Newtonian Physics is General Relativity is Unified Field Theory (Barring Mistakes That Need Correcting)

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The transition from Newton to Einstein in 1919 was based upon math mistakes. A mistake was made in the calculation of light bending within the context of Newtonian physics, correct the mistake and really it gives same value of light bending as General Relativity. This mistake led to replacing Newton by Einstein. Prof. Silberstein one of the original twelve people who understood Relativity pointed out that the math of Newtonian physics was really the same as that of General Relativity.

1. Introduction

Through discussing with various people, it has become clear that there are differences of opinion, best described as different philosophies. In order to progress, one must look at the different ways that people think; put oneself in their way of thinking and philosophy, and see what that leads them to conclude. From my study of thinking in the history of theoretical physics, what is really going on is math modeling. This means taking the simplest math model first and if there are problems matching that to physical observations then one merely updates the math model with an extra effect.

In the case of Newtonian physics, there was no need for the supposed revolution in science that occurred with Einstein in 1919. There was no need to move away from the paradigm [1] of Newtonian physics. We have Thomas Kuhn to thank for this idea of "paradigm" in science; and we have been encouraged to think there was a paradigm shift from Newton paradigm to Einstein paradigm; but when we look at this supposed paradigm shift its all based on mistakes. Newtonian physics was supposedly only able to give half the light bending observed. This observation does not invalidate Newtonian physics as many believe, because some of the options allowed are:

1. The calculation was done incorrectly
2. Extra effect can be added to Newtonian physics

Let's return to Eddington, who supposedly proved Einstein correct in 1919. He proclaims: [2]

> "For a ray grazing the surface of the sun the numerical value of this deflection is
>
> - 1" : 75 (Einsteinian theory)
> - 0" : 87 (Newtonian theory)"

In other words, in Eddington's way of thinking, Newtonian theory gives half the deflection of Einsteinian. (A way of thinking that will be contrasted with Silberstein anon.) Eddington thinks of this in terms of math modeling, where Einstein updates Newton, because Eddington says:

> "To sum up, a ray of light passing near a heavy particle will be bent, firstly, owing to the non-Euclidean character of the combination of time with space. This bending is equivalent to that due to Newtonian gravitation, and may be calculated in the ordinary way on the assumption that light has weight like a material body. Secondly, it will be bent owing to the non-Euclidean character of space alone, and this curvature is additional to that predicted by Newton's law. If then we can observe the amount of curvature of a ray of light, we can make a crucial test of whether Einstein's or Newton's theory is obeyed. "[3]

And Eddington believes in aether, but thinks in terms of a new aether (space-time) replacing the old aether. [4] So the update to Newton was effectively "add aether effect to it and get General Relativity (GR)". That is how Einstein Relativity was initially presented to us. But since then of course things have become distorted, and the publicity advertising for Einstein gets things replaced by something much more of a mess.

In contrast to Eddington, Silberstein [5] pointed out that the math of Newtonian physics is really same as General relativity. (Of course it might be interpreted differently.)

Thus, for the two options of staying within Newtonian physics: Eddington is viewpoint (2) and Silberstein tends to be viewpoint (1). From both viewpoints there is no need to leave Newtonian paradigm; one viewpoint is that Newtonian physics needs update and the other that it is perfectly satisfactory the way it is. Both viewpoints sit within the method of math modeling.

Neither of those two options was allowed and instead for unknown reasons a revolution in science was proclaimed. This has severely damaged physics, because it created a dogma of not understanding the proper connections in physics theories.

Whereas we might be working now from Newtonian physics paradigm and merely updating it whenever necessary. We instead work from Einstein physics in a confused mess – where some are updating that whenever necessary and others are denying that there is updating going on. So the method of math modeling has gone horribly messed up.

2. The Spherical Cow

Shelton and Cliffe explain spherical cow as follows: [6]

> "When scientists refer to a spherical cow, we poke fun at ourselves. We admit that some of our models or descriptions of things are far simpler than the actual object, like to say that a cow has a spherical shape. The phenomena we study are often complex, and including too many details can hinder, rather than help, our understanding. Often it is useful to study a simplified model which contains only the most important

characteristics. Such a model can be more easily studied using numerical or analytical methods, and then compared to observations."

