

# Time and Continuum: Zenon Manifold

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## Abstract

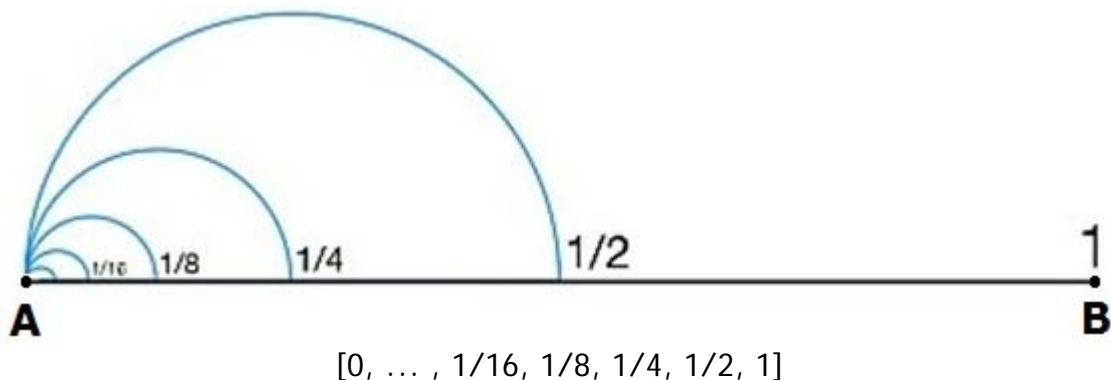
Ensuing from first principles, I suggest pre-geometric theory of spacetime [1], in which the apex of [light cone](#) 'here and now' is not modeled with dimensionless point [2], but with non-trivial mathematical object along *null intervals*, endowed with brand new structure, topology and dynamics (contrary to Robert Geroch [3]), and defined on so-called Zenon manifold [4].

The full manuscript is available upon request.

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According to [David Hilbert](#), an old French mathematician claimed that, if you suggest a new mathematical theory, it could not be considered complete until you have made it so clear that you can explain it to the first man whom you meet on the street. Let me try.

As told by [Aristotle](#) (*Physics* VI:9, 239b10), [Zeno of Elea](#) (490-430 BC) has formulated the famous [dichotomy paradox](#): That which is in locomotion must arrive at the half-way stage before it arrives at the goal. In the drawing below, if we imagine **B** going back to **A**, then **B** will stop *only* at the ultimate limit  $B \equiv A$ , which denotes one single dimensionless point [2], and locomotion will be impossible. See Thompson's lamp paradox and FI, pp. 15-16 in [1].



The only possible solution to the paradox above is to endow every point in  $[AB]$  with structure, topology and dynamics from the [Heraclitean flow of events](#) (p. 11 in [1]): replace  $B \equiv A$  with the elementary step of time  $AB$  depicted with [Fig. 2c](#) at p. 14 in [4]. The speculations about spacetime continuum [5] and causality [3] are unacceptable, and I suggest a *perfect* continuum of spacetime points as 4D events called 'atoms of geometry' (Fig. 3 at p. 7 and p. 12 in [4]) defined on a brand new [pre-geometric manifold](#), dubbed [Zenon manifold](#). In one sentence, I introduce Heraclitean time (p. 11 in [1]) "inside" the geometric points  $AB$  (read above) to solve the problem of [continuum](#) [5]: all points from the number line (p. 39 in [1]) [follow](#) the Heraclitean time ([Fig. 2c](#) at p. 14 in [4]) without any gaps whatsoever, not even by Gedankenexperiment. Now let's delve into details [8].

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## References and Notes

1. D. Chakalov, *Platonic Theory of Spacetime*. 10 February 2019, 46 pp., at [this http URL](#).
2. C. Stover and E. Weisstein. "Point." From MathWorld — A Wolfram Web Resource. <http://mathworld.wolfram.com/Point.html>
3. Robert Geroch, *General Relativity from A to B*, University of Chicago Press, 1978, p. 21. Robert Geroch and Gary Horowitz, *Global Structure of Spacetimes* (1979) at [this http URL](#).
4. D. Chakalov, *Spacetime Engineering*. 2 April 2019, 16 pp., at [this http URL](#).
5. John Baez, Struggles with the Continuum, [arXiv:1609.01421v3](#), 2 January 2018, p. 2. Ioannis Raptis, [arXiv:gr-qc/0110064v1](#), 15 October 2001; Sec. 2, (a)-(f) pathologies of the classical spacetime manifold.
6. D. Chakalov, *The Physics of Life*. 20 January 2019, 14 pp., at [this http URL](#).
7. D. Chakalov, *Hyperimaginary Numbers*. 7 February 2018, 26 pp., at [this http URL](#).
8. Notice that the back bone of Zenon manifold — the noumenal 'monad without windows' (read (iii) at p. 6 in [6]) — is not explicitly present in the drawing [above](#). It is a brand new notion of 'zero' which, just like the "big bang", does *not* belong to the physical (or rather *physicalized*) spacetime (p. 3 in [1]). We may think of it (not "Him") as 'Platonic Universe as ONE' and suggest physical theology (pp. 29-30 in [1]) and spacetime engineering (pp. 1-3 and p. 13 in [4]; pp. 8-10 in [6]), and also correct many errors in present-day [point-set topology](#), [set theory](#), and [number theory](#). The current mathematical presentation of the Continuum [5] is 'not even wrong': recall Zeno's dichotomy paradox [above](#) and read Erwin Schrödinger from 1935 (p. 2 in [6]) and Werner Heisenberg from 1958. The *intact* quantum world is **perfect** continuum, interpreted as Platonic *Res potentia* (dubbed John). It is still the first off mystery in Quantum Mechanics, known since 1911, thanks to Charles Wilson.

The Continuum is about Time: the elementary step of Heraclitean time AB 'here and now' (read [above](#)) is just the *interface* between irreversible past and Platonic potential future (Fig. 3 at p. 7 and Fig. 2c at p. 14 in [4]). Think of AB as the ancient [Ouroboros](#) with two *dual* states (p. 3 in [Penrose-Norris Diagram](#)), or the god [Janus](#) looking simultaneously at the past and in the future. We need new [Mathematics](#), not some "primordial standard clock" ([Xingang Chen](#)). For if some "oscillating" physical stuff behaves like "primordial clock" of the [scale factor](#), it must be defined by another physical phenomenon, *ad infinitum*: [Turtles all the way down](#). Which is why we need the Aristotelian [Unmoved Mover](#) endowed with **self-action**: *Der Geist bewegt die Materie* (Virgil, *The Aeneid*, VI, 727). Needless to say, the *physicalized* explications or "[jackets](#)" from the universal **self-action** cannot be traced to any physical "[turtle](#)" *whatsoever*, and many (otherwise [smart](#)) people decided to call them "dark" (p. 14 in [4]). But again, the **self-acting John** is Platonic reality "before" light, like [Macavity](#). It has exactly *zero* chance to exist as physical reality (p. 17 in [1]).

