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The Lateral-Clock coordinate-space Transform.

Benedykt Michal Josef Campbell-Biezanek

Distinguished Researcher, Shropshire hill country England, UK

Corresponding author

Benedykt Michal Josef Campbell-Biezanek, Distinguished Researcher, Shropshire hill country England, UK. Tel: +44 (0)1694 722 190

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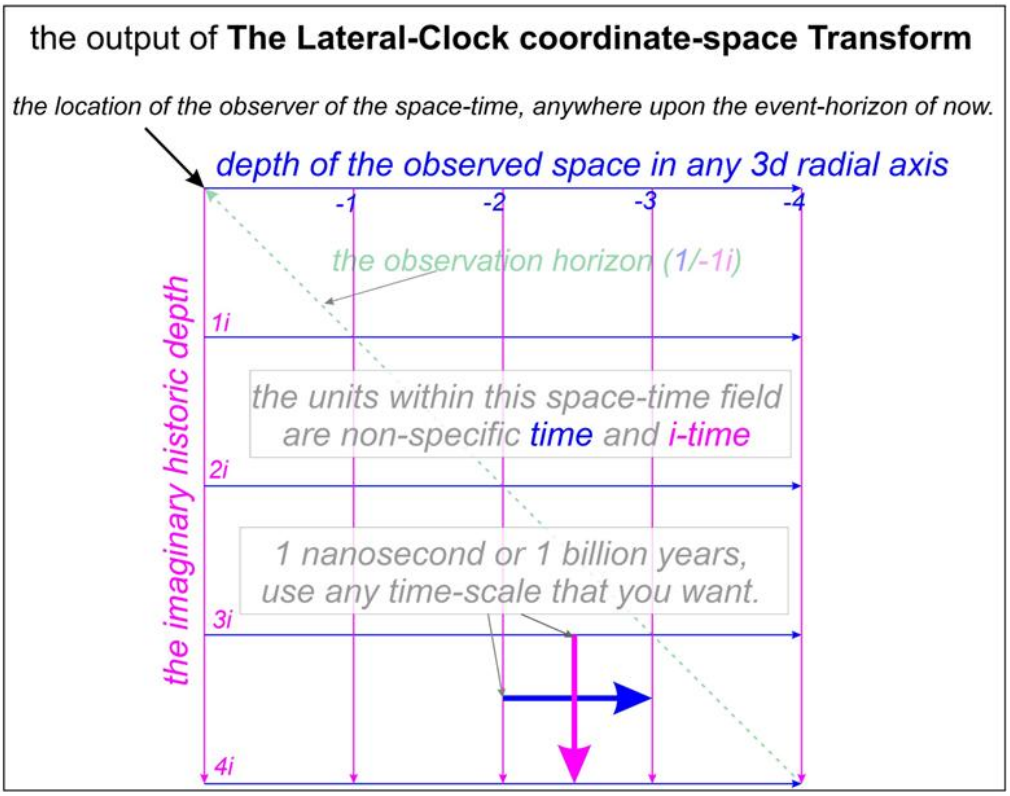
Introduction.

The author was an electrical engineer who became too rich and retired in 2005 at the age of only 55. After a two year period in which he became an international playboy, he found that being a playboy was even more boring than being a schoolboy and he needed something else to prevent himself from dying of boredom. He found a new direction in Natural Philosophy.



A Natural Philosopher is just a multidisciplined generalist scientist and mathematician who is not constrained by any need to respect the sacred cows of any discipline of specialist philosophers, such as say mathematicians or astronomers. Now, this Natural Philosopher (me) already knew this Lateral-Clock coordinate-space Transform from the age of about nine years old. Becoming a Natural Philosopher taught me that nobody else used this mind-bogglingly useful mathematical transform, even though it is such a simple mathematical transform that it could easily be taught to any curious and intelligent child of nine years old.

The search for contradictions and holes.

The search for contradictions and holes is the easiest search in the world because the important contradictions and holes are already known of and reported by many others who have been trying and failing to make progress. These known contradictions or known holes permit any new Natural Philosopher to instantly focus on the holes and the contradictions in the work of specialist disciplines of philosophy such as say cosmologists. This instant laser focus on the contradictions or the holes, frees the Natural Philosopher from the tedium of studying the details of the specialist philosophies, because generally those specialist arguments will add up perfectly and so there is no need for him to check out their work, he just trusts the specialists not to have been complete and utter muppets.

