"Energy is proportional to mass times the speed of light squared."[141]

In 1900 Poincaré derived a "momentum of radiation" that effectively incorporates the $E=mc^2$ relation[142]. Edmond Whittaker [c] credits him with its discovery[143].

In 1903 Olinto dePretto[d] derived the relation rigorously and explicitly. But since he published it in a relatively unknown Venetian scientific journal[e144], it attracted little attention.

Einstein, however, spoke fluent Italian: his father had moved there for business reasons when he was 15. And more significantly, the parents of his Italian work colleague Michele Besso were close family friends of the Venetian dePrettos[145]. (The plot thickens!).

Resuming, *not one single one* of the ideas in Einstein's 1905 Special Relativity paper was original. All had been previously published, and were available in the scientific literature. Max Born[a] wrote:

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[a] Roger Boscovich (1711–1767), Croatian polymath.
[b] Tolver Preston (1844–1917), English telegraph engineer.
[c] Edmond Whittaker (1873-1956), English science historian.
[d] Olinto dePretto (1857–1921), Italian engineer/industrialist and physicist.
[e] De Pretto presented two papers, both in Venice, in June and November 1903. The second was published in the proceedings of the Venetian Royal Institute of Science, Literature and Art in February 1904.

> "A curious feature of Einstein's 1905 paper is the absence of any reference to Poincaré or anyone else. It gives you the impression of a new venture. But that of course, as I have tried to explain, is not true."[146].

The science historian Keswani:

> "As far back as 1895 Poincaré had conjectured the impossibility of detecting absolute motion. And in his book *Science and Hypothesis*, published in 1902, he introduced the 'principle of Relativity'. Einstein acknowledged none of this in his unreferenced 1905 paper."[147]

Maurice Allais:

> "It is now time to speak directly of what Einstein was: first and foremost a plagiarist who had few qualms about stealing the work of others and submitting it as his own. Poincaré wrote 30 books and over 500 papers on philosophy, mathematics and physics. Einstein claimed he'd never read any of them. Yet many of Poincaré's ideas wound up in his 1905 paper, without being credited."[148]

Brian Ruhe:

> "The only original part of Einstein's 1905 paper was its title. Everything else was plagiarized."[149]

Noting that Einstein himself once said:

> "The secret to creativity is knowing how to hide your sources."[150]

And that towards the end of his life admitted to:

> "Having been an unscrupulous opportunist."[151]

Mileva effect

In 1903 Einstein married Mileva Marić[b], a Serbian fellow student at the Zurich ETH (Federal Polytechnic). They already had an out-of-wedlock daughter, Lieserl, whose fate is unknown. She is believed to have died in 1903. Einstein never mentioned her publicly.

Both families objected strongly to the marriage. Mileva's because Albert was bookish and Jewish. Albert's because Mileva was bookish and not Jewish. But they married anyway and had two more children: Hans Albert who became a university professor in California and had little subsequent contact with his father. And Edward who suffered from schizophrenia and spent most of his life in mental asylums.

A short technical diversion. Certain metals and gases "ionize", i.e. emit electrons, when light falls onto them – the so-called *photoelectric effect*. It was originally observed in 1888 by Heinrich Hertz[c], who was also the first to demonstrate experimentally the existence of the electromagnetic waves predicted by Maxwell. The unit of frequency, the "Hertz", is named after him.

The photo-electric effect was subsequently studied in depth by Philipp Lenard[d] as part of his work on cathode rays. for this he received the 1905 physics Nobel Prize.

Related to the photoelectric effect is *black body radiation*. The hotter a body is, the lighter its colour, and the higher the frequency of its emitted radiation. The current theory could not, however, explain the respective frequency spectrum.

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[a] Max Born (1882–1970), German physicist, co-winner of the 1954 physics Nobel Prize and a personal friend of Einstein's.
[b] Mileva Marić (1875–1948). Official name: Marity.
[c] Heinrich Hertz (1857–1894), German physicist.
[d] Philipp Lenard (1862–1947), German physicist.

The problem was finally solved in 1900 by Max Planck, who made the heuristic – and as it turned out brilliantly intuitive – proposal that matter consists of "material oscillators"[a]. And that these emit light not continuously, but in *discrete packets* that he called "*quanta*[b] *of action*".

Scientists in general are a conservative lot. Since Planck's theory had broken all the accepted rules, it was definitely not well received by the scientific establishment. Planck even came to be regarded as bit of of a crank, which then as now was an effective death warrant for an academic career.

So when in March 1905 an unknown young patent clerk from Bern named A. Einstein submitted to the German scientific journal *Annalen der Physik*, of which Planck was an editor, a paper explaining the photo-electric effect in terms of Planck's *quanta*, it was obviously immediately accepted. And Planck became eternally indebted to Einstein for having vindicated his theory and salvaged his career. Freud noted that most of us can handle aggression, but are defenceless in the face of flattery.

So when in June of that same year that same A. Einstein submitted to that same journal a further paper entitled *On the Electrodynamics of Moving Bodies*, in spite of its manifest ambiguities and complete lack of references, it too was immediately accepted.

A further detail. In 1897-98 Mileva had spent a semester on her own in Germany at Heidelberg University studying under Philipp Lenard, by then the principal exponent of the photoelectric effect.

Mileva therefore had as much, if not more, cause to be interested in the photoelectric effect as Albert. One suspects that the respective paper was at least in part hers. Noting that, contrary to Albert's custom, this paper *did* contain references, including two to Planck and one to Lenard.

When a couple marry under Swiss law, each can opt whether to emend the two surnames to form a joint *Allianzname*. Mileva chose to do this, and from then on was officially "Mileva Einstein-Marity". Albert did not, remaining plain "Albert Einstein". He is never known to have signed himself "Einstein-Marity"[152].

In 1905 Abraham Joffe[c] was assistant to Wilhelm Röntgen[d], the discoverer of X-rays, for which he received the first-ever Nobel prize for physics in 1901. Röntgen at the time was an editor of the *Annalen der Physik*. By virtue of this, Joffe got to see the original (long since disappeared) manuscript of the 1905 Special Relativity paper. He remembers that it was signed "Einstein-Marity", i.e. with *Mileva's* surname rather than Albert's[153].

In 1905 Mileva wrote to friend:

> "We have recently completed a very important work which will make my husband world-famous."[154]

And Albert wrote to her:

> "How happy and proud I will be when we two together have victoriously led our work on relative motion to an end!"[155]

There are therefore considerable grounds for suspecting that not only the photo-electric effect paper, but also that on Special Relativity, was at least in good part due to Mileva.

Further indications are that the divorce agreement stipulated that should Einstein ever win a Nobel prize, the monies were to be paid over to Mileva. Remembering that he got the prize for the photo-electric effect, and not for Relativity. And that when Mileva once

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[a] Later identified as atoms.
[b] 'Quantity' in Greek.
[c] Abraham Joffe (1880–1960), Russian physicist.
[d] Wilhelm Röntgen (1845–1923), German physicist.

hinted that she was thinking of publishing her memoirs, Einstein advised her in an extant letter to "Keep your mouth shut"[156].

Einstein and Mileva split up in July 1914. His last original work was General Relativity, first published in October 1915. From then on till his death in 1955 he produced virtually nothing of any significance. Without Mileva, it seems, "Albert's" scientific creativity ground to a halt.

Additional evidence for the Mileva effect is the total nonsensicality of Einstein's 1918 *Naturwissenschaften* "explanation" of the twin absurdity[a]. Had Mileva still been around, one can hardly imagine her letting him publish it at least in that form.

Ok. There is obviously no conclusive proof that much in the 1905 papers was in fact Mileva's. But there is also no conclusive proof that it was Albert's. The evidence is circumstantial: each makes of it what he may. Noting, however, that much of this circumstancial evidence points to Mileva.

Eclipse Show (2)

For the first two years after its publication, Einstein's 1905 paper received scant attention. But then in 1907 Hermann Minkowski used it for his 'spacetime' concept[b]. It was largely thanks to Minkowski's promotion of his own idea that Einstein's work became more widely known, although still only among a relatively small circle of theoretical physicists. Had one used the term "relativity theory" before 1919, it would have been taken to refer to that of Lorentz and Poincaré, and not to Einstein's[157].

But then came the 1919 Royal Society Eclipse Show[c] which:

> "Began an 'Einstein frenzy' of praise and adulation in the world press that would last for months, and would give Albert a divine greater-than-life image."[158]

Christopher Bjerknes[d], in his massively researched *The Manufacture and Sale of Saint Einstein*, with more than 3600 references, calls the event the "Canonization of Saint Einstein". The *London Times* of 7th Nov. 1919 carried the headline:

> "Revolution in Science. New Theory of the Universe. Newtonian Ideas Overthrown."

The article cited the Royal Society President Sir J.J.Thompson as calling it:

> "One of the most momentous, if not *the* most momentous, pronouncements of human thought."[159]

Adding however that:

> "He had to confess that no one had really yet succeeded in stating in clear language just what Einstein's theory is."[160]

So no-one really knew what General Relativity was. But everyone agreed that it had been resoundingly confirmed. The *New York Times* of 9th Nov. similarly headlined:

> "ECLIPSE SHOWED GRAVITY VARIATION. British Scientist Calls Discovery One of the Greatest of Human Achievements"

But again noting that:

> "Efforts to put Einstein's theory into words intelligible to the non-scientific public have so far not been very successful."[161]

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[a] p.70.
[b] p.30.
[c] p.36.
[d] Christopher Bjerknes (1965-), American Science historian.

The *Times* article was copied by newspapers all over the world, and Einstein awoke in Berlin on the morning of November 7, 1919 to find himself a world-famous celebrity. For the rest of his life would remain the world's most famous scientist. While General Relativity would remain a fascinating but puzzling subject that most people believed they could never understand[162].

The relatively few dissenting voices evidently got submerged in the generalized Einstein frenzy.

Zionism

Apart from being an ardent pacifist, Einstein was also an ardent Zionist. A somewhat contradictory combination, given that Zionism is not notoriously pacific. But Albert was no stranger to contradiction.