The Spherical cow joke in shortened form: Some scientists were asked to make cows produce milk faster, to improve the dairy industry. Chemists produced milk increase, but poisoned people in doing so (only in analogy, not real life). Physicists radiated the cows, while mathematicians wrote a paper computing a 300 per cent increase in milk with a paper starting, "consider a spherical cow…" – i.e. the mathematicians examined the issue outside from physical reality, as instead a purely mathematical issue.

Although the joke might be poking fun at mathematicians, implying they have lost touch with reality, actually the mathematician approach is correct. In theoretical physics, we need to look at the simplest representation of a physical issue, even if it is divorced from physical reality, and then update the simplest math model to fit physical reality. The method is the math modeling process: create a simple model, and then update.

According to Eddington (as pointed out) he believed GR was update to Newtonian theory. Thus by 'math model update' method, GR according to that belief should have been looked as still being Newtonian physics. But contrary to this, it was portrayed as Einstein revolution.

Why then has it been portrayed as revolution rather than what it really was believed to be at the time (in 1919), namely update to Newton? Answer: because portraying it as revolution was more newsworthy. Misrepresenting the news story made it more interesting and as consequence of this news distortion, we have Einstein portrayed as genius, making it difficult to address the issue that this update to Newton was a mess. (In my experience news distortion by the news media is the norm.)

The adoption of Einstein's General relativity in 1919 was looked upon as meaning the adoption of Special Relativity (SR) which introduced more math mistakes. One such mistake is having the kinematic speed of light mistakenly set equal to the light speed as given by the properties of free space; this is equivalent to the mistake of saying 1 =2. Undo all the math mistakes and we find that in the context of Newtonian physics there is the Unified Field Theory as given by Boscovich in 18th Century. [7]

Modern physics circa 20th Century is thus just based on math mistakes. John D Barrow (a pro-Einstein relativity professor (as far as I know) sums up situation with what Einstein did: "Einstein restored faith in the unintelligibility of science." [8] Up until then things could be logically argued through in context of Newtonian physics, then Einstein changed the meaning of the physics terms – that was what made it unintelligible. Barrow says:

> "Especially appealing was the fact that Einstein's ideas about space and time used familiar words like mass and energy but endowed them with new and richer meaning. Everyone knew what these words meant, but sentences such as 'everything is relative' or 'moving clocks run slow' did not by themselves convey useful information." [8]

It was thus just obfuscation; words just became confused and muddled because Einstein changed the meaning of words and changed the paradigm of looking at physics. He was portrayed as genius for doing this and so set the example to encourage others to follow and change everything; hence we get lots of proposed different theories for carrying on make changes, rather than go back to where the real problem is; namely the mess made by Einstein's changes.

The Einstein method was to make a change, and one might point out that change is nonsense, but then the reply would be – ah it's not nonsense because changing something else as well; so ends up a long series of changes, but all of it a collection of nonsense. We could argue successfully that any single change was nonsense, if we accepted it for what it really was as an update to Newtonian physics. But what hinders us is that every single change gets tied to a series of changes. And it gets presented to us as overturning Newton in an attempt to deny us from being able to talk about it from a Newtonian perspective; because that Newtonian perspective is supposedly overturned. The 'real' news was the Newtonian paradigm still works.

Example of how words get messed up: SR is supposedly represented as discarding aether (omitting Lorentz's theory that has similar theory to SR but with aether), this is because in Einstein SR, the aether not measurable. Its inability to be measured can mean that it is still there, but is beyond physics. This beyond physics aether would then be called "metaphysical aether". However, there are people who do not like the term "metaphysical" but still want aether to believe in, and would argue against it being called "metaphysical aether" and want it still called "physical aether". I.e. there can arise a great deal of arguing over meaning of terms.

3. Light Bending

I now refer to four diagrams.

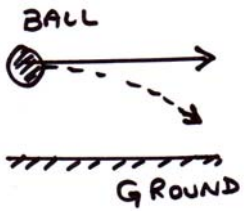

Fig. 1.

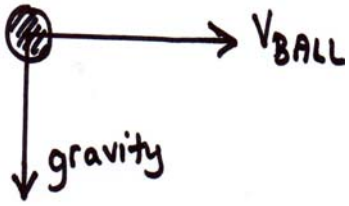

Fig. 2.

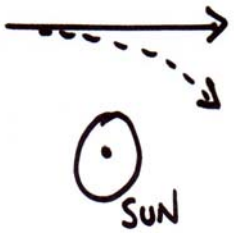

Fig. 3.