With the employment of the Lateral-Clock coordinate-space Transform, all the holes and all the contradictions were found to close and resolve instantly. This forced me to investigate why all the specialists were behaving as if they were complete muppets, when they were obviously not muppets at all. So I built a model of their minds explaining this. I had developed this model in about 1964 when I was 14 years old, but in 2012, when I really needed it, I had completely forgotten that I knew it. The model is devastatingly simple, anybody who can think, can easily understand this model and it explains the entire human condition very well.

Where any specialist philosopher has fallen in love with his own arguments, he becomes clinically blind to the holes and the contradictions in his own logic, he is blinded by his love of the good parts in his vision. The specialist can see all the beauty and the joy of his arguments and cannot see any holes or imperfections because he is blinded by love. This is analogous to a young woman who has fallen in love with a man. Her friends and family councillors can all quite easily see that this man is wrong for her and will hurt her, only the woman in love is blind. Absent the blind love of women and then very few of us here would have ever even impacted the gene pool in the first place.

Never love the good bits of any natural philosophical argument, but rather focus sheer hatred on the holes and on the contradictions. Just hate all the holes and the contradictions into oblivion, once all the holes and contradictions have been destroyed by his hatred, there might be nothing left or there might be a real answer and the natural philosopher must not care which. If the natural philosopher has fallen in love with the concept that he has not been wasting his time, then he is just as lost as if he had never bothered himself in the first place. If he cannot face defeat with a laugh and move on to other things, then he is wasting his life away on nothing.

The universe herself gets to decide who discovers her innermost secrets and her most intimate inner details. If he has not the courage to face her rejection, then he should far rather have played darts with the lads or gone off to the Tango dancing session in the hope of meeting a more pliant dance partner.

Pure Natural Philosophy is the loneliest game in the world. If the natural philosopher needs the human comfort of being surrounded by fellows who agree with him and even admire him, then he might as well have taken up market gardening instead. I mean, Stephen Hawking I would excuse because he could not have taken up market gardening, but did Hawking like the adoration of the crowd? He loved it to bits of course, it is a natural human tendency. It might get one a burial place in St Paul's Cathedral only to find out that the Universe was mocking one’s efforts for one’s entire life and that she actually revealed sweet nothing to my redoubtable colleague Stephen Hawking.

What could save a specialist from his own confusion? Why not pick a tough one, Schroedinger's cat? Why does Schroedinger leave us with this paradox without resolving it? Silly boy, just resolve it or do not even mention it at all. Curiosity killed the cat, in this case Schroedinger himself and not his cat. Let the cat open the box and let Schroedinger be the one who was both alive and dead at the same time. Schroedinger only survived his silly thought experiment because he never actually tried it out in practice.

The quanta “knew” its destiny before it was ever emitted in the first place, the reality of the quanta was entangled with its historic origins and so the issue of the quanta was known to the Universe before the box was ever closed down. In other words, do not play dice with the Universe because the Universe only pretends to play dice, she cheats and she enjoys cheating, that is what she likes to do, and that is what she does. If the Universe decided to exhibit cats, then you will find that she had tattooed the possibility of cats into the DNA of the slime moulds.

The Lateral-Clock coordinate-space Transform.

This mathematical transform is so simple that I never thought of it as a transform at all, I thought that everybody knew it and that everybody used it all the time. When I was at the Quentin Hogg Polytechnic in Central London during 1969 through 1973, I had thought that the reason that I was always the star pupil without ever bothering to actually attend any classes was explained by my 200+ IQ. That turns out to be nonsense because a 40 year old refuse operator with an IQ of say 110 could be taught all of electrical and electronic engineering in a year or two, he would only have to be really interested in the subject, dead keen to learn and be taught the The Lateral-Clock coordinate-space Transform as his lesson number one.

Space-time is four-dimensional, I hope that everybody knows that, even my cat knows that. The dimension of time is the strange one because for every frozen instant at now, it seems to stop existing. The other thing to notice about time is that the future has not happened yet. All that actually exists or has existed is now plus everything that happened in the past. The thing to know about "now" is that had the past not happened, then the present would not exist either. In other words, no (timed) history, no space, no nothing.

In what way does the dimension of historic depth, the depth in time back from now, relate to any dimension of space? That is so easy it is like falling off a log. The so-called time dimension is actually just the imaginary historic depth of the space. We can only see the space because of light in quanta and those light quanta are jumping instantly through space for us to see them. The question to ask is that if they jump instantly, then how on earth is there any delay? How does she create the illusion of the historic depth? For this we need James Clerk Maxwell and his other Universe (his luminiferous aether). Intimately beyond now there is another universe. The quanta of light jump in there and then jump out into our eyes when we decide to look at them. There are rules. The rule is that minus the imaginary historic depth must always be equal to the spatial depth, with both in the same units of time. The shared units can be nanoseconds or billions of years, whatever you need, the scale that one needs makes no difference.