His new-found fame was siezed upon by the Jewish press as a way of furthering the Zionist cause[163]. A certain Alexander Moszkowski[a] in particular, a career sycophant, made promoting Einstein his life's work. He wrote to him:

> "Regardless of what happens, I would like to continue the 'cult'. For you it is secondary. But for me it is paramount. Additionally, my modest writing abilities may serve the Zionist cause."[164]

Subsequent to the Nov.1919 Eclipse Show, Paul Ehrenfest[b] wrote to Einstein:

> "I hear that your accomplishments are being used to make propaganda for a 'Jewish Newton', who is simultaneously an ardent Zionist."[165]

As did also Max Born's father-in-law:

> "It uplifts the heart and strengthens one's faith in mankind to see the researchers of all nations prostrating themselves before a man of Jewish blood, who thinks and writes in German, in full recognition of his greatness."[166]

USA visit

In the spring of 1921 Einstein, together with the Zionist leader and future first President of Israel Chaim Weizmann[c], made his first visit to the USA. The objective of the journey was to raise funds for the Hebrew University in Jerusalem. Einstein jokingly called it "Dollaria".

On their way over Einstein tried to explain General Relativity to Weizmann. Asked later whether he had understood it, Weizman said:

> "Einstein explained it to me every day. By the time we arrived I was convinced that he really understands it."[167]

According a contemporary description[d][168]: When the ship docked in Lower Manhattan on the afternoon of April 2, Einstein was standing on the deck wearing a black felt hat that concealed some, but not all, of his now-graying profusion of uncombed hair. One hand held a shiny briar pipe. The other clutched a worn violin case:

> "He looked like an artist", the *New York Times* reported, "But underneath the shaggy locks was a scientific mind whose deductions have staggered the ablest intellects of Europe."[169]

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[a] Alexander Moszkowski (1851–1934), Polish writer and journalist.

[b] Paul Ehrenfest (1888–1933), Austrian physicist, later professor of theoretical physics at Leiden University.

[c] Chaim Weizmann (1874–1952), Zionist leader and future first President of Israel.

[d] With acknowledgements and thanks.

Thousands of spectators, along with the fife-and-drum corps of the Jewish Legion, were waiting when the mayor and other dignitaries brought Einstein ashore on a police tugboat. The crowd waved blue-and-white flags and sang 'The Star-Spangled Banner' and the Zionist anthem '*Hatikvah*'.

Einstein and Weizmann had intended to head directly for their hotel. Instead they were taken on a motorcade that wound through the Jewish neighborhoods of the Lower East Side late into the evening:

> "Every car had its horn, and every horn was put into action", Weizmann recalled. "We reached the hotel at about 11:30 p.m, tired, hungry, thirsty, and completely dazed."[170]

During the visit Einstein and Weizmann were wildly embraced, especially by the less assimilated and more enthusiastic Jews who tended to live in Brooklyn or on the Lower East Side, rather than Park Avenue. At one event more than 20'000 people showed up "Causing a near riot when they stormed the police lines", the *Times* reported.

After three weeks of lectures and receptions in New York, Einstein and Weizmann visited Washington, where for reasons fathomable only to those who live in that city, the Senate decided to debate the Theory of Relativity.

When a House side Representative proposed placing Einstein's theories on the Congressional Record, another rose to ask:

– "Did the Honorable Representative understand the theory?".
– "I have been earnestly busy with it for three weeks." was the reply, "And I am beginning to see some light."
– "But what relevance does it have to the business of Congress?", the first insisted.
– "It may bear upon future legislation concerning general relations with the cosmos", was the answer.[171]

So when Einstein visited the White House, it was inevitable that the President Warren G. Harding would be asked whether he understood Relativity. As the group posed for the cameras, the President smiled and confessed that he did not.

> "Einstein's Idea Puzzles Harding"[172]

ran the following day's *New York Times* front-page headline.

Einstein and Weizmann subsequently visited Princeton where Einstein delivered a week-long series of lectures and received an honorary degree. The lectures were very technical, and included more than 125 complex mathematical equations which Einstein scribbled on the blackboard while explaining them in German. One student admitted:

> "I sat up in the balcony. But even so he talked way over my head"[173]

One of the final stops on the grand tour was Cleveland where several thousands thronged the train depot to meet the visiting delegation. The parade included 200 honking flag-draped cars. Einstein and Weizmann rode in an open car preceded by a National Guard marching band and a cadre of Jewish war veterans in uniform. Admirers along the way grabbed onto Einstein's car, jumping on the running board while police tried to pull them away.

Back in Europe, Einstein confessed to being amused and baffled by America. He wrote to Michele Besso:

> "It is more easily aroused to enthusiasm than other countries I have unsettled with my presence. I had to let myself be shown around like a prize ox. It's a miracle that I endured it. But what remains is the fine feeling of having done something truly good for the Jewish cause."[174]

As a fund-raiser, the trip was however only a modest success. The poorer Jews and recent immigrants had donated with enthusiasm. But few of the established old-line Jews with great personal fortunes had joined the frenzy. Only $750'000 was collected, far less than the $4 million hoped for. But it was a good start. Einstein wrote to Ehrenfest.

> "The Hebrew University seems financially secured"[175]

There is a sequel. Politically Einstein was decidedly left-wing, for instance writing:

> "The real evil is the economic anarchy of capitalism, a huge community of producers unceasingly striving to deprive each other of the fruits of their labor – not by force, but in faithful compliance with legally established rules. The only way to eliminate this is a socialist economy with an educational system oriented toward social goals."[176]

The FBI had a 1'427 page file on him, and had recommended that he be barred from immigration to the US under the Alien Exclusion Act. Alleging with characteristic paranoia that:

> "He believes in, advises, advocates, or teaches a doctrine which would allow anarchy to stalk unmolested, resulting in government in name only."[177]

So when in December 1932 Einstein applied for a US visa, many protested and it was refused. The board of the National Patriotic Council termed him:

> "A German Bolshevik whose theory has no scientific value, and is not understandable because there is nothing there to understand."[178]

The American Women's Patriotic Association likewise warned that he was an undesirable alien.

In the end Einstein got his visa, chuckling over the fact that:

> "The sentries of America had not given heed to the wise patriotic ladies, apparently forgetting that the Capitol of mighty Rome was once saved by the cackling of its faithful geese."[179]

Great Relativity Battle

While Einstein was being publicy hailed as a genius, and one of the greatest minds of all time, the scientific community was not quite so sure. There were those who disagreed with the theory as such – we have noted Heaviside, Rutherford, Soddy and Tesla[a]. Albert Michelson also never accepted Special Relativity, as he once politely admitted to Einstein when they met[180]. Neither did Ernst Mach, Hendrik Lorentz, Henri Poincaré, John Bell, Max Born, Wolfgang Pauli and many famous others[b].

A May 1921 *Minneapolis Morning Tribune* article ran:

> "The scientific world has lately been much entertained, and somewhat mystified, by the increasing doubts which have gradually crept into the press regarding both the authenticity and the reliability of Professor Einstein's much-vaunted Theory of Relativity. Professor Arvid Reuterdahl of St. Thomas College has challenged Professor Einstein to a written debate on the latter's theory, but has so far only been met with more or less evasive statements by Professor Einstein, some of which appear to be simply irreconcilable."[181]

Then there were those outraged at his plagiarism, especially after he got a Nobel prize[182]. This had been instituted by Alfred Nobel[c], a Swedish chemist and armaments

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a p.23.

b Cf p.15.

c Alfred Nobel (1933–1896), Swedish chemist and armaments manufacturer.

manufacturer – among other things the inventor of dynamite. As a practical man, Nobel had decreed that the physics prize be awarded for *experimental* discoveries.

The photoelectric effect law was first confirmed experimentally in 1914 by Robert Millikan[a], and he was slated to receive the 1921 Nobel Prize for it. So when the prize went to Einstein for, as the Awards Committee phrased it:

> "His services to theoretical physics, and especially for the discovery of the law of the photoelectric effect."[183]

this was in direct contravention of Nobel's directives. Einstein had made no experimental discovery. In fact, once he left the ETH he never did another scientific experiment for the rest of his life. Bjerknes:

> "It was obvious that Einstein was given the Nobel prize, not because he deserved it, but because certain influential persons [for which read 'Max Planck'] had insisted on it."[184]

That the 1921 prize was only awarded in the following year of 1922 further indicates the controversy surrounding it.

Einstein at the time was on his way to Kyoto, Japan, to deliver a talk entitled "How I created the Theory of Relativity" (excess modesty was never one of his faults). On his return the Swedish ambassador delivered the prize cheque, medal and certificate to him discreetly in private, again pointing to a certain embarrassment over the issue.

The Swedish academic Arvid Reuterdahl (1876–1933) called Einstein:

> "The P.T. Barnum[b] of the scientific world, basking in the circus limelight he focused on himself. Never before in the world of Science has a hero been so quickly and cleverly manufactured from plagiarism, false data and sophistry. Never before has intellectual opposition to the absurd been so effectively suppressed by race-baiting and brow-beating as was done by Einstein and his cronies. Deliberately and in the knowledge of the historical forces at play, and how they might be manipulated to fit the desired purpose."[185]

And in a May 1923 article in the *San Francisco Journal*, Thomas See called Einstein "A Second Dr. Cook". Bjerknes again:

> "In the early 1920s Einstein's plagiarism became an international scandal, with some calling for the revocation of his Nobel Prize. He acted like a teenager who copies an article from an encyclopedia, changes a few words, and then submits the finished forgery as his own work. But many Jewish owned newspapers, avoiding the legitimate criticisms leveled at him, resorted to *ad hominem* attacks against his critics, calling anyone who dared speak a word against him an anti-Semite."[186]

In a widely commented April 1929 speech, the archbishop of Boston Cardinal William O'Connell[c] denounced Einstein's theories as:

> "Authentic atheism camouflaged as cosmic pantheism."[187]

Throughout the 1920s the Great Relativity Battle raged on, with "idealist" anti-relativists maintaining that in spite of Einstein's undeniable public image, his ludicrously incoherent theory simply could not be admitted. And "pragmatic" relativists holding that the

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[a] Robert Millikan (1868–1953), American physicist.

[b] A famous circus promoter.