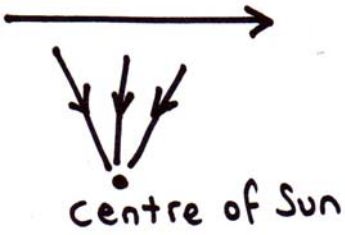

Fig. 4.

In Fig. 1 a ball is thrown parallel to the ground. We treat as idealization, so that there is no air resistance etc. As ball moves with v_{Ball}, gravity acts on it as shown in Fig. 2. In Fig. 3 we have the path of object passing by the Sun. Fig. 4 shows the same object passing by the sun, but now shows that gravity acts on that object directed towards the centre of the sun. If we now compare Fig. 2 and Fig. 4 we see a difference. Fig. 2 has gravity acting permanently perpendicular to v_{Ball}. But Fig. 4 has gravity acting towards a centre. This means we do not expect the path of the object in Fig.1 and Fig.3 to be the same shape.

Fig. 1 deals with the approximation in daily life when we throw a ball parallel to the ground, and ignore the fact that the Earth is a sphere. As good approximation we can treat the gravity as not directed towards a point (the centre of the Earth), but as parallel lines. If we go to a larger scale of size such as satellites in orbit, we have to take into account the gravity is directed to the centre of the Earth. But for thrown ball we can approximate and ignore that.

Now, we might suppose that an object whether it is material object (like a ball or a craft) is added upon by gravity in same way, we can also suppose gravity adds on light the same as it would do a material object. Thus in Fig.1 the same would apply if it were light instead of a ball. It deals with the approximation of when we can ignore that gravity is directed to a point.

Thus we do not expect that light bending in Fig. 1 and Fig. 3 scenario would be the same. And further if we were doing a calculation based within Newtonian physics for Fig. 3 we would do it as per Fig. 4 setup for its velocity and for how gravity was acting upon it.

But the calculation for Fig. 3 was done as per Fig. 2, and Fig. 2 gives half of the bending that Fig. 4 gives. Upon this incorrect calculation in 1919 it was believed that Newtonian physics was shown wrong. However, when we do the correct calculation within the context of Newtonian physics for Fig. 3 with set up of gravity as per Fig.4, we get same value of light bending as GR.

Eddington thought from his incorrect calculation that an update was needed to Newtonian physics to give the full bending and that gave him GR. But no update was required, just do the calculation correctly and Newtonian physics still works as required (Full calculation [9]). Thus we can see now why the math of Newtonian physics and GR are the same. The differences being that Newtonian physics is usually interpreted from Euclidean geometry and not non-Euclidean geometry. I am very accommodating with the Newtonian paradigm, and accept that the usual geometry it uses is Euclidean, while using a different geometry I would still treat as being within that Newtonian paradigm.

Now let us look at the things that Eddington was saying that led him to the mess he made. I disagree with some things Eddington says, but agree with this (my comments in square brackets): [10]

> "I am not sure that the phrase 'classical physics' has ever been closely defined. But the general idea is that the scheme of natural law developed by Newton in the Principia provided a pattern which all subsequent developments might be expected to follow. Within the four corners of the scheme great changes of outlook were possible; [okay to here] the wave-theory of light supplanted the corpuscular theory [bit wrong here because Newton's theory was really wave-particle duality, so no supplanting of one light theory by another]; heat was changed from substance (caloric) to energy of motion; electricity from continuous fluid to nuclei of strain in the aether. [Different math models are allowed as far as I am concerned] But this was all allowed for in the elasticity of the original scheme. [Okay – very good- very important and its still the case] Waves, kinetic energy, and strain already had their place in the scheme; and the application of the same conception to account for a wider range of phenomena was tribute to the comprehensives of Newton's original outlook."

Eddington thinks this Newton scheme breaks down, and requires update. I say it does not. But the big problem it created is that many people think the way to be seen as a genius is to think outside the box and do things a different way, i.e. they decide to do things differently instead of trying to tie ideas together in one scheme.

Looking at Einstein we find lots of ways that we might decide to do things differently. This creates lots of theories. This is done rather than notice that Newton scheme still works and Einstein supposed divergence from it can be looked upon as a series of mistakes. Einstein's way of thinking about things was to go from Special Relativity (SR) and extend it to General Relativity (GR). The acceptance of GR without the realization that it was still really Newtonian physics meant the mistake of adopting SR, so now let us look at SR.