Presumably everybody found this a trifle confusing, but it certainly is not the slightest bit confusing. In 1980, the CIPM (the international committee of weights and measures) who are the global oversight body for all national physical laboratories, finally got the message and defined the metre as 1/c seconds. Now 1/c is an extremely confusing way to state this. It is as if, although they ought to have known better, the physicists on that committee were still imagining light quanta as if they were magic bullets of energy-nothingness moving through our own universe at what they call the

"speed of light". Well, never mind their problems because they told everybody else the correct answer anyway. You see, the reciprocal of the apparent velocity is just a very strange and novel way of describing the metre as 3.335.. nanoseconds of time.

If you were seeing this from one end of their "metre" in vacuum space, what is the historic depth at the other end of the metre? They just told you, it is 3.335.. nanoseconds back down into the imaginary history of the vacuum-space.

Lateral-Clock coordinate-space is only tough for people who have been trained since early childhood into thinking a load of nonsense. Please forget that you ever heard all those people who taught you their utterly daft phrase "the speed of light" and just replace that with "the apparent wave velocity". Nobody ever saw the wave, the merely imagined waves in our universe are associated with a particle dual in the parallel universe (Maxwell's luminiferous aether) and the waves have an apparent wave velocity of c or

one unit of space per unit of inverted imaginary historic depth

*The "imaginary" word in there is mathematically identical to the pure mathematician's number, "**i**".*

$c = 1/\mathbf{-i}$ $c^2 = -1$ and $E_0 = -m_E$; where m_E is the inertial mass in energy units.

How did the Universe trick Albert Einstein into making a fool of himself?

Easy, she quite fancied young Albert, she showed him a few tricks but she never gave him the Lateral-Clock coordinate-space Transform and without that, what she had revealed to him left him dying 50 years later as a poor unhappy fellow. Before he died, he realised that he knew nothing. Knowing nothing and being highly confident that one knows nothing is a very superior place to end up at. It is infinitely worse to know everything, only to find out that everything that one ever "knew" was nonsense.

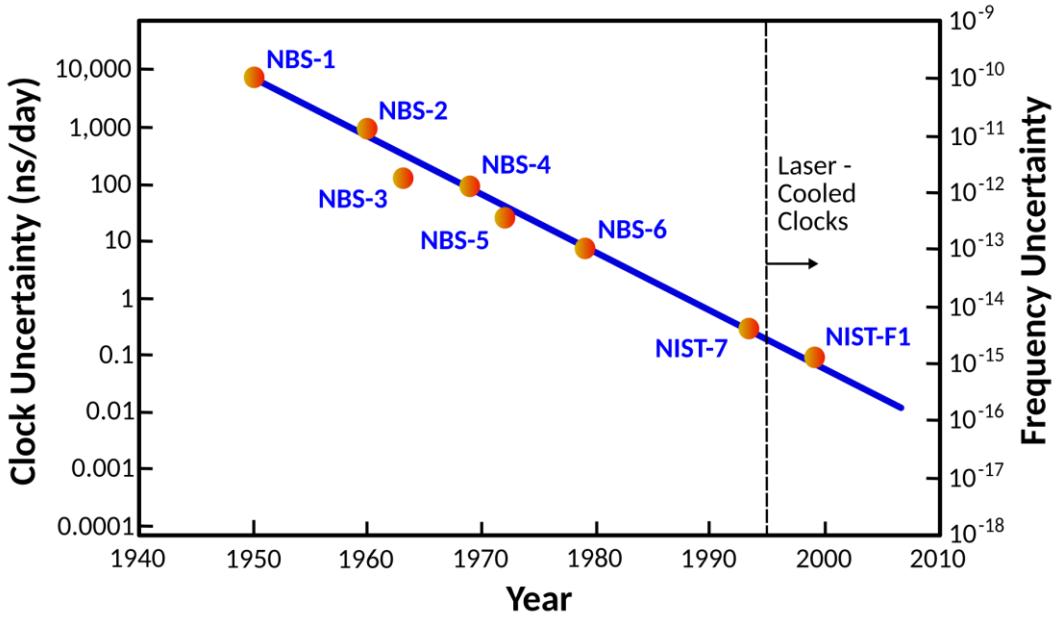
I mean, I had no language for all this at 9 years old, I just a saw a few obvious facts and knew about light as lumps and as waves. I realized that Maxwell's aether was there and explained it as lying in the future which we never get to of course.

How stable is the Universal Master-Clock?