[c] William O'Connell (1859–1944). Famous for authorizing the priests of his diocese to refuse communion to women wearing lipstick.

lucrative spinoffs in terms of increased status and funding for the physics community offered by the Einstein bandwaggon simply could not be refused.

In what ultimately became a witch-hunt – and as normally seems to happen in such cases – the pragmatists won out. In spite of its manifold contradictions and incoherencies, Special Relativity was adopted by mainstream physics as an official dogma.

In Germany, for instance, the 1922 Annual Congress of the *Gesellschaft Deutscher Naturforscher und Ärzte*"[a] resolved that thenceforth:

> "No criticism of Relativity would be admitted, either in scientific journals or in congress papers"[188]

evidently not a particularly "scientific" standpoint!

An American physicist recounts:

> "While I was working for my Ph.D. at the University of California in the late 1920s, physics departments were being purged of Relativity critics. Those who refused to change their minds were ordered to resign. Those who would not were fired on charges of anti-Semitism. The reason given was to present a united front before grant-giving agencies, the better to obtain maximal funds. There has been a particularly vicious attitude towards critics of Einsteinian Relativity at U.C. Berkeley ever since."[189]

More recently Robert Crease[b] argued:

> "It would be unscientific to suspend Einstein's theory because of a single contrary experiment, since this would allow anti-scientific ideologues – e.g. Soviet scientists – to stop progress through falsification."[190]

This is again hardly "scientific" – especially since Einstein himself had declared that a single contrary experiment could prove him wrong[c].

Walter Babin[d]:

> "Today Relativity Theory can no longer be discussed objectively. Science majors are brainwashed into accepting it. Career scientists must pledge allegiance to it as American presidential candidates must pledge allegiance to Israel. Even constructive criticism of Relativity is interpreted as an attack on Jews. Experimental results that allegedly support the theory are celebrated and applauded. Those that contradict it are suppressed, attacked, smeared or ignored. This is not Science. It is rough hard-nose politics."[191]

Louis Essen:

> "Students are told that they cannot expect to understand Relativity. It must be accepted. Right at the beginning of their careers they are encouraged to forsake science in favour of dogma. Since the time of Einstein there has been a great increase in anti-rational thought. The Theory of Relativity is so rigidly held that a young scientist with any regard for his career dare not openly express his doubts"[192]

Reginald Cahill:

> "For a considerable time physics has been in a state of extreme censorship. Einstein has replaced Newton as the monarch of physics. All discussions of

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[a] *Society of German Scientific Researchers and Doctors*.
[b] Robert Crease (1953–), US science historian.
[c] p.17.
[d] Walter Babin (1934-), Canadian science researcher.

> the experimental detections of absolute motion[a] over the last 100 years are now banned from mainstream physics publications."[193]

Al Kelly:

> "There is no fair balanced debate on Special Relativity. But two armies lined up against each other like a pair of drunks, neither of whom listens to the other."[194]

Rochus Boerner[b]:

> "Textbooks present science as a noble search for truth in which progress depends on questioning established ideas. This is a cruel myth. Scientists know from bitter experience that disagreeing with the dominant view is dangerous. When research threatens a powerful interest group – government, industry or professional body – its representatives attack the critic's ideas or him personally: censoring publications, denying appointments or promotions, withdrawing research grants, taking legal actions, harassing, blacklisting and spreading rumors."[195]

Bryan Wallace:

> "Modern theoretical physics has become little more than an elaborate farce. President Eisenhower said that 'In holding scientific research and discovery in respect, as we should, we must also be alert to the equal and opposite danger of public policy becoming the captive of a scientific-technological elite'."[196]

What Eisenhower feared has happened. Robert Jahn[c]:

> "At the dawn of the 21st century we find a smugly contented Scientific Establishment, a High Priesthood of Science. This 'New Inquisition' consists not of cardinals and popes. But of the editors and peer reviewers of scientific journals who determine what will and what will not be published. And of governmental agencies that decide what will and what will not be funded."[197]

Michael Suede[d]:

> "Scientists are so emotionally and monetarily locked in to Einstein's theories that they cannot give them up. The future will see ever more insane explanations of the experimental results, a craziness that will accelerate till the whole house of cards finally collapses[e]. Scientists are a bunch of thieving fraudsters, defrauding the public by putting foreward theories they know observations refute."[198]

Erwin Schrodinger[f] once said:

> "The scientist only imposes two things, namely truth and sincerity. He imposes them upon himself, and upon other scientists."[199]

Er ... could you say that again, please, Erwin? Just to make sure we heard you aright.

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[a] Through the aether.
[b] Rochus Boerner (??), freelance journalist.
[c] Robert Jahn (1931–), Dean of the Princeton School of Engineering.
[d] Michael Suede (??), Austrian economist.
[e] Cf p.17.
[f] Erwin Schrodinger (1887–1961), Austrian quantum physicist.

Modern relativistic physics has effectively painted itself into a corner. Privately it must know that Special Relativity is wrong – all those highly-qualified physicists can't be *that* stupid! But to openly admit it would be a public relations catastrophe.

The "Einstein was a genius, and Relativity is a pinnacle of human thought" charade has to be maintained at all costs, and for as long as possible. Knowing full well that the truth will one day out. But please: let it be tomorrow after we have collected our salaries and research grants, and not today.

A Caltech astronomer was once asked by his mother what he thought about as he gazed out through his telescope into the profoundest depths of the starry nightime heavens:

> "Funding", was his one-word reply[200].

2+2=5

A thought exercise. Imagine that I am a first year mathematics student. And the lecturer writes up on the board "2+2=5".

> – "But Sir!" I say timidly, raising my hand, "To my way of thinking – which could of course be wrong – 2+2=4."
> – "Aha!", says the lecturer, "That is a very good point, and I am glad you made it. I fully agree that on first sight it might seem to be so. But this in fact is a highly complex question involving mathematical epistemology, transcendent number theory and non-commutable functions, to name but a few. Look: for the moment simply accept that 2+2=5, and later you will find out why."

Well, he is the lecturer and I am a humble first year student. What can I say? Since none of my classmates seem to be having any trouble with the idea, I make a mental note to sign up for that course in mathematical epistemology, and get my nose back down to copying off the blackboard.

Time goes by. I finish my course; start doing research; and to make ends meet take on some part-time teaching. And suddenly here am I one day teaching a first year mathematics class. And when I get to the bit where one writes up on the board "2+2=5", and a student raises his hand and says timidly:

> – "But Sir! To my way of thinking – which could of course be wrong … "

Well … to tell you the truth, what with course work, seminars, exams, part-time teaching, etc. I never did get around to doing that course in mathematical epistemology. And having in the meantime heard that anyone who questions whether in fact 2+2=5 could have trouble getting tenure … and given that in the current political climate academic jobs are not so easily come by … and what with my wife now expecting our first baby … well, just to be on the safe side I say:

> – " Aha! That is a very good point, and I am glad you made it. I fully agree that on first sight … "

And so it goes on, from mathematical generation to mathematical generation. As Joseph Goebbels[a] was wont to say:

> "A lie repeated often enough becomes a truth."

A modern Internet blogger has reformulated this as:

> "The odour of bullshit, repeated to the limit of infinity, asymptotically approaches that of roses."[201]

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[a] Joseph Goebbels (1897–1945), Nazi propaganda minister.

The mind

Einstein was evidently a complex personality, to put it mildly(!). He was firstly *dyslexic*, a condition also called "word blindness", that normally manifests as an early reading difficulty. Einstein was twelve before he could read and write adequately[202].

Dyslexia is fairly common. 10% of the population have it to some degree, and 3% severely. The dyslexic brain functions *visually*. It links a written word with another visual image. In the sentence "The cat sat on the mat", for instance, the words "cat", "sat" and "mat" have associated visual images and cause no problem.

But on encountering the little word "the", the brain searches for a visualisable physical correlate. And finding none goes into a flat spin. The rest of the sentence is then simply not perceived. A small girl with dyslexia once complained that when she tried to read:

> "The words crawl off the page and hide under the carpet"[203].

Objectively of course they don't – i.e. others wouldn't agree that they do. But having a dyslexic step-daughter myself, I have little doubt that, subjectively and experientially, this small girl's words did.

By the time they reach their teens most dyslexics have developed strategies to overcome their disability – which is more a "difference" than a deficiency. But their brains continue to function visually and intuitively, rather than verbally and rationally.

Dyslexics being less susceptible to language, they are also less subject to the *pressures* that societies exert on their members via their language. And so tend to be *more creative* than the norm. Leonardo da Vinci, Michael Faraday, Thomas Edison, Pablo Picasso, Andy Warhol, and loads of famous others were all dyslexic.

For the same reason, dyslexics are typically *less conformist*. Einstein's rebelliousness was legendary. At his Munich high-school, where he felt victimized by a harsh Prussian-style educational system, he treated the school and its teachers with disdain[204]:

> "Einstein. You sit there at the back smiling", one of them complained. "That violates the feeling of respect that a teacher needs from his class"[205]

Heinrich Weber, one of his ETH professors, told him:

> "You are a smart boy, Einstein. But you have one fault. You do not let yourself be told anything."[206]

Einstein was later to say:

> "He who joyfully marches to the music in rank and file has already earned my contempt. He has been given a large brain by mistake. For him a spinal cord would suffice. Unthinking respect for authority is the greatest enemy of truth."[207]

In the same vein:

> "Great spirits have always encountered violent opposition from mediocre minds, incapable of understanding the man who refuses to bow blindly to conventional prejudices, but expresses his opinions honestly and courageously. Few people are capable of expressing opinions differing from those of their social environment. Most are even incapable of forming such opinions. Two things are infinite: the universe and human stupidity. And I'm not sure about the universe."[208]

And :

> "The difference between genius and stupidity is that genius has its limits."[0]

Later in his life he said of himself:

> "To punish me for my contempt of authority, Fate made me one."[209]

Apart from being dyslexic, Einstein seems to have been mildly *autistic*, a condition also known as "Asperger's syndrome". It is characterized principally by deficient social interaction. Autistics have difficulty in interpreting the non-verbal communication of others – facial expressions, gestures, etc. They don't have a "theory of mind": they don't attribute intentions, thoughts, feelings, etc. to others. And consequently have little empathy. And tend to be solitary, living in little worlds of their own.