As of today, nobody is interested. I keep exploring my "carrot" (p. 1 in [4]), it works like a charm, better than a Swiss watch — read the 'yellow button' story at p. 15 in [7]. [Again](#), the full manuscript, entitled *Zenon Manifold*, is available upon request ([Matthew 7:6](#)).

16 April 2019

Last update: Easter 2019, 21:00 GMT

## Addendum

The two-page manuscript above was submitted to arXiv.org on [24 Apr 2019 09:46:09 EST](#). One day later, on 25 April 2019, arXiv Moderation wrote: "Our moderators have determined that your submission is not of plausible interest for arXiv. As a result, we have removed your submission."

Let me show just one example of Platonic theory of spacetime, which, according to arXiv Moderation, "is not of plausible interest for arXiv." Recall the Catch 22 paradox from Escher's drawing hands at p. 3 in [4] and the crux of "GW astronomy", pp. 15-16 [therein](#). Here's my conclusion (p. 12 [therein](#)):

But there is no *direct* coupling of matter and geometry. Instead, matter is "coupled" to its *atemporal* (p. 3) Platonic state called *Res potentia* ([John](#)). The latter is being localized in the physical world (local mode of spacetime) as 'geometry', [once-at-a-time](#). Thus, matter is acting *on itself* via its Platonic state ([John](#)) in the global mode of spacetime, thanks to which matter becomes *gravitalized* (Sic!) and acquires inertia due to the feedback (p. 11) from the entire Universe as ONE. In the same way the [human brain](#) is acting *on itself*. Only matter interacts with matter. Neither geometry (p. 4) nor parapsychological "ghosts" can.

There is no *direct* coupling of matter and geometry. As I explained previously (p. 3 in [6]),

... the left-hand side contains an entirely different, neither quantum nor classical, animal. Many people consider "intuitively clear" to interpret this brand new object as 'pure geometry' (at the limit  $B \equiv A$ , read [above](#) - D.C.), like the grin of the Cheshire cat without the cat (p. 15), but here's the catch: "There is no spring or sink *everywhere* (emphasis mine - D.C.) in spacetime for matter (particles' plus electromagnetic field's) energy-momentum" ([Zhaoyan Wu](#)), which could be reserved exclusively for gravity, so that gravity could employ such "spring or sink" to interact with matter and fields, say, with a plastic bottle (p. 21) or with "a bead on a stick" ([Richard Feynman](#)). We face the same puzzle in the physics of the [human brain](#): if the mind were able to interact with brain's tissue, then the mind will be a bona fide physical field. But how could geometric things interact with matter?

Read the first excerpt [above](#). Again, geometric things do not *directly* interact with matter. They just can't. Matter is *always* localized in the irreversible past (Fig. 3 at p. 7 in [4]), whereas the gravitational energy is inherently *non-localizable* ([MTW p. 467](#)) and atemporal Platonic *Res potentia* ([John](#)) placed in the *potential* future, "just in the middle between possibility and reality" (Werner Heisenberg, p. 2 in [6]). According to GR textbooks, geometry acts on matter, telling it how to *move* ([MTW p. 5](#)), and hence the *gravitalized* matter becomes **self-acting**. Why? Because we cannot see 'the grin of the Cheshire cat without the cat'. We can see only one of Escher's drawing hands (p. 3 and p. 10 in [4]), placed in the right-hand side of Einstein's field equations, and it *cannot* obey the law of energy conservation ([Hermann Bondi](#)). If it could, gravity will become physical field. Thus, we need brand new notion of Time (read [above](#)) to unify GR and QM ([Charles Wilson](#)).

But this brand new approach to quantum gravity "is not of plausible interest for arXiv", said arXiv talebans.

So be it ([Matthew 7:6](#)).

Regarding quantum gravity and cosmology [8], look at the so-called evolution equation (Sec. 3 in [CEN.pdf](#)): at every consecutive instant AB 'here and now' (read [above](#)), the total energy of the *physicalized* universe is being nullified — [once-at-a-time](#). The equation is still in symbolic form, pending the precise formulation of hyperimaginary numbers ( $|\mathbf{w}|^2 = 0$ ):

$$|\mathbf{w}|^2 = |\mathbf{m}|^2 + |\mathbf{m}_i|^2$$

I also suggested spacetime engineering (pp. 1-3 and p. 13 in [4]; pp. 8-10 in [6]), with emphasis on particular type of natural healing known as [Reiki](#). It is made of two Japanese words — Rei which means 'Higher Power' and Ki which denotes 'life force energy' (see 'Platonic Universe as ONE' [8] and pp. 11-12 in [6]). [Reiki energy](#) is not based on belief, faith, or suggestion. It cannot be guided by the practitioner, because it has its own innate wisdom to guide itself by its own [self-action](#) (read [above](#)): recall the Law of Reversed Effort (p. 9 and p. 38 in [1]). Everyone can master Reiki by learning (p. 43 [therein](#)), much like learning to juggle three balls in the air (p. 9 in [6]). All you need is [one click away](#).

Happy Easter!

D. Chakalov  
Easter 2019, 15:15 GMT



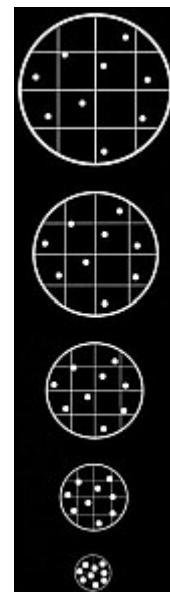
## Questions and Answers

Q1. What do you mean by 'Platonic Universe as ONE' [8]?