4. Special Relativity

SR presents many mistakes, but let us look at just a few. Consider light travelling distance x in time interval t, and travelling x' in time interval t' so that we have:

$$x = ct$$
$$x' = c't'$$

It is the $c_M = c_0$ error that gives variable time, as pointed out by Monti. [11] (Kinematic speed of light (c_M) and speed of light property of free space (c_0). Newton physics can deal with constant speed that is $v = u^+$ at for $a = 0$. Unfortunately, when we look at the so-called Galilean transformations (GT) we find mistakes made with them. In other words, there are mistakes made with Newtonian physics and Einstein appears to have capitalized on this to make his mistakes on top of the existing mistakes and come up with a supposedly different theory.

Then with GR, many texts say GR has variable light speed. If that were the case (and I say it can be treated that way) then SR dealing with constant light speed (in vacuum free of fields and other influences) when updated to GR with variable light speed should have really been realized as having given us back Newtonian physics again.

If constant light speed took us away from Newton then going back to variable light speed should have got us back to Newton. But Einstein did not apparently do that, instead he introduced non-Euclidean geometry when he went to GR. This then means he was dealing with a Newtonian physics in non-Euclidean geometry setting instead of what was the usual Euclidean setting. What Eddington thought this geometry change meant, will be dealt with anon. Silberstein on analysis of the math of GR came to the conclusion that GR math was same as Newtonian physics, [5] and also to be dealt with anon.

What we have is a series of mistakes in dealing with Newtonian physics leading to Einsteinian physics. Unfortunately everything in the Einstein revision gets reinterpreted. Instead of slow moving clocks which need to be carefully kept synchronized (as would be the norm expectation of Newtonian physics), by Einstein, he introduces using light speed as a constant as an assumption to use synchronize clocks.

For slow moving clock gives c not equal to c'. But making the assumption that light speed is constant and using that assump-

tion to synchronize clocks setting $c = c'$ (which Monti writes $c_M = c_0$). Saying $c = c'$ is like saying 1 = 2. So people have messed up the math. It leads to all the other problems with people now not agreeing on how to do math.

Einstein messed things up so much, that there are now many things to disagree about among ourselves. He abandoned the existing schema (overall plan) of Newton and made it the pattern to keep abandoning the existing schema and try different patterns. He set himself up (or was set up) as a genius with his schema, establishing the pattern for mainstream dogmatism, sticking with the schema Einstein introduced.

Some of the issues to argue over become:

1. Some people accept the mathematical modeling process; while some want to abandon it. (The math modeling method is: simple model, then update for additional effects.)
2. Different Philosophic interpretations of the experiments.
3. Different philosophies of math

These things arise because

1. Einstein changed his philosophy from positivism (a type of extreme empiricism) to what seems a Platonic (or Pythagorean) philosophy. Making it unclear what the basis of modern physics is, when we go from his supposed revolution.
2. All the publicity aimed at Einstein, diverted attention from another revolution that happened – namely with Boscovich's theory, making it a mostly forgotten revolution. [12]
3. Einstein is basically unclear on a lot of issues.

The change in how large numbers of scientists view science in a different way is usually called a scientific revolution.

5. General Relativity

As noted, effectively Eddington adds an extra effect to Newtonian physics, and treats space-time as aether, actually as a "new" aether. Thus, Newtonian physics plus an aether effect gives GR, according to Eddington.

It is the math modeling process: add more to model when needed. SR is usually presented with no aether, but the GR update here by Eddington adds aether. But there is a lot of arguing with relativists, because Einstein's relativity is not presented to them the way Eddington is presenting it here. What we have is bad presentation to students creating confusion.

Anyway, if GR is mere update to Newton then ideally we are still within Newtonian paradigm. But as I said added to this – the calculation was done wrong and there was no need for the aether update. So Newtonian gravitational physics = GR math.

GR is interpreted by a non-Euclidean geometry perspective and Newtonian physics usually by a Euclidean; this means looking at the same bit of math in different perspectives. The usual way it is presented is that SR is the sub theory of GR, and Newtonian physics is sub theory of SR.