As children they are typically introverted, learn to talk late, use few words, laugh and cry little, and focus in on a few interests. In the more severe cases they can show restricted repetitive behaviour patterns; and also sudden destructive temper tantrums.[210]

As adults they tend to disregard social conventions, for instance using old worn clothes. Being insensitive to body language, they take verbal language literally, and so have difficulty in recognizing metaphor and irony. Consequently they have little sense of humour.

In a few cases they can have unusual mental abilities, such as a photographic ('eidetic') memory. Such a person will "read" a 300 page book in a few minutes, photocopying it into his brain. Asked how the third paragraph on page 273 starts, he can tell you. But asked what the book is about, he hasn't the first idea.

Others can perform phenomenal arithmetical calculations in their heads. Asked to multiply 12345 by 6789, he will say "Umm … 83'810'205", the correct answer. Asked how he did it, he might say (I once saw someone like this on telly):

> "Numbers appear before my eyes. Then comes one with a different shape, or maybe a different colour. That is the one."

A small pocket calculator can readily do such a calculation. And so obviously can also a 100bn-neurone human brain. But not in the standard verbal/rational way: "9 times 5 makes 45; put 5 down and carry 4; etc.". The autistic brain performs the calculation unconsciously, i.e. non-verbally. And then presents its answer to consciousness in the standard language of the unconscious, which is visual image.

Not all autistics evidently exhibit all its symptoms, especially in the milder cases. Einstein for instance had an excellent sense of humour. But he showed a number of its other characteristics.

As a child he was solitary, preferring building card houses[a] by himself to playing with other children[211]. He didn't start talking till he was three, and then seldom and very slowly. He would mutter sentences repetitively to himself under his breath to the extent that his parents and teachers suspected he could be mentally retarded. He only became fluent in spoken German at the age of nine[212].

He was also subject to sudden attacks of rage. His elder sister Maja wrote in her biography of him:

> "The usually calm small boy had inherited from his maternal grandfather a tendency toward violent temper tantrums. His face would turn yellow, the tip of his nose snow white, and he was no longer in control of himself. On one occasion he grabbed a chair and struck his violin teacher, who ran away terrified and was never seen again. Another time he threw a bowling ball at his little sister's head. And he once knocked a hole in it with a child's hoe."[213]

At school he was considered lazy, sloppy, insubordinate and a slow learner. One of his Munich high-school teachers famously told him:

> "Einstein. You will never amount to anything"[214]

And his ETH maths teacher Hermann Minkowski scornfully called him a "lazy dog"[215].

Einstein later told a friend:

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[a] Cf his image of Relativity "collapsing like a house of cards" (p.17).

> "Being the only Jewish child in the school made it easier for me to isolate myself from the rest and find comfort in the solitude that I so cherished."[216]

He wrote:

> "The essence of being a man of my type lies in how and of what he thinks; not in what he does or suffers. I am a solitary traveller. I never felt I belonged to my country, house, friends or even family. My passionate sense of social justice has always contrasted oddly with my lack of need for direct contact with other human beings."[217]

But also:

> "Although I am a typical loner in daily life, my consciousness of belonging to the invisible community of those who strive for truth, beauty and justice has preserved me from feeling isolated."[218]

His sartorial unconcern was legendary. He minimized his wardrobe so as not to waste time deciding what to wear[219]. Asked why he didn't use socks, he said:

> "When I was young I found that the big toe always ends up making a hole. So I stopped wearing them. What's the use of socks? They only make holes."[220]

He didn't brush his teeth, alleging that:

> "Pigs' bristles can drill through diamond. So how should my teeth stand up to them?"[221]

Bjerknes recounts that during his visit to the USA:

> "He was invited to dinner at an exclusive Los Angeles town house to meet the local writers. Apparently missing the cloakroom on arrival, he appeared in the dining room before the assembled guests in his 'humble' black overcoat and much-worn hat. In a scene worthy of Chaplin, he removed his overcoat, folded it neatly, laid it on the floor in a vacant corner, and set his hat on top of it. He was then ready to be presented to the literary elite of Southern California."[222]

On another occasion he dropped a saliva-saturated cigar butt into the dust. And then unashamedly picked it up and put it back into his mouth again, declaring;

> "I don't care a straw for germs."[223]

A further consequence of his autistic lack of social sense was his inability to adapt to an audience. In June 1930 in the USA he spoke to an assembly of 4'000 conference delegates "as if they were a physics class"[224]. The following day's *New York Times* headline ran:

> "4'000 BEWILDERED AS EINSTEIN SPEAKS".

It said in the article:

> "He sometimes gestured with his hands, as if to indicate how clear and obvious his reasoning was. Occasionally he would look up from his paper and smile upon his intent hearers, seeming to assume that they were grasping everything he was saying."[225]

And although publicy renowned for his intelligence, to those who knew him personally he rather came across as slow-witted. A July 1924 *New York Times* article entitled "EINSTEIN COUNTED WRONG" ran:

> "After counting hurriedly the change the street-car conductor had given him, Einstein insisted that it was wrong. The conductor recounted it deliberately,

> explaining to Herr Einstein that it was indeed correct. Then, turning to the next passenger, he said with a shrug of his shoulders 'His arithmetic is weak'."[226]

Of those who graduated in his ETH class, Einstein had the lowest average grade[227]. His maths teacher Hermann Minkowski considered him too a poor mathematician to have written the 1905 Special Relativity paper[228][a]. And after meeting him for the first time, Max von Laue wrote:

> "I did not believe the young man I met to be capable of being the father of Relativity."[229]

Einstein wrote in a letter to Paul Hertz in 1915[b]:

> "Elliptic geometry escapes me. You don't have the faintest idea of what I, a mathematical ignoramus, went through when writing my last paper[c]."[230]

He was noted for his vacant eyes and air of childlike nalvete. On his arrival in America in 1921 the *New York Times* wrote:

> "Under a high broad forehead he had large luminous eyes, almost childlike in their simplicity and unworldliness."[231]

Charles Nordmann[d], who chauffeured him around France, less charitably called him:

> "A vacant-eyed simian clod."[232]

And there remains the absurdity of his *Naturwissenschaften* "explanation" of the clock absurdity[e].

Before their USA trip, the secretary general of the World Zionist Organization Kurt Blumenfeld[f] warned Weizmann not to let Einstein make speeches on behalf of Zionism, since:

> "He is a poor speaker, and often says things out of naiveté that are unwelcome to us. "[233]

He was also notoriously inadept at defending his own theories. To provide him with an opportunity to answer his many critics, in Sept. 1920 a discussion on Relativity was included in the 86th congress of the *Arbeitsgemeinschaft Deutscher Naturforscher*[g] in Bad Nauheim, Germany, to be chaired by Max Planck.

The event was widely publicized, and Einstein had let it be known that his critics in general, and Philipp Lenard in particular, would be resoundingly humiliated.

Thousands turned up expectantly. Armed police were present at the door, allegedly to maintain the peace, but in fact to attempt to exclude Relativity dissenters and stack the audience with pro-Einsteiners. When this was realized a tumult ensued outside the hall, and many ant-relativists stormed it.

The conference day began at 09:00 a.m. with a long and boring series of lectures by Einstein and his colleagues. Only at 12:45 did a bell sound to announce the start of the main proceedings. Lenard was the first to question Einstein. Who within a short time had become flustered, couldn't give cogent replies, and had been made to look foolish.

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[a] More evidence for the Mileva effect.
[b] Just after finishing General Relativity.
[c] On General Relativity.
[d] Charles Nordmann (1881–1940), French astronomer.
[e] p.12.
[f] Kurt Blumenfeld (1884–1963).
[g] *German Natural Scientists*.

At 13:00, after only few minutes of proper debate, Max Planck announced the lunch break. Shortly before it ended Einstein slipped out of a back door, "taking French leave" as they say in my native England[a], and was not seen again at the congress[234].

This was not the only occasion on which he fled his critics[235]. We already noted his evasive replies to Arvid Reuterdahl's challenge to debate[b]. All of which heightens the suspicion that Mileva was the real author of "his" theories.

In spite of this, Einstein had the effrontery to later declare:

> "The best proof that I by no means dodge criticism is that I myself arranged for the Theory of Relativity to be discussed in Bad Nauheim(!)."[236]

Writing of his own mental processes, Einstein said:

> "I never came upon any of my discoveries through a process of rational thinking. Science and Art tend to coalesce in aesthetics, plasticity and form. The greatest scientists are always artists. People should be like animals, more intuitive and not too conscious of what they are doing when they are doing it. There comes a time when the mind takes a higher plane of knowledge, but can never prove how it got there."[237]

Of General Relativity he said:

> "The only thing I firmly *believed* in Prague was that the Equivalence Principle had to be incorporated. The whole *faith* in the theory rests on the *conviction* of this principle. I had not *lost faith* in Special Relativity either, but *believed* that the theory was likewise incomplete."[238] (italics ours)

'Belief', 'faith' and 'conviction' are all *religious*, and not rational/scientific terms.

Einstein recounted how after his conversation with Michele Besso he "suddenly saw" where the key to Special Relativity lay[c]. And that after seeing a man fall from a roof-top, the Equivalence Principle "suddenly struck him"[d]. The word "suddenly" appears in both these quotes, suggesting "epiphanies", sudden intuitive insights.

Like the autistic mathematical genius[e], Einstein seems to have arrived at his conclusions intuitively rather than via rational deduction. He got the right answers (well: not always), but couldn't say how. This would explain his notorious ineptness at defending his own theories.

Chaim Weizmann was probably close to the mark when he called him:

> "A poet in science, able to intuitively detect fallacies in the theories of others, but needing someone else to work out the details for him."[239]

Einstein, for instance, was the first physicist to say that Planck's discovery of the quantum would require rewriting the whole of physics[240]. It did.

The man

On his ETH course Einstein attended few lectures, preferring to pursue his extra-curricular interests. His friend Marcel Grossmann however attended them all, and took neat copious notes which he made available to Einstein[241]. With his eidetic memory, Einstein presumably photo-copied them into his brain the night before the exam. And thereby managed to scrape through[242]. (Well, this is evidently conjecture. But it is what one can imagine.)