A1: Firstly, the entire Universe as ONE is not comprehensible with our cognition, because it is not relational — it includes, by definition, *absolutely* everything. The two drawings below are misleading, as they show some background dark area "outside" the universe, with respect to which we can *think* of '[the boundary of the universe](#)'. Secondly, the entire Universe as ONE is *atemporal* Platonic object, which acts as ultimate *cutoff* on the *physicalized* 4D universe (email from 3 August 2018 at p. 26 in [1]). It (not "He") is *atemporal* Platonic object (dubbed "trunk" on p. 11 in [6]), like the state of Platonic photon "during" its flight, "after" it is emitted but "before" it is absorbed. In photon's reference frame, it does *not* age nor move at all, being at null interval ([Kevin Brown](#)).

Ditto to the Platonic Universe as ONE shown with [red](#) vertical line in [Fig. 2c](#) at p. 14 in [4].

This **red** vertical line is the *atemporal radius* of the inflating balloon in Fig. 4 at p. 6 in [1]; read also p. 32 [therein](#). It shows the *atemporal* “location” of the **matrix** (pp. 8-10 in [6]). Let me elaborate with the drawings below.



The dark “pizza” above shows the idea of ‘[expanding universe](#)’ as 2D surface of the [inflating balloon](#) (the drawing at right), after [Arthur Eddington](#). You cannot see here the **nullified atemporal radius** of the inflating balloon nor its omnipresent **center** at the Beginning ([John 1:1](#)): the ultimate limit  $B=A$  replaced with AB at p. 1 [above](#).

The two drawings above are misleading, because they “show” the entire physicalized 4D universe *en bloc*, “outside of time and outside of space” ([Stéphane Durand](#), 2:15-2:23). We stay always *inside* 4D spacetime, along the horizontal line of instantaneous state of the *moving slit* below (1+1-D spacetime), from Stéphane Durand (source at [this http URL](#)).



The horizontal line (left) of instantaneous state of the *moving slit* is 1+1-D spacetime from which we produce 3+1-D (local mode of) spacetime with *squared* ([Wikipedia](#)) local time. The 3D slit itself is moving **up↑** following the global Heraclitean time (read [above](#)), shown with **red** vertical line in [Fig. 2c](#) at p. 14 in [4] and marked with AB [above](#). The global motion of 3D slit **up↑** is *precisely* (Sic!) **nullified** — once-at-a-time, as recorded with your clock. This is the reason why we have a *perfect* 4D spacetime continuum (dubbed ‘local mode of spacetime’), as explained also at p. 31 (conversation with Stavros) in [1]; see also [Macavity](#).

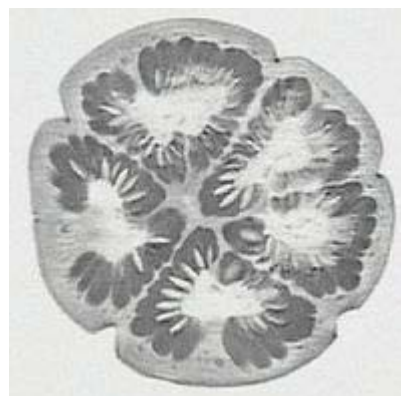
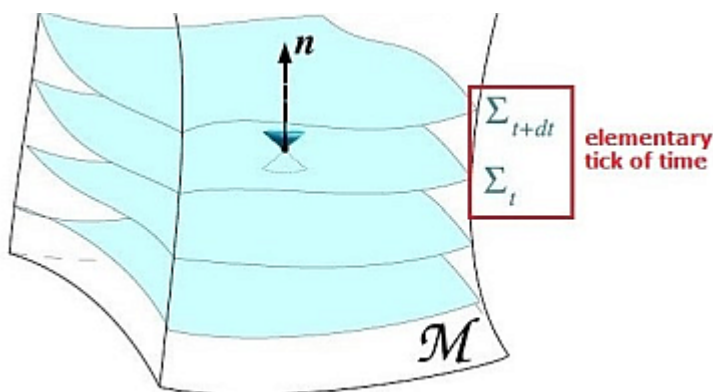
Thus, the fundamental time asymmetry from the 3D slit **up↑** [above](#) is *precisely* nullified in the *physicalized* 4D local mode of spacetime — we end up with two symmetric “future pointing” and “past pointing” vectors ([Piotr Chrusciel](#)), and “there is no dynamics within space-time itself: [nothing ever moves therein](#); nothing happens; nothing changes.” (Robert Geroch in [3]). If this were true, you shouldn’t be reading these lines, in the first place.

NB: To understand the 3D slit [above](#), imagine taking snapshots from a dark room with camera equipped with flash, and then [assembling](#) the snapshots to see the illuminated room as 3+1-D movie reel (local mode of spacetime). There is no physical space nor time **between** the snapshots, and you will see a *perfect* spacetime continuum [rendered](#) by the



“speed” of light — the global Heraclitean time of the 3D slit **up↑ above** is “orthogonal” to the entire *physicalized* 4D movie reel (local mode of spacetime), as it follows the **nullified atemporal radius** of the **inflating balloon**, from its **center B≡A** at the Beginning (John 1:1).

In **numerical relativity**, on the other hand, people interpret the sliding 3D slit **up↑ above** as the physical time read with a clock, by taking the stand of some unphysical meta observer “outside of time and outside of space” (**Stéphane Durand**). Such “splitting” of spacetime is **not even wrong** — the resulting picture of ‘space + time’ resembles the consecutive slices of a pumpkin, along the time of your wristwatch; click the animated (.gif) image below.

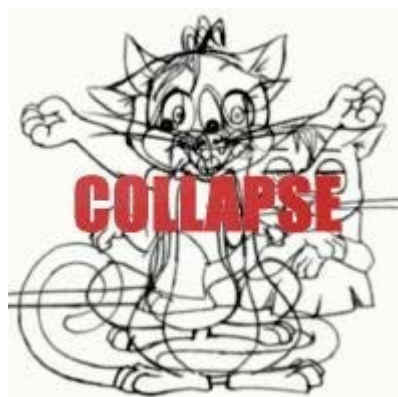


It is a grave error to present the cosmological time of the 3D slit **up↑** (read **above**) with the time read with your clock. Read Slide 12 in **Quantum Spacetime**.

Q2: Are you suggesting Universal Mind, by quoting **Vigil** ‘*Der Geist bewegt die Materie*’ (the Mind moves the matter)?