GR-→ sub theory SR -→ sub theory Newtonian physics

But if we accept that the math of GR is same as Newtonian physics then it's really:

Newtonian physics → sub theory SR

This can be accounted for if SR is only dealing with the trivial case of $v = 0$. The Lorentz transformation equations (LT) have been formed, and really they only deal with $v = 0$, the belief that v is non-zero in LT was an error.

Existing: GR → sub SR → sub Newton (scheme 1)

Reality: Newton = GR → sub SR (scheme 2)

The experiments have been distorted to fit SR in scheme (1) and this has caused all the confusion with a theory SR supposedly proven, when it has not been. Essen, [13] top experimental physicist, has pointed out that SR has not been experimentally proven; this is contrary to the publicity that is given. But there is so much peer pressure to conform to the mess that Einstein gave us that Essen was ignored.

There are a great many good physics books written before the supposed Einstein revolution; but because of that supposed Einstein revolution they get discarded, and mainstream physics community tries to build upon the mess that Einstein gave us. It would take a great deal of effort to undo that mess. But the simple message is: Newtonian physics is still a valid paradigm. In the usual way that Einstein's GR is connected to Newtonian physics, it is as Silberstein describes:

> "Einstein easily obtains the Newtonian equations as first approximation, with $\Omega = -1/2 \cdot c^2 g_{44}$ as the potential of the gravitational field. This treatment of the question is repeated, so far as I know, by all exponents of Einstein's theory." [5]

I.e. Newtonian physics is being presented as approximation of Einstein's GR.

By math modeling process this is - initial math model is Newtonian physics that then requires update and gives GR. I.e. GR is updated Newtonian physics. But this is a mistake. Actually Newtonian physics and GR are the same math. As Silberstein points out:

> "Now, as recently occurred to me, the true relation of Einstein's equations to those of Newton is of a much more intimate nature, and remains valid, no matter how strong the field and how much space deviates from Euclidean behaviour." [5]

In the existing scheme of GR as updated Newtonian physics, the update is that Newtonian physics is deemed valid for weak gravitational fields, but for strong gravitational fields need update to GR where the extra effect(s) is deviation from Euclidean geometry. But as Silberstein points out, he realizes this is not the true connection between Einstein's equations and Newton. And really, Einstein's equations and Newton remain valid for no matter how strong the field is.

Thus he is saying: Einstein's equations are the same as Newton. That means: the existing belief that GR equations is an update of Newton is a mistake. The existing set up is update Newton math model and it gives GR. But that is just math mistakes, and the true nature is the math of Newton is the same as GR. Hence the supposed Revolution in physics due to Einstein in 1919 was just based up doing a math mistake in handling Newtonian physics, and making a mistake with the math models.

Charles Lane Poor also points out that Einstein starts from Newton treating it as 1st approximation and updating it; i.e. the math method of initial math model requiring update. I like the conclusion: "The Newtonian law has not been abolished: there is no Einsteinian law of gravitation." [14] This translates as far as I am concerned to - Einstein messes up his math modeling, and the initial math model of Newton did not require updating; hence it's still really Newton physics.

A lot of these early anti-relativists have been allowed to be forgotten. And some of them had the position that translates to: there was no Revolution in 1919, it was still Newtonian physics; the supposed math for a new theory (of Einstein) is not a new theory and really it's the messed up math of the existing theory of Newtonian physics. I.e. Einstein messes up his math while dealing with Newtonian physics and gets hailed as giving a new theory But untangle the mess he made and it's still Newtonian physics.

While other anti-relativists attacking Einstein's theory don't realize that they are also attacking (hidden in Einstein's mess) the math from Newton physics. More recently we have Jean Eisenstaedt:

> "At the end of the 18th century, a natural extension of Newton's dynamics to light was developed but immediately forgotten. A body of works completed the Principia with a relativistic optics of moving bodies, the discovery of the Doppler-Fizeau effect some sixty years before Doppler, and many other effects and ideas which represent a fascinating preamble to Einstein relativities. It was simply supposed that 'a body-light', as Newton named it, was subject to the whole dynamics of the Principia in much the same way as were material particles; thus it was subject to the Galilean relativity and its velocity was supposed to be variable. Of course it was subject to the short range 'refringent' force of the corpuscular theory of light - which is part of the Principia - but also to the long range force of gravitation which induces Newton's theory of gravitation. The fact that the 'mass' of a corpuscle of light was not known did not constitute a problem since it does not appear in the Newtonian (or Einsteinian) equations of motion. It was precisely what John Michell (1724-1793), Robert Blair (1748-1828), Johann G. von Soldner (1776-1833) and Francois Arago (1786-1853) were to do at the end of the 18th century and the beginning the 19th century in the context of Newton's dynamics. Actually this 'completed' Newtonian theory of light and material corpuscle seems to have been implicitly accepted at the time." [15]

These are pretty much all the supposed discoveries of Einstein, but derived from Newtonian physics before Einstein in 1919.