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[a] Or as they say in France: "*filer à l'anglaise*" ('to take English leave').
[b] p.46.
[c] p. 7.
[d] p.27.
[e] p.52.

After graduating in 1900 Einstein was unemployed for two years. Till finally in June 1902 – thanks principally to Marcel Grossmann's father, who knew the director personally – he got a job on a trial basis as a patent clerk, 3rd class, in the Swiss Federal Patent Office in Berne[243].

In 1905 came his first master stroke: the buttering up of Max Planck with "his" (probably Mileva's[a]) photoelectric effect paper. This and Minkowski's 1907 use of his Special Relativity paper then gave him a certain visibility within German physics. For the sake of appearances he evidently had to be "scientifically authenticated", i.e. got into a proper academic job[244].

In 1909 he was offered a teaching post at the ETH in Zurich. And in 1910 a full professorship at the German university of Prague. Both were thanks to glowing recommendations of him by Max Planck, who wrote:

> "Einstein's work on Relativity probably exceeds in audacity everything that has been achieved so far in speculative science "[245]

He even compared him to Copernicus.

In 1912 Einstein returned to the ETH in Zurich. And in 1914 moved to Berlin to become a professor at the Humboldt University, with a special clause exempting him from most teaching obligations. Both of these posts were again mainly due to Max Planck, by now Dean of Berlin University and the dominant figure in German physics.

In 1918 Einstein was admitted to the prestigious Prussian Academy of Science. Planck said in his proposal:

> "There is hardly one of the great problems of modern physics to which Einstein has not made a remarkable contribution."[246]

In the same year Einstein reciprocated by proposing Planck for the Nobel prize[247]. He remained in Berlin till his emigration to the USA in 1933.

In 1919 his second master stroke, his carefully cultivated friendship with Arthur Eddington, came to fruition with the solar eclipse expedition's alleged "confirmation" of General Relativity. From then on the story has been told.

Another thing Einstein was a past master at was *exploiting others* – in the nicest possible way, of course. Marcel Grossmann for his lecture notes; Grossmann's father for his patent office job; Mileva (probably) for his theoretical work; Planck for his academic positions (without Planck Einstein could well have remained a patent clerk for the rest of his life); Minkowski and his space-time concept for promulgating Special Relativity; Grossmann and other mathematicians for General Relativity; Eddington, Weizmann and the Zionist press for turning him into a world celebrity. And who knows how many others along the way we've never heard of. Not to mention all those – Lorentz, Poincaré, dePretto, etc. – whose work Einstein plagiarized without acknowledgement.

Returning to the aether, Einstein as seen discarded it in his 1905 Special Relativity paper. But resoundingly re-embraced it in his 1920 Leiden speech[b]. So what was his true position on the aether?

Detail: his 1920 speech was to inaugurate his appointment as Special Professor at Leiden University at the invitation of Paul Ehrenfest and Hendrik Lorentz[248]. And since the latter was of course the "Mr Aether" of his time, what could a serial bum-licker like Einstein do but heartily endorse it? When in Leiden, do as the Dutch do.

Albert and Mileva separated in 1914. She returned to Zurich with the two boys. He stayed on in Berlin, moving in with his cousin Elsa Lowenthal (née Einstein) and her two daughters Ilse and Margot.

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[a] p.42.
[b] p.32.

Einstein, however, moved not only into Elsa's house, but also into her bed. While simultaneously making sexual advances towards her teenage daughter Ilse[249]. Initially he seems to have had little success, since Ilse wrote to a friend:

> "I have not the least desire to be close to Einstein physically."[250]

But she appears later to have relented, since Einstein wrote in a 1918 letter to Max Born:

> "We, I and the small harem, eat well and are thriving."[251]

Turned down in matrimony by Ilse, Einstein married Elsa in 1919, a few months after his divorce from Mileva became final[252]. Else was an excellent German-style *hausfrau*, and took good care of him. He stayed with her for the rest of her life – she died in 1936.

Einstein's theory that everything is relative got applied to his marriage with Elsa also. Bjerknes tells of the Chaplinesque way in which he would blatantly flirt with other attractive women, with "my old lady" (as he used to called her) at his elbow. He is reputed to have had a number of more or less open affairs with – as *Time* magazine put it when naming him its Person of the 20th Century:

> "The ladies who swarmed around him like moonlets circling a planet."[253]

Elsa's comment on all this was:

> "I am the one he goes home with."[254]

(Well, maybe not always.)

Einstein was also somewhat misogynist. In 1906 he was arrested twice for domestic violence. In one of the police reports Mileva stated that when she came into his study to ask if he wanted some coffee, he flew into a rage and began choking and striking her, threatening to stab her with his pen. The second report is similar[255]. We noted his childhood attacks of anger[a]

While still with Mileva in Berlin, Einstein stipulated in a July 1914 letter to her the conditions under which their marriage could continue:

> "– 1) you will see to it *a*) that my clothes and linen are kept in order; *b*) that I am served three regular meals a day in my room
> – 2) you will renounce all personal relations with me except when required to keep up social appearances
> – 3) you will expect no affection from me, and must leave my bedroom or study at once without protesting when I ask you to."[256]

He held that:

> "A female's production centre is not situated in the brain. Women are there to cook and nothing else. A good wife stands somewhere between a pig and a chronic cleaner. Women are not suited for theoretical physics. I would never let a daughter of mine study the subject."[257]

In spite of all of which, however, and his bombastic self-promotion, he could be disarmingly open and frank:

> "In my view the cult of individuals is always unjustified. There are plenty of the well-endowed. It strikes me as unfair, even in bad taste, to attribute superhuman powers of mind to only a few of them. This has been my fate. The contrast between the popular estimate of my achievements and the reality is simply grotesque."[258]

He wrote to Lorentz in 1920:

---

[a] p.52.

> "I am not able to deliver lectures and dispense original ideas virtually effortlessly as you can, with your refined and versatile mind. Awareness of my limitations pervades me, especially seeing how my faculties have been overrated after a few consequences of the General Theory of Relativity stood the test."[259]

His objective view of himself, and his Buddhist-like non-attachment, match his deterministic philosophy:

> "I do not believe in freedom of the will. Schopenhauer's words 'Man can do what he wants, but cannot will what he wills' accompany me in all situations. They reconcile me with the actions of others, even if they are painful. My awareness of my lack of freedom of will preserves me from taking myself and my fellow men too seriously, and from losing my temper."[260]

And:

> "I am a determinist. Jews believe in free will, that a man shapes his own life. I reject that doctrine. In that respect am not a Jew. Everything is determined by forces over which we have no control. Human beings, vegetables and cosmic dust all dance to a mysterious tune intoned by an invisible piper."[261]

Joke or swindle?

Returning to Louis Essen asking whether Relativity was a joke or a swindle[a]: the only person who can answer this is evidently Einstein himself. So let's ask him:

> "Which was it, Albert? A swindle? You deliberately conned us, reckoning we were too dumb to realize? In line with your opinion of human intelligence in general[b]. Or was it a joke? You knew we would get it one day – we're not *that* stupid. You just wanted to see how long it would take[c]."

Fig. 33. Which was it, Albert?[262].

Unless further evidence comes to light, we will obviously never know for sure. Voltaire however held that:

> " God is a comedian playing to an audience too afraid to laugh."[263]

Who knows? Einstein could have seen himself as a comedian-god peddling a totally incoherent theory to a physics audience too afraid to laugh. In which case Relativity is simply another delicious Jewish joke, along with *Oedipus schmoedipus*[d] and the rest. We saw that Oliver Heaviside also reckoned Einstein had to be joking

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[a] p.22.
[b] p.51.
[c] Maybe not realizing it would be more than a century!
[d] Ok! Should you never have heard *Oedipus schmoedipus*, here it is: Jewish mum bumps into a friend on the street. "Darling!" gushes the friend, "It's been *ages*! And how is your boy?" "Not too good, I'm afraid", says the mother, "His psychoanalyst says he's got an Oedipus complex." "Ach!", says the friend, "Oedipus, schmoedipus! What does it matter? So as long as he loves his mother." (An Oedipus complex being a love fixation on one's mother.).

> "I really think he is a practical joker, pulling the legs of his enthusiastic followers, each more *einsteinisch* than he. He knows the weakness of his theory and only propounds it to annoy."[a]

The story of the 'Emperor's New Clothes' is *almost* – but fortunately not quite – too well-known to be retold:

> Two tailors arrive at the Emperor's court offering him a suit of clothes so magnificent as to make him the envy of all the other kings in the land. With the very special quality that they would only be seen by the intelligent, being invisible to anyone unfit for office or irremediably stupid.
>
> The Emperor, who was obsessed with fine clothing, immediately accepted. Tables were set up, scissors and needles brought, and the tailors set to work: laying out invisible cloth, cutting and sewing it with invisible thread, and calling the Emperor in from time to time for trial fittings.
>
> News of the new clothes spread fast. By the time they were finished the whole kingdom was assembled for their official presentation. Aided by the tailors, the Emperor stripped naked, donned his new clothes, and to a fanfare of trumpets emerged from his palace at the head of a procession of nobles and courtiers. While his subjects all applauded wildly, commenting to each other on how magnificent the new clothes were … that is, till the applause finally died down and a small child's voice was heard to say:
>
> – "Mummy! Why isn't that funny man wearing any clothes?"

Einstein has been strutting around in his birthday suit for more than a century now. While the mainstream scientific community, almost to a man, has applauded his Special Relativity clothes. And when an ingenuous young physicist dared to ask why he was naked, Mummy Establishment Physics clammed his mouth shut with her hard horny hand. Ingenuous young physicists should be seen, not heard.

An alternative interpretation of the Einstein myth is of course that, based on an exceptionally modest physics degree and a logically totally incoherent theory, Einstein got himself crowned one of the most brilliant scientists of all time, and man of the 20th century. Now *that*, deep in our hearts, is something we would all like to be able to do. And we applaud when someone like Albert E does it.