A2: No, I don’t. Read about the doctrine of *trialism* at pp. 11-12 in [6] and pp. 29-30 in [1], and the excerpt **above**. Notice the “location” of *atemporal* Platonic **matrix** at p. 5 **above**. It is **self-acting** Platonic matrix (p. 3 **above**), neither mental (*Res cogitans*) nor physical (*Res extensa*) stuff. Read p. 9 in [6] and check out Slides 9 and 10 in **Quantum Spacetime**. To see a demonstration of the evolution equation (p. 4 **above**), watch closely Wong Yi Feng at [this http URL](#). It’s not “**magic**”. Any sufficiently advanced technology is indistinguishable from magic (**Arthur C. Clarke**).

Please don’t hesitate to submit your questions. If you wish to start from Mathematics, read p. 1 **above** and pp. 6-7 in [4]. If you decide to start from QM, read Erwin Schrödinger from 1935 at p. 2 in [6]. The *intact* Platonic quantum state (dubbed **John**) cannot have definite values, neither before nor after we measure it — quantum “superposition” of macroscopic classical states (see the cat states below) is an **oxymoron** (p. 14 in [6]).



There is no “collapse” in the quantum world (*ibid.*, p. 3). If you nevertheless prefer to follow the current QM textbooks, try to produce some “quantum time operator” from the trajectory of a single quantum particle, as demonstrated by Charles Wilson in 1911. Check out also Slides 6, 7, 8, 9, and 10 in [Quantum Spacetime](#), to fully understand the *atemporal* Platonic **matrix** (pp. 8-10 in [6]).

If you prefer to start from GR, don't forget the *bundle* of inertia & [gravitational rotation](#): read pp. 10-11 in [4] and p. 46 in [1]. By comparison, we know from QM that electrons do not revolve about the nucleus, like a pea travelling in a circle, and the same tallies to the “classically not describable two-valuedness” known as quantum spin ([Wolfgang Pauli](#)). In current GR textbooks, the [torsion](#) is eliminated *by hand* from the outset, and nobody knows how spacetime geometry could possibly “move” matter (MTW p. 5) to produce continuous macroscopic gravitational rotation. Also, nobody has tried to explain how the gravitational “field” was created, so that mass “there” — [the whole universe](#) — could determine inertia “here” ([John Wheeler](#)). The solution is very simple and [counterintuitive](#): read p. 3 [above](#).

Finally, let me quote from the abstract of my first paper ‘How to Bind Mind to Matter?’ from January 1990 (source at [this http URL](#)): “the description of the bond “between” mind and matter and the description of the topology of spacetime are, in essence, one and the same problem.” It took over twenty-three years to solve this immensely difficult problem, by suggesting a new theory of quantum gravity on [20 October 2013](#): read p. 3 [above](#). Little did I know back in January 1990 that we need brand new mathematics and quantum gravity (read p. 4 [above](#)) to understand the physics of Life (p. 9 in [6]). To quote Erwin Schrödinger from [18 November 1950](#) (*ibid.*, p. 2), every *physical* fact “definitely either *is* or is *not*”, whereas the *atemporal* Platonic quantum-gravitational *Res potentia* ‘neither *is* nor is *not*’. It is a different kind of reality (dubbed [John](#)), “just in the middle between possibility and reality” ([Werner Heisenberg](#)): read p. 2 [above](#).

As an illustration of *atemporal* Platonic *Res potentia*, recall John Wheeler's game of [Twenty Questions](#) (pp. 60-61 in [gravity.pdf](#)):

There had been a plot not to agree on an object to be guessed, but that each person, when asked, must give a truthful answer concerning some real object that was in his mind, and which was consistent with all the answers that had gone before. With only one question left, John Wheeler guessed: “Is it a cloud?”  
The answer was “Yes!”

The final answer ‘cloud’ was correlated with all previous answers, but it could not been physicalized from/by the Platonic idea of ‘cloud *per se*’ until the final question. But if you say ‘cloud’, you will not “collapse” the Platonic idea of ‘cloud *per se*’, which keeps its invariant *meaning*: try the experiment with your brain at p. 2 in [7]. Now just replace ‘meaning’ with *atemporal* Platonic **matrix** and read Slides 9 and 10 in [Quantum Spacetime](#), and p. 13 in [4]. Every *physicalized* ‘jacket’ occupies one single “point” in the [number line](#). All you need is [one click away](#).

As to the physicalized, [cloud-like](#) manifestation of gravity as inertia-and-gravitational rotation (read [above](#) and p. 35 in [1]), the *Bondi news*, which determines the energy flux of [gravitational radiation](#), cannot produce [holomovement](#) in the cosmos — read p. 3 [above](#). You need the ultimate *cutoff* on the physical universe (Q1 at p. 4 [above](#)) to define the [positivity mass conjecture](#) — you cannot “install” GW mirrors at [null-and-spacelike infinity](#).

To sum up, I offer three proposals (P) relevant to Mathematics and mathematical physics:

P1. New [pre-geometric manifold](#), called Zenon manifold (p. 1 [above](#)), in which all geometric points are emergent *physicalized* points ('jackets' or 'clouds'), whereas their common Platonic source [does not belong](#) [8] to its set of emergent *physicalized* geometric points. I also suggest corrections (explained in the [full paper](#)) to [point-set topology](#), [set theory](#), and [number theory](#), and new numbers called hyperimaginary numbers ( $|\mathbf{w}|^2 = 0$ ).

P2. Every geometric point has internal structure "along" the three types of *null intervals* ( $c^2 t^2 = r^2$ , see [Wikipedia](#)), such that these dynamic points *follow* the global Heraclitean time without any gaps whatsoever (p. 1 [above](#)), thanks to which we end up with *perfect* 4D spacetime continuum (local mode of spacetime) made by 'jackets' or 'clouds' (p. 7 [above](#)).

P3. The global and non-relational Heraclitean time (p. 25), depicted with the motion of 3D slit [up↑](#) (p. 5 [above](#)), is unobservable due to the "speed" of light  $\pm c$ : p. 4 and p. 31 in [1]. For if it were *physically* observable, we will face 'turtles all the way down' (p. 2 [above](#)).

Corollaries (C):

C1. The so-called Russell's paradox, revealed in 1899 by [Ernst Zermelo](#), is not applicable to Zenon manifold — the unphysical Platonic world (p. 11 in [1]), which can organize any [uncountable set](#) of elements "into a whole" (*Zusammenfassung zu einem Ganzen*, [Georg Cantor](#)), [does not belong](#) to any element of its own set. The unphysical Platonic world (read [8]) is the UNSpeakable (p. 2 in [7]) manifestation of 'absolute zero' (not 'zero of something', p. 30 in [1]), known as 'the monad without windows' (Leibniz).