Soldner gives us light bending in gravity field. Mitchell gives us bodies so strong gravitationally that light can't escape- what we now call black holes, etc. Eisenstaedt continues:

> "In such a Newtonian context, not only Soldner's calculation of the deviation of light in a gravitational field was understood, but also dark bodies (cousins of black holes). A natural (Galilean and thus relativistic) optics of moving bodies was also developed which easily explained aberration and implied as well the essence of what we call today the Doppler effect. Moreover, at the same time the structure of - but also the questions raised by-- the Michelson experiment was understood. Most of this corpus has long been forgotten. The Michell-Blair-Arago effect, prior to Doppler's effect, is entirely unknown to physicists and historians. As to the influence of gravitation on light, the story was very superficially known but had never been studied in any detail. Moreover, the existence of a theory dealing with light, relativity and gravitation, embedded in Newton's Principia was completely ignored by physicists and by historians as well. But it was a simple and natural way to deal with the question of light, relativity (and gravitation) in a Newtonian context. Einstein himself did not know of this Newtonian theory of light, and he did not rely on it in his own research."

The last paragraph is wrong because Einstein was working from extended Newtonian physics; he [Einstein] did know the theory; it was called Boscovich's theory. So now we know the method: math modeling working from Boscovich's theory, but mess up doing the math. Since per Newtonian physics light speed is variable, where is the evidence for variable light speed in mainstream physics? Answer: it becomes hidden in obscure terms. For example, Bryan G. Wallace was banned from publishing in mainstream science journals. In "The Farce of Modern Physics" Wallace says:

> "Since then, I've been unable to publish any further letters in Physics Today, no matter how important the subject. For example, I made the startling discovery that the NASA Jet Propulsion Laboratory was basing their analysis of signal transit time in the solar system on Newtonian Galilean $c+v$, and not c as predicted by Einstein's relativity theory. There is a short mention of the major term in the equation as the "Newtonian light time" but no emphasis on the enormous implications of this fact! I tried to force this issue out into the open by submitting a letter to Physics Today 9 July 1984, with the cover letter to the editor indicating that I had sent a carbon copy to Moyer at JPL for his comment on the matter. The following is the text of the letter I submitted: The speed of light is $c+v$…. " [16]

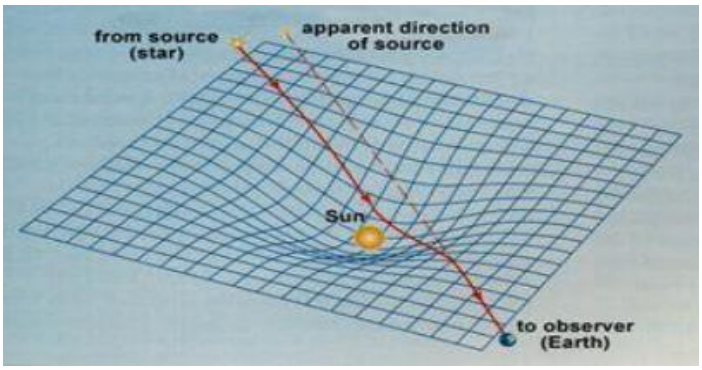

Fig. 5.

The usual way mainstream physics presents light deflection is shown per Fig. 5 above. [17] The coordinate lines are shown distorted by the presence of matter this is to compensate for the force of gravity being directed to a point as per Fig.4 when the calculation was initially done assuming that the lines of the force of gravity was parallel. If we accept lines of gravity are as per Fig. 4 then there was no need to distort the coordinate lines.

Conclusion

The process of physics is math modeling. Einstein was no good at math. [18] When it came to doing math, he made mistakes. He (or Eddington) thought GR model was an update to the math model of Newton. But that was a mistake, he had the math wrong for the Newton math model; thus there was no update required. Based upon this math mistake, Einstein was hailed a mathematical genius and made the example of how physicists were to do math ever since. I.e. that was the example to follow Einstein's lead and make math mistakes. Hence the basis of Modern Physics is a vast collection of math mistakes, which Physicists are continuing to add more math mistakes to.