Time only exists where there is a clock to observe it into existence, no clock, no time; no time, no space; no time and space, no nothing. If we think of time as being merely an attribute of the universe that we can measure with clocks, then we have missed the point entirely. Wherever there is mass and the associated gravity then there is a clock

that observes the passage of (at the very least its own) history into existence.

We find consistency in time wherever and however we measure it and we can say that the passage of history into the past is an extremely consistent process. The most consistent clocks that we can observe today are based on the hyper-cold Caesium-133 atom and this is much more consistent than just taking a fraction of the current sidereal year. The great advances in the precision of our clocks is testified to by the fact that there has been no need to add a single leap second since 2016. When I last looked at this in 1972, we were still adding an average of one leap second per year. The fabulous NIST-F1 (1999) will need a leap second every 300 years or so. However, advances in laser cooling mean that by 2035 we will cease the need to add leap seconds ever again. Over the entire 25,770 year cycle of the precession of the equinoxes we will maintain a consistent sidereal time frame of reference, but 25,770 years is a long time to wait and see if we are keeping an accurate clock.



This diagram is taken from Wikipedia, even the fabulous NIST-F1 is uncertain to 0.1 ns per day, not exactly accurate just "quite good", but we are working on it and we will never just give up.

Within your own body there are about 4 x $_{10}$28 clocks, each of which is vastly more precise than any piddling little NIST F1 because that is based upon a Caesium-133 atom and that is a very clumsy lump indeed when compared to the individual nucleons that make up the atoms of your own body. Who knows if nuclear clocks will ever be possible? A single free proton (an ionised hydrogen atom) in free space and well separated from anything else is theoretically your perfect clock, it could never get any better than that because that would be infinitely precise.

What I wanted to know was whether the hypothetical perfect proton clock rate was a constant independent of its age, a flat function of its age or an exponential function of its age and if it was exponential what was its time constant or what was the universal master-clock acceleration rate. The answer was staring me in the face ever since about 1972, but I only bothered to do anything about it by 2012. Did I deliberately leave the cosmologists hanging in the air with no visible means of support? Not really, I was far too busy raising children and having so much fun doing that. Sorting out the bogus cosmology was never a high priority for me. I had to become seriously bored to even take on this rather irrelevant issue at all.

As we look out deep into space there are galaxies and astronomers have found a method of working out the distance off, not only from the red shifts but also from observations of standard candles that tell them how far away that galaxy is. A galaxy seen at a billion years in our past has a red shift just because of its age, the universal clock was a billion years younger back then, so far so good. Well, not quite, they assumed a constant master clock rate and thought that the red shift came from the target galaxy and ourselves rushing apart, but whether we use a flat universal master clock expansion rate or a constant master clock rate we get the same answer anyway. We can plot the distance to the galaxy against her red shift. We can plot thousands of galaxies and draw a straight line through those thousands of galaxy points back to zero and say that the universe must have emerged from a single point, 13.8 billion years ago.

There are two problems with this, the first is that 13.8 billion years ago is like yesterday and so it makes the universe vastly too young to explain the scale and complexity of what we can see in the galaxies. For example, a local galactic year is 225 million years and so some people think that the universe is only 61 galactic years old. Listen, let us not bother to trouble those kind young men in the white coats, but some people out there are stark raving mad; we must pay no attention to imbeciles.

The second problem is that the master clock rate is not a linear function of its age, it is an exponential function, $e^{t/\tau}$. One can ask oneself this; is $e^{t/\tau}$ the clock rate acceleration function, the clock rate function or the clock age function? Well, Leonard Euler explained that if each is the integral of the next with respect to time (and they all are of course) then they are all the same. In other words, all three of the critical universal master-clock dynamic functions are all equal to $e^{t/\tau}$.

What is the Exponential time-constant of the Universal Master Clock?

This was what was obvious to me in 1972. You see, we all know, or we all ought to know, that the time constant of a capacitor discharging into a resistor is RC seconds. The units of RC are in farad-ohms or seconds and we can show this as being a straight line extrapolation of the initial discharge rate. The farad-ohm is identical to the second and the reason for that working out so nicely is that Michael Faraday knew what he was doing. Anyway, the discharge function is an inverse exponential and the time constant of that is this easy-to-understand short hand for the initial rate extrapolated in a straight line to zero, in units of seconds.

So, here we are now, wishing to look backwards into the history of the $e^{-t/\tau}$ function of the universal master-clock and some seriously cool astronomers have already worked out the time constant τ for us, it is 13.8 billion years. If you prefer to think in terms of the half-scale time-constant, then the relationship is the time-constant τ times 0.693 (ln(2)) which is 9.56 billion years. The apparent exponential clock-rate doubling time of the universal master-clock is 9.56 billion years.