"Right again"

We already suspected[b] that many, if not a majority of professional physicists in fact realize that Relativity is wrong. But keep quiet about it to preserve their jobs, reputations and research funding. A questionaire of the form:

> "Do you subscribe to Einsteinian Relativity? Answer yes or no. Remembering that our privacy policy permits us to sell your reply to your employer."

is unlikely to reflect the true situation.

There are however other indicators. An exercise for the reader. Do an Internet search for "Einstein right again". I did, and got in order of appearance:

– "Einstein was right, again"
– "Einstein right again"
– "Black hole images show Einstein was right again[c]"

---

[a] p.23.
[b] p.50.
[c] Oblivious to Einstein's never accepting black holes, and writing an article proving they cannot exist (p.35).

– "Einstein proven right again`"
– "Einstein was right … again".
– "Einstein about to be proved right – again"
– …

And so on for page after page.

As a control, now do a similar search for "Newton right again". I did – and didn't get a single direct hit. The question then being:

> "Why does Einstein's rightness need to be incessantly reaffirmed, when Newton's doesn't?"

As if to order, a few days after I had done the Einstein search, the “Astronomy" web-site carried the headline:

> "Einstein Proven Right *Even in Other Galaxies*."[264] (italics ours)

(No joking! Check it out.)

Not satisfied with humble terrestial physics departments – nor even planet Earth, the solar system or the Milky Way galaxy – Einstein's rightness has now assumed extra-galiactic proportions and is set to conquer the entire universe!

Einsteinian cosmic rightness is set to conquer the whole universe

Watch out, Yahweh! Not content with denouncing Your not-dice-playing, the upstart is challenging Your Cosmic Right(eous)ness!.

The basic problem is of course that Relativity today is a "scientific fundamentalism", that professional physicists are required to "Subscribe to or else!", with a basic *credo*[a]:

Art.1) Einstein is right
Art.2) Einstein is always right
Art.3) Should, exceptionally,
Einstein be wrong, arts 1) and 2)
take immediate effect

An answer to the "Why Einstein but not Newton?" question could then be that everyone knows that Newton was right. Whereas behind the physics' department scenes there is in fact massive doubt about Einstein.

But given that to openly admit this would unleash a major public relations meltdown[b], mainstream physics is obliged to endlessly plug his cosmic rightness[c]. In its essentially vain attempt to protect its "credibility"[d], and hence its members' jobs, reputations and research funding. Presumably based on the Joseph Goebbels principle that a lie repeated often enough becomes a truth. William S. could have commented:

> "The Establishment doth protest too much, methinks."

FINALE

Newton[265]

A key supporting role in the Einstein saga is played by *Isaac Newton*, the other most famous scientist of all time. It is interesting to compare the two.

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[a] Paraphrasing a sign about the boss that people sometimes stick up on their office walls.
[b] p.50.
[c] Cf Clifford Will & Co. (p.14).
[d] Don't laugh!

Newton was also a lonely child with a difficult upbringing. Born prematurely on Christmas day of 1642 in a manor house in the village of Woolthorpe, in the English county of Lincoln, he was so small that his mother said he would have fitted into a quart mug. His father, a prosperous farmer also named Isaac Newton, had died three months previously.

When Newton was three his mother got married again to an elderly clergyman. But since Isaac disliked him, he was sent off to live with his maternal grandmother. He however also had little affection for her, so this was another traumatic experience. He always resented his mother's having remarried. When at the age of 19 he made a list of all the sins he had ever committed (he was somewhat compulsive!), they included:

> "Threatening to burn my father and mother and the house over them[a]".

When Newton was ten his stepfather died, and he returned to live with his mother. His relief was however short-lived, since less than two years later he was sent away again, this time to study at the King's School in Grantham.

In 1661 he was admitted to Trinity College, Cambridge, where like Einstein he was an undistinguished student, preferring to follow his own interests. He obtained his degree in 1665. Shortly after this the university closed for two years due to the Great Plague. Newton returned to his home in Woolsthorpe, and it was during this period that he initiated his main scientific work on differential calculus, optics and gravitation.

When the plague ended in 1667, Newton returned to Cambridge to become a fellow of Trinity College. In those days this required one to be an ordained Anglican priest. This Newton desired to avoid. He was highly religious and owned more than 30 bibles. In fact he wrote more on subjects such as the Early Church Fathers, biblical hermeneutics, alchemy and the occult in general, than on the Natural Science he is best known for.

His concept of gravity as an invisible force acting over empty space, for instance, was criticised for "introducing occult agencies into Science". In 1704 he wrote a tract predicting from biblical sources that the world would end no earlier than 2060, saying:

> "I mention this not to assert when the end shall be. But rather to stop the rash conjectures of fanciful men who frequently predict it. This brings the sacred prophesies into discredit, since their predictions often[b] fail."[266]

Newton's religious views were known to be highly unorthodox. But living in an age of religious intolerance, he wisely kept quiet about them. He is said to have held that the doctrine of the Holy Trinity contravened the first commandment[267]. What he actually believed is still a matter for discussion. John Maynard Keynes[c] called him:

> "Not the first of the age of reason, but the last of the magicians."[268]

Luckily for Newton, the ordination requirement for Cambridge fellows had no deadline, and could be postponed indefinitely. But this was no longer the case when he was made a professor. He wormed his way out of that one by getting a special exemption from the king, Charles II (no flies on old Isaac!).

He got engaged once in his late teens, but never married. He was always too involved in his work and studies. He was twice made a Member of Parliament for short periods, where his only recorded "speech" was to complain about a cold draught and request that the window be closed.

In his mid-fifties he was appointed Master of the Royal Mint (equivalent to today's Governor of the Bank of England), and his life underwent a radical change. His income shot up from £60 to £500 a year; he exchanged his modest lodgings in Cambridge for a

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[a] Like Einstein, Newton could also have been somewhat autistic.

[b] He presumably meant "To date: always".

[c] John Maynard Keynes (1883–1946), Cambridge economist.

palace in London; entered society; kept horses, carriages and servants; was knighted; and became an influential personage at court. He is said to have commissioned at least 14 portraits of himself.

Twenty percent of the coinage at the time was estimated to be false. But although counterfeiting was technically a capital offense, in practice few were ever convicted. Newton set about changing that. He had himself made a Justice of the Peace. And then frequented bars and taverns in disguise, gathering evidence personally. He successfully prosecuted 28 offenders.

Among them was one William Chaloner whose feats included getting Parliament to adopt a method of producing coinage that, according to him, couldn't be counterfeited. And then using it to produce false coinage himself. He became rich enough to posture as a gentleman.

Chaloner was accused and convicted. But with friends in high places, he was subsequently acquitted and released. Newton however persisted. He had Chaloner brought to retrial, where he was again convicted, and this time hung, drawn and quartered at the Tyburn gallows in March 1699.

Newton became president of the Royal Society, enjoying to the full its special privileges of robes of state, a mace, and a seal bearing the motto "Let no one's word be law." The last was not, however, strictly observed. Newton was re-elected president with absolute regularity; his word became law; and the Royal Society was popularly known as "Sir Isaac's Parliament".

By now monarch of all he surveyed, Newton occupied in Western Science the place of Pythagoras in antiquity, whose disciples were wont to crush all opponents with the words "Pythagoras himself said so".

Newton's perpetual neurosis reached a climax in his passionate crusade to destroy his arch-enemy Gottfried Leibniz[a]. The principal dispute was over who first discovered differential calculus. Most historians today believe it was Newton. But he published nothing before 1693, apparently fearing criticism, and only gave a full account in 1704.

Whereas Leibniz, who had developed the theory independently using a different notation[b], began publishing in 1684, nine years before Newton.

In spite of Newton's claim being unprovable, depending solely on his word, it was *Leibniz* who was required to prove that he had not plagiarized. The absurdity of the charge demonstrates the status Newton enjoyed.

In 1711 the Royal Society published a study, the *Commercium epistolicum*, proclaiming Newton to be the true discoverer of calculus and condemning Leibniz for plagiarism, labelling him a fraud. The validity of the "study" was however cast into doubt when it later transpired that Newton himself had composed it, and had personally thrust it upon the Society's committee of allegedly impartial judges. The bitter controversy only ended with Leibniz' death in 1716

Under Newton's sway the cosmos, previously subject to random Divine Intervention, was redesigned along universal rational lines by a Master Creator whose existence could not be denied in the face of the grandeur of His Creation.

In such an absolute universe space and time evidently had to exist absolutely, independently of matter. But when challenged by Leibniz to prove this, all Newton could find to say was that they were "absolute in the mind of God". Leibniz rightly retorted that this was scientifically meaningless. And when asked to define his terms, Newton replied.

> "I do not define space, time and motion, as being well known to all."[269]

(A mega conceptual copout, if ever there was one!)

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[a] Gottfried Leibniz (1646–1716), German philosopher and polymath.

[b] The one used today.

Newton died in 1727, refusing on his death bed the holy sacrament offered to him. He was buried among kings and queens in Westminster Abbey. His epitaph was written by Alexander Pope[a]. It ran:

"Nature and Nature's laws lay hid in night.
God said 'Let Newton be' and all was light."

In a 1999 opinion poll, one hundred leading physicists voted Einstein "the greatest physicist ever", with Newton as the runner-up. A parallel survey of rank-and-file physicists however gave the top notch to Newton[270].

Fig. 0-34. Sir Isaac today.

Cahill

Another key figure in the modern Relativity saga is *Reginal Cahill*. His remarkable insight into the working of the interferometer[b] reconciled a whole range of previously apparently divergent aether-wind measurements, using widely differing experimental techniques. And thereby conclusively resolved a dissension that had split the world of physics apart for more than a century.

Cahill's could well come to be seen as one of the greatest scientific syntheses of all time. If Michelson got a Nobel prize for putting a *wrong* interpretation[c] on his results, Cahill certainly deserves one for providing the *right* one.

Interested in this Cahill guy, I looked him up on the Internet[271]. "Cahill" is a fairly common Irish family name, so there are plenty of them. There is for instance Barry Cahill, a Gaelic footballer who plays for his club and also for his province. And Martin Cahill, deceased, a prominent Dublin criminal known for hiding his face from the media. Also Leo Cahill, an American from Illinois who coaches a Canadian football team, and has five children called Steve, Christy, Terry, Lisa and Bettye. And Sarah Cahill, a beauty queen from Minnesota who competed for Miss USA, but didn't reach the semi-finals ....