This is equivalent to the situation physics was in before the Copernican revolution, where they got into the rut of adding more epicycles to the geocentric model. Physicists have FUBAR'ed [19] the math, and really Einstein's Relativity is just disguised Newtonian Physics hidden under layers of mistakes. There has been an early tradition of Physicists (at the beginning of Einstein's celebrity) that have noticed this, I gave Silberstein and Poor as examples; but the mainstream just wants to ignore that and carry on regardless.

References

[1] Thomas Kuhn, **The Structure of Scientific Revolutions**, 1st. ed. (Chicago: Univ. of Chicago Press, 1962).

[2] A. S. Eddington, **Space, Time and Gravitation: An Outline of the General Relativity Theory** (Cambridge University Press, 1920), p 100. http://www.archive.org/details/spacetimegravita00eddirich.

[3] ibid p 97

[4] A. S. Eddington, **The Nature of the Physical World** (Cambridge at the University Press, 1929, based on 1927 lectures)

[4a] Roger J Anderton, "Aether Quantum Theory according to Eddington," *General Science Journal* (2010).

[5] L. Silberstein, "The True Relation of Einstein's to Newton's Equations of Motion", *Nature* 788-789, (Dec 1923) http://www.wbabin.net/historical/silberstein3.pdf (pointed out to me by Tom Miles).

[6] Robin Shelton, J. Allie Cliffe, "Spherical Cows", http://lheawww.gsfc.nasa.gov/docs/xray/research/snrs/spherical_cow.html; "The Origins of Spherical Cow" http://www.sphericalcow.net/why_sphericalcow.htm.

[7] Roger J Anderton, http://wbabin.net/anderton.htm#Anderton, several articles.

[8] John D Barrow, **Cosmic Imagery: Key Images in the History of Science** (W.W. Norton, 2008), "The Bodley Head", p 434.

[9] Roger J Anderton, "Newtonian Light Bending" (2008), http://wbabin.net/science/anderton15.pdf.

[10] ibid [4], p4-5; Roger J. Anderton, "Eddington on the Greatest Scientific Revolution of the 20th Century", *General Science Journal* (2010), http://wbabin.net/science/anderton54.pdf.

[11] Roberto A. Monti & Geradina A. Cesarano Monti, "The Real Einstein", http://www.lowenergytransmutations.org/documents/the-real-Einstein_EN.pdf; Roger J. Anderton "Electromagnetic Lightspeed and Kinematic Lightspeed: Analysis of the Real Einstein", *General Science Journal* (2010), http://wbabIn.net/science/_anderton52.pdf.

[12] Roger J. Anderton, "Eddington on the Greatest Scientific Revolution of the 20th Century", General Science Journal (2010), http://wbabin.net/science/anderton54.pdf.

[13] L. Essen, **The Special Theory of Relativity: A Critical Analysis** (Oxford University Press, Oxford Science Research Papers No. 5, 1971), a booklet questioning the modern interpretation of STR.

[14] Charles Lane Poor, "Relativity and the Law of Gravitation", Astronomische Nachricten., :Band 238 nr 5699 (Jan. 1930) http://www.wbabin.net/historical/poor3.pdf (pointed out to me by Tom Miles)

[15] Helmut Pulte, "On the Reception of Isaac Newton in Europe", Mathematisches Forschungsinstitut Oberwolfach Report No. 10/2006 Mini-Workshop, Ivor Grattan-Guinness, organizer (London, Feb. 19-25, 2006); J. Eisenstaedt, "The Newtonian Optics of Moving Bodies", http://www.mfo.de/programme/schedule/2006/08c/OWR_2006_10.pdf.

[16] Bryan G. Wallace "The Farce of Modern Physics" http://users.navi.net/~rsc/physics/wallace/farce.txt.

[17] M. K. Han, "How Gravity Works" http://www.timephysics.com/how-gravity-works.html.

[18] H. C. Ohanian,: **Einstein's Mistakes** (W. W. Norton, 2008), http://einsteinsmistakes.com/index.html.

[19] FUBAR = Fouled Up Beyond All Recognition