The Universal Master-Clock; Relative Apparent Rate History.

(the theory of everything that is apparent; credit, Leonard Euler ca 1730).

$$\underbrace{e^{\left(\frac{-t}{\tau}\right)}}_{A} = \underbrace{\int_{now}^{then} e^{\left(\frac{-t}{\tau}\right)}.dt}_{B} = \underbrace{\int_{now}^{then}\int_{now}^{then} e^{\left(\frac{-t}{\tau}\right)}.dt.dt}_{C}$$

where t is the universal master-clock age in years (now = 0) and τ is the apparent universal master-clock time-constant which is 13.8 billion years.

A *is the universal apparent specific scale acceleration rate, now = 1*
B *is the universal master-clock apparent historic rate, here and now = 1*
C *is the apparent relative scale, now = 1 (the limit of "then" is* $>>_{10}$*80 years)*

The relative apparent clock rate is the sole determinant of the relative apparent scale of the observed historic space-time. The apparent scale acceleration is actually just an optical illusion generated by infinite macro-universal gravity; that is Einstein's stunning general theory of relativity integrated out into infinite depth and scale.

The cosmic microwave background centre frequency is 160.2 × $_{10}$9 Hz and the frequency of the gamma band source was say 299 × $_{10}$18 Hz. So the gravitational space-time linear scale deflation factor is the ratio of these two frequencies, which is 1.86 × $_{10}$9. Now, converting that into exponential half-scales, which is given by working out (log(1.86 × $_{10}$9)/log(2)), which is 30.8. Then 30.8 times 9.56 billion years puts the source of the radiation at 295 billion years in the past, and of course, at the time that it was emitted, a range off of 295 billion light years away.

What irritated me is that some teachers are confidently telling my eleven grandchildren that the universe blew up out of nothing only 13.8 billion years ago. That is absolutely not what actually happened and I do not like my grandchildren being told such utter nonsense, all worked out for the poor teachers by complete muppets who had all discarded their exponential slide-rules over 50 years ago. They tried to make the simplest calculation in the universe difficult, and there was only one problem, they all got completely the wrong answer.

What had gone wrong for everybody else?

When they discovered, back in the late 1960s, that the deep space red shifts were becoming much greater than expected beyond about 2 billion years off, some “bright spark” said “dark-energy” and then they all breathed a sigh of relief because they had all fallen in love with how very clever they all were for working out all the constant apparent clock calculations and the 13.8 billion year, “instant creation v2.0” nonsense. Nobody sent Chicken-liken off to tell the King (well, the only time-master that we had anyway) that the sky was falling down, so I never got a chance to tell Chicken-liken “there there, calm down, no dark energy, your observations just confirm the expected natural-exponential universal apparent master-clock-rate acceleration function”.

Conclusion.

Should we buy the big bang theory from people who are in love with their daft and unworkable constant universal apparent clock-rate theory? Well, definitely not, the Cosmic Microwave Background signal is an effect caused by the trans-galactic cross-fire wave sequence passing through any galaxy observable to us today at 2 x 295 = 590 billion years ago.

The universe could not possibly be younger than $_{10}$80 years old, but the age of these stunning galactic apparitions might not even be finite. The galaxies only light up after the trans-galactic core-body cross firing sequence has passed through them. So, prior

to 590 billion years ago, they were utterly unobservable anyway and hidden deeply beneath the background 160 GHz white noise created for us today by the trans-galactic core eruptions. Unobservable that is, even if they had shone anything at all, which they could not of course, having dark-star temperatures of the order of $_{10}$-18 Kelvin and with all those dark-stars in the form of hyper-thin discs of superconductive hydrogen-ion condensate. There is no dark energy of course, but what did anybody else think that dark matter was? Some kind of invisible Chicken-liken soup perhaps?

Footnote: *The details of the galaxies prior to the cross-fired galactic warm-core-body eruptions (from dark galactic form into visible form) are part of the new subject of mass-compaction-mechanics and that entire subject is stupendously beyond the scope of this simple introductory paper. A slight introduction to that can be found on the ATCP publisher web site under my title "The Last Tango of the Finite Graviton". These two papers, this paper and the ATCP paper, are effectively companion papers and one needs to read both papers. Which paper one reads first is rather unimportant.*

For further study and learning about the new mathematics one requires with Quantum-Relativity see;

https://www.gnqr.co.uk/

gnqr stands for Gauss-Newton Quantum-Relativity.

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