But when one gets to "Reginald Cahill", although his name is on the list as "an Australian theoretical physicist", all one gets clicking on it is "Page does not exist"[272].

(Reader, permit that I draw you metaphorically aside for a wee moment and offer you a wee word of advice. Should you be ambitious, and desirous of making your name in this world, becoming a ground-breaking theoretical physicist – even one deserving of a Nobel prize – is maybe not your best option. You could perhaps try something to do with football.)

Faith

Religions make an *us-them discrimination*. "We" are the believers, the good, the pure, the clean, the included, the biblical sheep. "They" are the infidels, the bad, the impure,

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[a] Alexander Pope (1688–1744), English poet.
[b] p.24.
[c] So to speak. He in fact got the prize "for his optical precision instruments".

the unclean, the rejected, the biblical goats. What distinguishes the believing sheep from the infidel goats is their *faith*.

Faith in something that *conceivably could* exist – for instance E.T.s or unicorns – is however too easy. Anyone can do it. It doesn't serve the discriminatory purpose. But belief in a *logical contradiction* – something that *couldn't possibly* be true – now that's *real faith* and serves to distinguish.

The function of Relativity in contemporary physics is not, then, to explain physical reality, which it blatantly doesn't do. But rather to filter the physicist sheep from the physicist goats. Which young physicists will unquestionly accept the pronouncements of their "superiors"[a], no matter how fatuous? Evidently: those who are prepared to unquestionly accept (strictly: *say* they accept) a totally fatuous theory of Relativity, the physicist sheep.

Their rewards are the jobs, promotion, research funding, pension schemes, etc. that the physics establishment so generously bestows upon them; and denies to the heretical free-thinking physicist goats, those who refuse to accept the Relativity nonsense.

It is ironic that a professed belief in Einsteinian Relativity should have become a criterion for identifying conformist physicist sheep, when its progenitor with his:

> "Unthinking respect for authority is the greatest enemy of truth."[b]

was a dyed-in-the-blood goat. As he himself said:

> "To punish me for my contempt of authority, Fate made me one."[c]

Thought-stop (1)

Herbert Dingle recounts that while wrestling with the nitty-gritty of the twin absurdity, he sent a draft of his paper to a colleague, Kathleen Lonsdale, asking her to look over it for him. Six months went by before she replied:

> "I spent all this time trying to make sense of your paper. But my mind always went blank. Were I to spend weeks reading it again, it would still mean nothing to me."[273]

She rationalized her reaction as due to the way Relativity had been presented to her as a student:

> "Cloaked in metaphysics. I ascribed my incomprehension to my own incompetence, rather than to that of my tutors."[274]

Remembering that her unfortunate tutors were obliged to try to explain rationally something that, being rationally incoherent, *cannot possibly* be explained rationally.

Louis Essen also noted that:

> "A common reaction of physicists to Relatively Theory is that, although they do not understand it themselves, they think it is so widely accepted that it must be correct. I must confess that until recent years this was my own attitude."[d]

This is the Goebbels principle[e] again. If everyone believes that everyone believes that something is correct, even though they don't understand it themselves, it ends up being said to be:

> "Of course it's correct", people will say, "Ask anyone."

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[a] Those higher up in the Physics heirarchy.
[b] p.51
[c] p.51.
[d] p.22.
[e] p.50

George Orwell[a] had the concept of *thoughtstop*. He described it as:

> "The tendency to stop short, as though by instinct, at the threshold of any dangerous thought. This includes not perceiving the logical errors of the simplest arguments if they are inimical to the Established Word. And feeling bored or repelled by any train of thought that leads in a heretical direction. Thoughtstop is protective stupidity."[275]

Einstein also held that:

> "Few people are capable of expressing opinions differing from those of their social environment. Most are *incapable of even forming* such opinions."[b]
> (italics ours)

A train of thought that is unconsciously sensed as likely to lead to questioning individual beliefs, or the collective wisdom, is unconsciously blocked off before it ever reaches consciousness. In Lonsdale's words:

> "One's mind simply goes blank".

Thought-stop (2)

Related to this is the process by which I personally ended up as an anti-relativist. Back in 2005, probably stimulated by the Special Relativity centenary, I thought:

> "Omaigodd![c] I'm getting on. Its high time I understood the twin paradox. I'll go onto the Internet and find the answer."

So onto the Web I went. And found explanations involving the Lorentz transformations, so had to get into those. And others using Minkowski space-time, so I had to understand that. And others requiring … and so on almost *ad inf*. A 'symmetrical twin' case[d] even came into my mind at that point, and I submitted a query on it to an Internet physics forum, but got no reply.

And then … it wasn't that I consciously thought "I'm obviously not intelligent enough". It was as if a soft woolly cloud subtly enveloped my mind. And without consciously realizing it, I forgot the whole question. Orwellian thought-stop blocking my potential "I am stupid" thought.

Five years later, as I was finishing a projected philosophical tome[e], I thought:

> "Omaigodd! I've put in all this stuff on quantum physics. I *can't possibly* leave out Relativity. It would be too glaring a gap. I can't be *all that* stupid. If others can understand it, I can too."

So back onto the Web I went. And the Lorentz transformation … and Minkowski space-time … and … Till one day, as I was bogged down for the nth time in the nitty-gritty of the Hafele-Keating experiment, and got to the bit about taking the Earth's centre as an 'at rest' reference, I suddenly thought – and this was certainly the happiest thought of my own relativistic life:

> "Wait a minute! This isn't Relativity! No way! Relativity *specifically states* that there is *no preferred* 'at rest' … This is a *fudge*! … Maybe it's *all* a fudge!! … Maybe the reason I can't understand Relativity is not that *I'm* stupid. But that *it's* stupid – i.e. logically incoherent and inherently incomprehensible."

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[a] George Orwell (1903–1950), English writer.
[b] p.51.
[c] A popular interjection, thought to be of Celtic origin.
[d] Fig. 10.
[e] I still am.

But then I immediately thought (this was before I knew of anti-Relativity):

> "Me right and Einstein wrong. No, that's impossible. I'm going out of my mind. *That's* what's happening."

Orwellian thought-stop blocking my potential "I am right and Einstein was wrong" thought.

But then as my mind relaxed, and I started searching the Web for previously inconceivable topics such as as "Einstein wrong", I found that loads of others had reached the same conclusion. I joined them.

Market

The ultimate fate of almost everybody and everything of any renown in the modern world is to become *advertising copy*. In spite of Einstein's holding the real evil to be the economic anarchy of capitalism[a], once he was dead and unable to prevent it, this was his fate too. Maurice Allais:

> "One way to get more money is to create a superhero like Einstein, whose standing is the product of the media and the physics community. Each group benefits enormously. Media corporations like *Time* magazine sell millions of magazines. And the physics community receives billions in research grants."[276]

"Albert Einstein"®™ is now a registered trademark owned by the Hebrew University of Jerusalem, and administered by the American advertising agency that controls the commercial usage of his and other names[277]. As the agency points out in its website:

> "Celebrated personalities deliver instant recognition, recall and credibility to your advertising campaign and/or promotional program."[278]

Today there are hundreds of products trading on Einstein's lucrative image as the symbol of things brainy – and marketers like their products to be perceived as brainy. There are *Einstein Coffee Mugs*. And *Einstein Holy Prayer Cards* depicting him before a chalkboard with a purple robe and halo. Also *The Ultimate Albert Einstein Carrot Cake* ("His genius lives on in this carrot cake", its manufacturer asserts). And even *The Albert Einstein Theory of Relativity Junior Baby Doll*, togged out in suitably relativistic lingerie.

> "Einstein has gone beyond the figure that he is into iconic status", said one marketer, "He stands for almost any great idea now."[279]

The Physics Establishment was likewise not amiss in recognizing the potential of the Einstein image. When deciding to celebrate the 1905 Special Relativity centennial, one of its stated objectives was to attract more students into physics:

> "The general public's awareness of physics, and its importance in our daily life, is decreasing," said the *European Physical Society*, the international coordinator of the Einstein Year. "The number of students choosing physics has declined dramatically in recent years."[280]

The real reason could however not be a *decreasing* awareness of physics. But rather, an *increasing* awareness of the hypocrisy, fraud, censorship, blugeoning and blatant pecuniary self-interest currently being practiced by mainsteam physics. (Well, this is evidently the author's personal opinion, with which the reader may or may not agree. But even if he doesn't, it is hoped that he at least appreciates the data and reasoning it is based on.)

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[a] p.46.

The brain

In spite of Einstein having categorically refused permission for his brain to be studied after his death, Thomas Harvey, the Princeton Hospital pathologist who performed the autopsy, removed it before the cremation and took it home with him. Allegedly hoping that Science would one day discover what had made Einstein so intelligent.

Harvey later contacted scientists at McMaster University in Ontario, Canada. They found that the part of the brain thought to be related to mathematical reasoning[a] was 15% wider on both sides than is normal[b]. And that a groove normally running from the front of the brain to the back did not extend all the way in Einstein's case.

> "That kind of shape is not observed in any of our brains. It is not depicted in any atlas of the human brain."[281]

said Sandra Witelson, the neuroscientist who led the study, published in the British medical journal *The Lancet*.

Parts of the brain remain in a glass jar at Princeton University. According to a source:

> "Harvey became obsessed with the brain, and kept some of it for decades, only returning it when he was nearly 90 years old. He believed that it would reveal the secret of genius and make him famous. Neither occurred. But the brain became so imbued with Einstein's charisma that all who saw it were galvanized by dreams of riches and glory. Scientists, journalists, entrepreneurs and the executors of Einstein's will all tried to get in on the action. The organ became a kind of saintly relic. Rather than hair, blood or a toenail, there was pickled cerebral matter."[282]

Sic transit gloria mundi[c].

Petr Beckmann[d] noted:

> "Einstein is dead. But it will take decades to bury him."[283]

You can say *that* again, Petr!