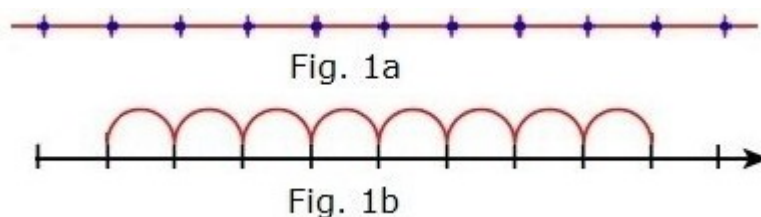
C2. Atemporal Platonic Universe as ONE (p. 4 [above](#)) and Platonic reality endowed with [self-action](#) (p. 3 [above](#)), presented with so-called global mode of spacetime spanned "along" null intervals [1]: spacetime engineering [4]. The *atemporal* Platonic world ([John](#)) is the common source of (i) its *physicalizable* eigenstates (e.g., 'cloud', p. 7 [above](#)) and in the case of gravity (ii) its *physicalizable* ([non-tensorial](#)) and *gravitalized* energy, momentum, and angular momentum (p. 7 [above](#)). Tensors are applicable only to a *physical* fact that "definitely either *is* or is *not*" ([Erwin Schrödinger](#)): no tensors in quantum gravity. For if geometry were *physical* fact, it could instruct matter/energy "[how to move](#)" only by some *physical* 'total field' (*Gesamtfeld*, Albert Einstein at p. 12 in [4]), which simply does not exist. There is no *direct* coupling of geometry to electromagnetic field in the first place, as we know after the unsuccessful efforts by [Gunnar Nordström](#) in 1914: p. 3 [above](#).

C3. To those who are only curious about how the Platonic [matrix](#) works (p. 7 [above](#)): recall the probability for [emergence of life](#). As [Fred Hoyle](#) remarked (p. 9 in [6]), the random emergence of even the simplest cell matches the likelihood that "a tornado sweeping through a junk-yard might assemble a [Boeing 747](#) from the materials therein." Or recall the collision deep below the surface of the Atlantic Ocean of two nuclear submarines in February 2009 (p. 18 in [7]) — the chance of such correlation is perhaps much higher than the chance of successful correlation of your 100 billion neurons and 100+ trillion synapses right above your neck (ensuing from your [prenatal brain](#)), so that you can read these lines. This is the Platonic [matrix](#) in action. The list goes on and on.

To demonstrate the Platonic [matrix](#), read the 'dark room' analogy at p. 5 [above](#) and recall how you create light in a dark room with a light bulb, which emits photons with rate, say,  $1.8 \times 10^{20}$  photons per second (Slide 9 in [Quantum Spacetime](#)), depicted with blue dots in Fig. 1a below. All photons (blue dots) are *identical* 'jackets' or 'clouds' (p. 7 [above](#)) cast by the Platonic [matrix](#) of 'photon *per se*', depicted in Fig. 1b [below](#).



Notice that EM radiation in Fig. 1a employs *background* spacetime continuum, thanks to which we can estimate the *rate* of app.  $1.8 \times 10^{20}$  photons per second, whereas the 'dark room' (p. 5 [above](#)) is the Platonic *matrix* depicted in Fig. 1b below. The latter is *precisely* nullified ( $|w|^2 = 0$ ) in the *physicalized* 4D (local mode of) spacetime (p. 31 in [1]) shown in Fig. 1a: read P1 [above](#).



The first off challenge to canonical quantum gravity and [the problem of time](#) is to suggest some "quantized" spacetime which, unlike EM radiation on *background* spacetime at Fig. 1a, does not have *any* background whatsoever. The problem resembles painting a picture without any canvas (p. 17 in [1]). The "canvas" might be 'something else' (C.J. Isham and J. Butterfield) that could only be hidden **between** the "quanta" of gravitational "field". Thus, Fig. 1a [above](#) would have to contain 'something else' that does not [8] belong to it:

[---one photon---]**between**[---one photon---]**between**[---one photon---

But how to describe some entity (P1), which must not exist as physical reality (p. 5)? We have similar situation in QFT, as the question of how *virtual particles* exist "before" they show up and "after" they go back to the *quantum vacuum* is quietly swept under the carpet, despite the fact that its precursor is known since 1935, thanks to Erwin Schrödinger (p. 2 in [6]). The only possible solution, in my opinion, is to employ the Platonic *matrix*: read p. 3 [above](#). As Bernhard Riemann stated in [June 1854](#), "Either the reality which underlies space must form a discrete manifoldness, or we must seek the ground of its metric relations outside it, in binding forces which act upon it." Just replace 'outside it' with the Platonic *matrix*. What happens locally, in the infinitesimal neighborhood of every geometric point, depends on [the entire Universe as ONE](#), and *vice versa* (C2 [above](#)).

If you disagree, check out the alternative approach with "*gravitons*" suggested by [Nobel Laureate](#) Kip Thorne, and try his experiment aimed at creating "gravitons" at p. 16 in [4]. Read also p. 25 (last) in [viXra:1712.0017vA](#). Sad but true.

Again, anything you were unable to understand will be entirely my fault. Should you have questions, please don't hesitate to contact me by [email](#).

But if you are [not interested](#) in the origin of Time and Continuum, as demonstrated with Zeno's paradox of motion (p. 1 [above](#)) — no problem ([Matthew 7:6](#)). Have a beer instead. As Max Planck pointed out in [1936](#):

An important scientific innovation rarely makes its way by gradually winning over and converting its opponents: it rarely happens that Saul becomes Paul. What does happen is that its opponents gradually die out and that the growing generation is familiarized with the idea from the beginning: another instance of the fact that the future lies with youth.