APPENDIX

Clock-slowing

Imagine photon clocks with mirrors a vertical distance of 1 m apart. In 1/*c* seconds the station clock photon travels a distance of 1 m and the clock ticks once, Fig. 35a.

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[a] The inferior parietal region.
[b] Remembering that Einstein was a lousy mathematician (p.54).
[c] There goes worldly glory."
[d] Petr Beckmann (1924-1993), Czechoslovakian professor of electrical engineering at Colorado University.

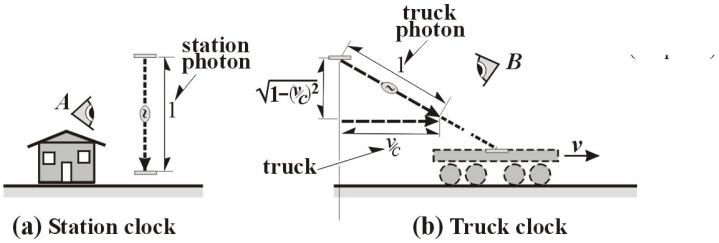

Fig. 35. Clock-slowing (3).

In this time[a], the truck B photon likewise travels a distance of 1 m towards the lower mirror. But since the truck itself moves foreward a distance *v/c*, Fig. 35b, the *vertical distance* the truck B photon covers is $\sqrt{(1 - (v/c)^2)}$[b]. The truck clock B then runs slow by the ratio of the two vertical distances. This gives the Lorentz factor γ[c].

On the Lorentz Aether Theory, the diagram for the station clock[d] A is as before[e]. With the difference that the clock photon speed is now *through the aether,* rather than relative to the observer.

The corresponding diagram for the truck clock B is shown in Fig. 0-36. In 1/*c* sec the clock photon again travels a distance of 1 m through the aether. And during this time is 'blown back' a distance *v/c* by the aether headwind due to the truck's motion, Fig. 20b[f]. This clock again runs slow by the Lorentz factor γ.

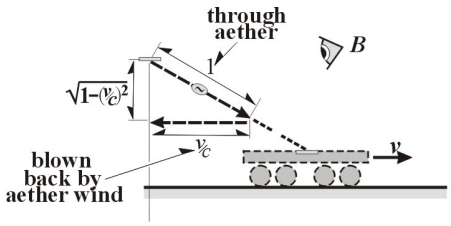

Fig. 0-36. Lorentz Aether Theory (2).

Einstein Postulates (2)

In spite of Einstein claims to the consistency of his theory[g], his postulates nevertheless contain a number of logical anomalies.

Starting with the second postulate, a constant[h] speed of light for all inertial observers *implies* its independence of the speed of the emitting body[i]. The corresponding rider is redundant. More seriously, Einstein doesn't state *with respect to what* "the definite velocity *c*" is measured. On his own criterion[j] his statement is meaningless.

In the first postulate he however talks of "reference frames for which the equations of mechanics hold good", i.e. inertial frames, and so presumably means one of these. But if

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[a] 1/*c* sec.
[b] Pythagoras.
[c] eq.1, p.8.
[d] Stationary in the aether.
[e] Fig. 35a.
[f] When swimming across a fast-flowing river, one has to head somewhat upstream and takes longer to cross.
[g] p.6.
[h] In his words "definite".
[i] And/or observer.
[j] p. 3.

this is what he *does* mean, why doesn't he say so clearly, rather than leaving it to conjecture?

And because the speed of light is one of the laws of physics, the first postulate already requires it to be the same for all inertial observers. The second postulate as a whole is then redundant. There is effectively only one Einstein postulate:

the laws of physics are the same for all inertial observers

All in all the postulates are a muddle. And if something starts off in a muddle, it is hardly surprising to find that it ends up as one.

Lorentz transformations

The Lorentz transformations relate an event's space and time coordinates in different inertial frames, as seen by different inertial observers. An apparently simple derivation.

Consider an event *X* with frame A coordinates[a] (*x*,*t*), Fig. 0-37a. The question is: what are the corresponding coordinates (*x'*,*t'*) for an observer B moving at steady speed *v* with respect to A, Fig. 0-37b? The clocks are synchronized at the time origin *t*=*t'*=0, the instant that B passes A.

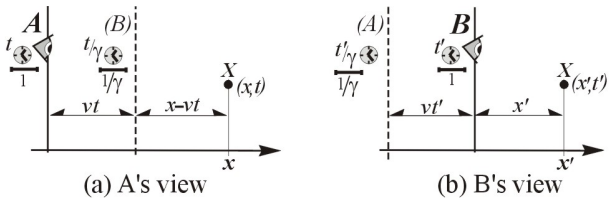

Fig. 0-37. Lorentz transformations.

A sees B's clock running slow by γ. But since he sees B's metre rule correspondingly shortened, he concludes that B measures the same relative speed *v* as he does. And vice versa for B:

$$v' = v \qquad \text{(eq.6)}$$

For observer A, the event *X* occurs at a distance *x*–*vt* from B[b]. But since he sees B's metre rule shortened by γ[c], he concludes that the distance *x'* that B measures is γ times greater, giving:

$$x' = \gamma(x - vt) \qquad \text{(eq.7)}$$

B's clock for A runs slow by γ, making B's times *t'* shorter than his by γ:

$$t' = t/\gamma \qquad \text{(eq.8)}$$

Turning to observer B[d], for him the event occurs at distance *x'*. But since he sees A's rule shortened by γ, he concludes that for A this distance is γ times greater, i.e. γ*x'*. And having travelled away from A at speed *v* for time *t'*, he deduces that A sees the event at distance *x* given by:

$$x = \gamma x' + vt' \quad \text{whence} \quad x' = (x - vt')/\gamma \qquad \text{(eq.9)}$$

B sees A's clock running slow by γ, giving A's times *t* in terms of his own:

$$t = t'/\gamma \qquad \text{(eq.10)}$$

Substituting for *t'* from eq.10 into eq.9b:

---

[a] Seen by observer A, with his rule and on his clock.
[b] Fig. 0-37a.
[c] For him.
[d] Fig. 0-37b.

$$x' = x/\gamma - vt \qquad \text{(eq.11)}$$

These relations are firstly *mutually contradictory*. And secondly, they *are not* the official Lorentz transforms:

$$x' = \gamma(x - vt); \;\; t' = \gamma(t - vx/c^2)^{a} \qquad \text{(eq.12)}$$

Noting that the time relations (eqs 8,10) are effectively the *clock absurdity* – each observer seeing the other's clock running slower than his own.

The Lorentz transforms *cannot* therefore be derived from the SR length-contraction and time-dilation relations alone. This can also be seen from the speed of light *c* appearing in the transforms of eq.12, but nowhere in Fig. 0-37.

So how did Lorentz arrive at them? Well, it seems that he simply "presented" them, offering no mathematical derivation or other justification[b284]. Poincaré used the same relations. But likewise gave no indication of how they were derived, or where he got them from[285]. The Lorentz transforms were for practical purposes "plucked out of thin air"[c286].

Given, however, that Relativity overall is rationally incoherent, one can hardly expect rational coherence from it. One doesn't get it.

Naturwissenschaften

Einstein's "explanation", verbatim[d] :

> "With respect to the coordinate system B, the phenomenon is explained in the following manner. During procedural steps 2 and 4[e], clock B, moving at velocity v, has a slower rate than clock A which is at rest. But this time lag gets overcompensated by the faster rate of B during procedural step 3[f] . Because, according to the general theory of relativity, a clock has a more accelerated rate the higher the gravitational potential is at the clock's location[g]; and during procedural step 3 B is indeed at a location of higher gravitational potential than A; calculation shows that this running-ahead amounts to precisely twice as much as the lag-behind during the procedural steps 2 and 4. This analysis clarifies completely the paradox you referred to."[287]

Photon mass

It is currently fashionable to call photons *massless*. Compton scattering[h288], however, shows that they have *momentum*. And since in the classical domain momentum is mass x velocity, in this respect it is *as if they* had mass.

Photons also have *energy*[i]. And on the $E=mc^2$ principle it is again *as if* they had mass. The same holds for their deflection in a gravitational field.

One might say that photons have no *rest mass*. But since they always travel at the speed of light *c*, and are never at rest, this doesn't mean much.

---

[a] Its *x'* term is compatible with eq.6 but not eq.7.
[b] In his 1895 "*Versuch*" paper, so-called after its German title "*Versuch einer Theorie der electrischen und optischen Erscheinungen in bewegten Koerpern*" (Towards a Theory of Electrical and Optical Phenomena in Moving Bodies").
[c] As were likewise a number of crucial QM relations (QM article).
[d] Except for symbol changes to agree with ours.
[e] The steady speed out-and-return phases.
[f] The turnaround.
[g] Wrong. GR says that clocks *run slower* in a gravitational potential.
[h] QM article.
[i] ditto

We will treat photons *as if* they had mass. But won't stick our necks out by saying they actually have it.

Reductio ad absurdum

The philosophical *reductio ad absurdum* principle says that premisses leading to a contradictory/absurd conclusion are themselves contradictory/absurd:

premisses leading to a contradictory/absurd conclusion are themselves contradictory/absurd

If contradictory/absurd premisses are *defined* as those leading to a contradictory conclusion, this is a truism.

Consider the premisses:

- Fido is a dog
- dogs are animals
- Fido is an animal

These are *rationally coherent* in the sense that they tie in together with no contradictions, Fig. 38a.

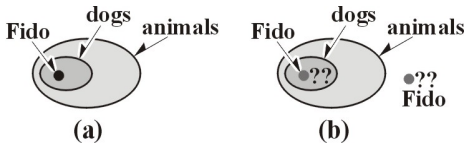

Fig. 38. *Reductio as absurdum*.

Now consider the relations:

- Fido is a dog
- dogs are animals
- Fido is not an animal

The first two lead to the 'Fido is an animal' as before. But since this is here contradicted by the third, the overall relation set is *logically incoherent*, or *nonsensical*, or *absurd*[a], Fig. 38b.

Noting that any two relations taken alone *are* rationally compatible. So no one of them can be said to be "wrong". But the three taken together are incoherent.

[a] We take the terms as equivalent.

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