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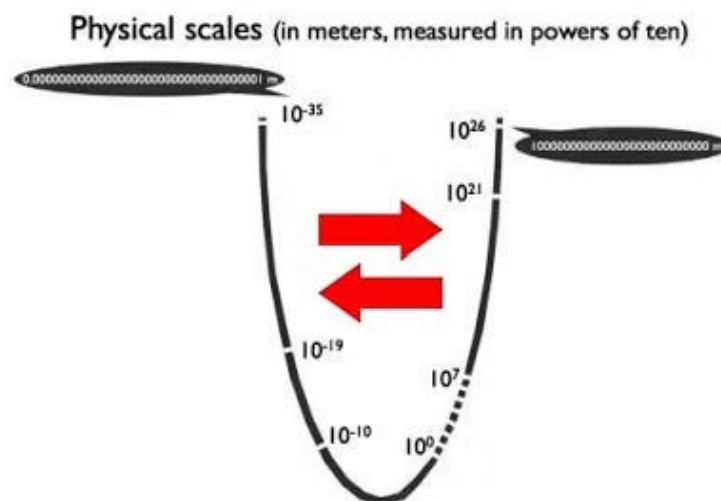
April 30, 2019

Last update: June 4, 2019, 14:30 GMT

## Note on Relative Scale (RS) Spacetime

Since I am relativist, I do not accept absolute *physical* phenomena, such as the absolute length scale ([Wikipedia](#)). The “length” of 1m and the “duration” of 1sec are *relational*, not absolute, physical phenomena. Relative to *what*? Here’s the outline of relative scale (RS) spacetime (p. 5 in [Gravitational Holomovement and Rotation](#)), with updated references.

Consider two observers, Alice and Bob, at the length scale of tables and chairs, and a table with length 1m in front of them. In RS spacetime, the **matrix** (p. 7) of the table will *shrink* it toward the Small and *inflate* it toward the Large. If Bob is co-moving with the table, he will *always* see *the same* invariant ( $\Delta s^2$ , [Wikipedia](#)) table in front of him. Relative to Alice ( $R_t = 1$ ), Bob’s table will *shrink* to the size of a proton and smaller, while *at the same instant* (Sic!) the same Bob and the same table will *inflate* to the size of galaxy clusters and beyond, after tweaking Bob’s **matrix** with  $R_t \in (0, \infty)$ . Yet the table will *always* have *invariant* length 1m with *invariant* duration of app. 3.33 nanoseconds light-travel time ([Fig. 9](#)) to both Alice and Bob in their respective scales: macroscopic scale with respect to Alice, and microscopic/astronomical scale as seen by Alice looking at Bob. It’s all relative. Read the explanation of relative scale (RS) spacetime (pp. 4-5 in [\[4\]](#)) below.



The space entanglement  $\rightleftarrows$  begins from the length scale of Alice ( $R_t = 1$ ) and ends at the Universe as ONE ( $R_t \rightarrow 0$  &  $R_t \rightarrow \infty$ ). Read p. 5 and p. 13 in [\[4\]](#).

Who has ‘the right meter’ and ‘the right second’, Alice or Bob? Wrong question. Their RS ‘meter’ and ‘second’ are not observer-independent quantities, but *flexible* ‘jackets’ (cf. John’s jackets parable in [CEN.pdf](#)) determined by their *atemporal* Platonic **matrix** (p. 7).

In my opinion, RS spacetime is *the* only way to unite quantum theory with gravity, since they will be “separated” only to Alice, while Bob will be *both* “small” like a proton *and* “large” like a galaxy, and will [EPR-like correlate](#) the entire RS spacetime *en bloc* (p. 9).

In RS spacetime, [gravity & rotation](#) (p. 46 in [\[1\]](#)) is determined by the spacetime **matrix** that creates the *entire* spacetime ([Slide 12](#)), only applied *locally* (Sic!): shrink the RS metric to produce so-called “cold dark matter” or inflate the RS metric to produce “dark energy” — always in dynamic ‘tug of war’ equilibrium. See the [Dipole Repeller](#) ([Vimeo](#)).

Now look at Fig. 9 in *Spacetime Physics*, by E.F. Taylor and J.A. Wheeler (source [here](#)).

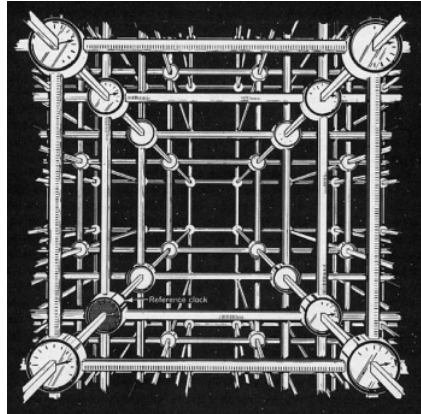


Fig. 9. Latticework of meter sticks and clocks.

The authors Edwin F. Taylor and John Archibald Wheeler explicitly acknowledged their metaphysical assumption that “every clock in the latticework, whatever its construction, has been **calibrated** (emphasis mine - D.C.) in meters of light-travel time” (source [here](#)).

This ‘calibration’ is the crux of RS spacetime. It is a global *atemporal* phenomenon, which is being **exactly** nullified in the physicalized 4D (local mode of) spacetime, once at a time (Fig. 1a at [p. 9](#)). If you look along the *vertical* motion of the 3D slit **up↑** at [p. 5](#), you will see different **photoshop-like** 4D layers, as both time *and* space are **already** being changed, “before” light (conversation with Stavros, p. 31 in [1]). Thus, we cannot see the global motion of 3D slit **up↑** ([p. 5](#)) viz. the omnipresent **luminiferous aether** (called **Macavity**), as confirmed by the **Michelson-Morley experiment**. We cannot “turn around” and look straight at the *atemporal* Platonic reality, in Plato’s parlance, nor detect “online” the Heraclitean *flow* of events (p. 11 in [1]) — it only makes the *physicalized* “shadows” **self-acting** ([p. 3](#)).

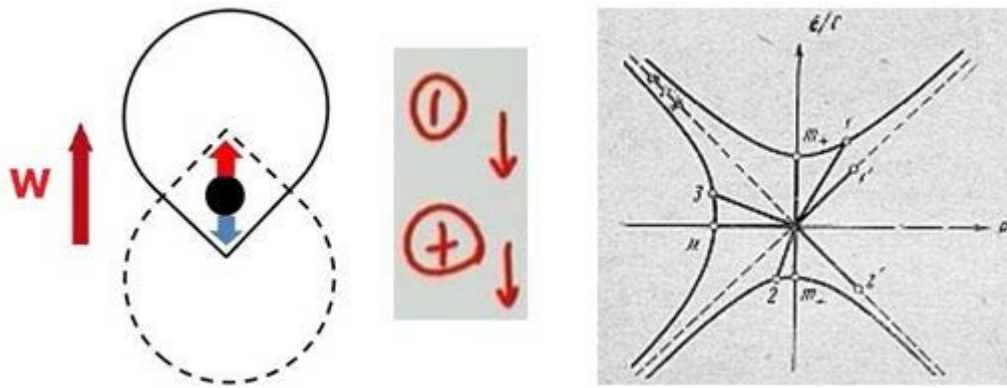
As an example, look at Fig. 1a at [p. 9](#) and the mechanism of creating light in Slide 9 in [Quantum Spacetime](#), discussed previously at [p. 8](#). The precise ‘calibration’ of creating app.  $1.8 \times 10^{20}$  *identical* photons *per second* is not a *bona fide* physical process, resembling, for example, flushing a toilet. In the latter case you can place all events on a timeline: before you flushed the toilet, the water was present in toilet’s reservoir, waiting patiently to be released down the pipe, with particular acceleration and gradually gaining speed at which it does its final job, then it takes some time to refill the reservoir with fresh water, etc.

Our case of creating *physicalized* photons is totally different — water is made of **bradyons** possessing real (not **imaginary**) non-zero rest mass, whereas **photons** are entirely different animals, as they do not exist as *physical* stuff ‘out there’, *before* they were created, and they do not “**accelerate**” either. In this sense, photons remotely resemble so-called **virtual particles** ([p. 9](#)). But where are they “located”? See Fig. 1b [above](#) and the equation at [p. 4](#).

Yes, we have *calibration* of the entire latticework “in meters of light-travel time” (Fig. 9), and the scale-dependent ‘meters of light-travel time’ produce relative Large and Small: read [p. 10 above](#). It’s all relative, as uncle Albert used to say.

Regarding the applications of RS spacetime, read the interpretation of the “expansion” of space at pp. 4-5 in [4] and the last paragraph at [p. 5 therein](#), about spacetime engineering.

The crux of the issue is the universal **self-action** (see below) and the equation at [p. 4](#).



Read p. 3 [above](#) and the references at p. 3 in [1].

Regarding the hypothetical Higgs field ([Ian Low](#)), which supposedly permeates the entire spacetime ([Ivo van Vulpen](#)) like some “invisible hobgoblins” ([Lawrence Krauss](#)), we are invited to believe that “fields that had no rest mass to begin with start to behave as though they were massive” ([Viktor Toth](#)). For example, the Higgs field imparted mass to the [intrinsically massless](#) W and Z bosons, thereby ‘slowing them down’ ([David J. Miller](#)).

Briefly, it is impossible to “recover” gravity by embedding such ‘retarded light’ hypothesis in the [Standard Model](#): read about the so-called “[gravitons](#)” at [p. 9](#). I believe the approach outlined at [p. 3](#) and [p. 4](#) offers [the only possible](#) path to [quantum gravity](#) and [cosmology](#), and [the only possible](#) explanation of the “dark” manifestations of gravity: read [p. 2](#).

However, the precise mechanism of *universal* repulsion, producing *positive* mass-energy (forget about the [Higgs field](#)), is still unclear. I suppose this phenomenon can create unlimited [self-acceleration](#) depicted in the second drawing [above](#). If [Baron Münchhausen](#) used spacetime engineering (p. 9 in [4]), perhaps he could fly effortlessly in the air (NASA called it ‘[propellantless propulsion](#)’), along with his brave horse. To quote Robert Powell and Alejandro Rojas from the Scientific Coalition for UAP Studies (source [here](#)):

Calculated AAV [anomalous aerial vehicle] accelerations ranged from 40 g-forces to hundreds of g-forces and estimated power based on a weight of one ton ranged from one to nine gigawatts. None of the navy witnesses reported having ever previously seen military or civilian vehicles with these maneuvering abilities. Manned aircraft such as the F-22 and F-35 are limited to nine g-forces and the F-35 has maintained structural integrity up to 13.5 g-forces. Our results suggest that given the available information the AAVs capabilities are beyond any known technology.

True, we still do not have scalable applications of spacetime engineering, perhaps because we still do not understand [Time and Continuum](#). Our ‘map’ ([p. 16](#)) is still at [conceptual level](#), much like the one used by [Christopher Columbus](#). But if he didn’t go west, with the insane hope to find shorter route to the Far East, how could he discover America?

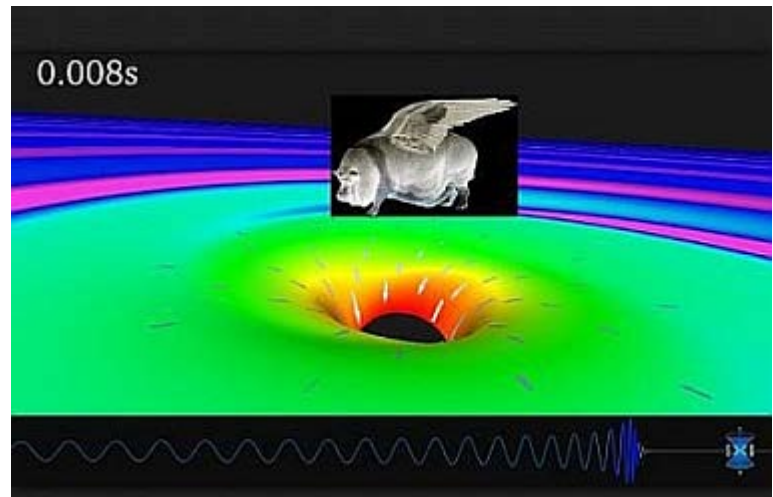
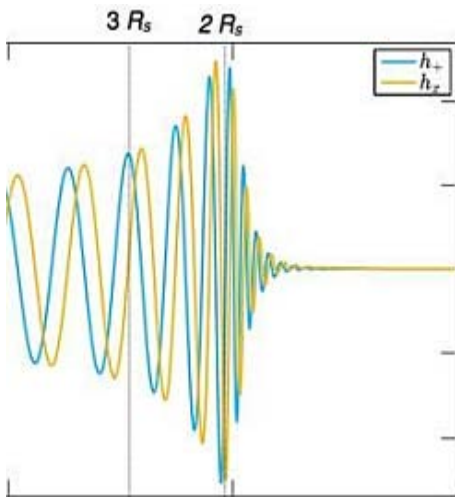
D. Chakalov  
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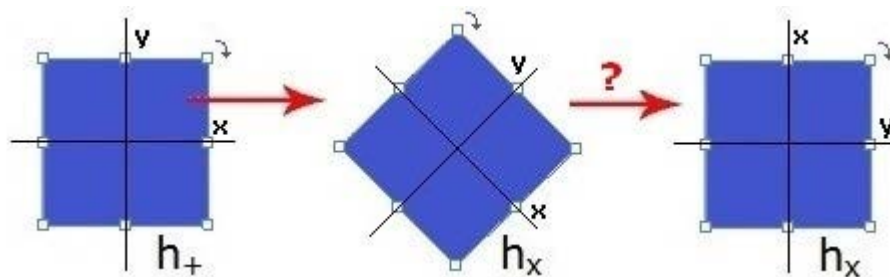


## The Persistent Mystery of Gravitational Radiation

The so-called [GW150914](#) is **FRAUD**: read p. 17 and p. 25 in [viXra:1712.0017vA](#). In February 2016, over 1500 “experts” in General Relativity (GR) declared *four* outstanding discoveries: (i) “gravitons” (Q2 in [gw\\_miracles.pdf](#)) with mass app.  $m_g \leq 7.7 \times 10^{-23} \text{ eV}/c^2$ , (ii) “vacuum” spacetime in which the **stress-energy tensor** is **zero** ( $T^{ab} = 0$ ), (iii) binary **black holes**, and (iv) gravitational “waves” (p. 15 in [gwa\\_rip.pdf](#)). According to [Kip Thorne](#), GW150914 were “by far the most powerful explosion humans have ever detected except for the big bang”, only it went off **completely** silent. Why? Because “a *vacuum* BBH merger does not produce any EM or particle emission whatsoever” (p. 9 in [arXiv:1602.08492v4](#)). It just **can't**.



Recall that in present-day GR “it would be hopeless to look for exact solutions for the gravitational waves emitted by realistic astrophysical sources” ([Michele Maggiore](#)). Thus, the first drawing above is “derived” by pure imagination and wishful thinking. It’s **FRAUD** (p. 25 in [viXra:1712.0017vA](#)). Read also *Gravitational Wave Miracles?* ([gw\\_miracles.pdf](#)).



**Q1:** What phenomenon could possibly produce an exact  $45^\circ$  angle between  $h_+$  and  $h_x$  and keep it **exactly** fixed **within** the “superposition” of these oscillating metric fields, in such way that the latter will *never* conflate and intermingle? What could sustain the *phases*?

**Q2:** How could these “gravitons” be arranged in **vacuum spacetime** to keep the  $45^\circ$  angle between  $h_+$  &  $h_x$ ? For if the angle reaches  $90^\circ$ , the net effect from  $h_+$  &  $h_x$  will be **zero**.

Forget it. The motto of [Kip Thorne et al.](#) is ‘**fake it** until you make it’. **BIG** mistake. Bernard Schutz explained the insoluble problems of gravitational radiation 17 years ago, on 2 August 2002 ([Schutz.pdf](#)). In the first place, there is no physical *structure* in **vacuum spacetime** to produce any “angle”, similar to, e.g., the H-O-H angle in **water molecule**.

The only available theory of [gravitational radiation](#), suggested by Hermann Bondi in 1961 (Josh Goldberg, private communication) and published in 1962 (Hermann Bondi *et al.*, [Paper VII](#)), cannot explain the fact that we observe only *one* type of mass. It is impossible in principle to define the [non-linear transport of energy](#) — both emission (loss) and absorption (gain) — with the *linearized* approximation of GR ([Jose Pereira](#)), adopted also in [Bondi's hypothesis](#). The latter uses *linear* perturbations of the Minkowski metric and [wrongly](#) suggests energy conservation in “[isolated system](#)” at [null infinity](#), just as Penrose did — [wrongly](#) — next year, in [January 1963](#). Here's the core problem in present-day GR.

Picture gravity as the *shape* of a mountain. The mountain is dead fixed and its shape does not “move” anywhere, just as the effects predicted by the Special and General Relativity, which are used to correct the GPS Navigation System (pp. 20-22 in [1]), are fixed on the “mountain”. Bondi's [news field](#) produces *changes* of the [stress-energy-momentum](#) of the mountain due to gravitational radiation, which instruct the physical mountain how to *move* ([MTW p. 5](#)), and the *gravitalized* mountain becomes **self-acting** ([p. 3](#)) viz. “dark” ([p. 2](#)).

Why? Because the detector of Bondi's *news field* can interact with only one of Escher's ‘drawing hands’ ([p. 3](#) in [4]), placed in the *right-hand* side of [Einstein's filed equations](#): the “mountain” as *Res extensa*, subjected to perpetual energy **non-conservation** ([p. 3](#)).

Geometry as  
potential  
reality or  
*Res potentia*



Matter as  
physical  
reality or  
*Res extensa*

Read [p. 3](#) in [4].

There is no background ‘[aether](#)’ in GR ([p. 9](#)) to *time* the [non-linear](#) interactions of the two ‘drawing hands’ above, to determine which goes first, the mountain's *shape* (*Res potentia* in the **potential** future) or the physical mountain (*Res extensa* in the irreversible past).

Thus, the genuine detector of gravitational radiation must *simultaneously* ‘feel’ both the Platonic state of the mountain, placed in the **potential** future, and the physicalizable, [cloud-like](#) mountain placed in the irreversible past. This is the crux of my proposal for *atom of geometry* possessing its own structure, dynamics, and topology ([p. 17](#) in [1]). It replaces the false “one single” dimensionless geometric point  $B \equiv A$  ([p. 1](#)), used also in current math textbooks to “define” closed and open intervals ([Wolfram](#)) and “derive” the murky idea of ‘[limit](#)’. See also the metric paradox at [p. 3](#) in [1] and read again [p. 3](#) [above](#).

To sum up, here are the two major ideas: (i) the continuum of spacetime ([p. 2](#)) is modeled with the *atemporal* axis **W** ([p. 12](#)) moving **up** ([p. 5](#)), which is *precisely* nullified in the *squared* ([Wikipedia](#)) and *physicalized* 4D spacetime orthogonal to **W**, and (ii) the *activity* (**C3**) of the cosmological time arrow ([p. 6](#)) is powered by the **self-acting Unmoved Mover**.

Regarding the “vertical” motion of the 3D slit **up** at p. 5: the entire *physicalized* world is being **re-created** and **re-rendered** by the “speed” of light (p. 11), at every *consecutive* 4D instant ‘here and now’, like **re-created** Phoenix Universe, with total energy being *always* “conserved”, that is, **nullified** (p. 4), once-at-a-time **AB** (p. 1), as read with your clock.

People still interpret mountain’s *shape* (**geometry**) as *physical* reality and try to present it with tensor in the *left-hand* side of **Einstein’s filed equations**, which is why this inherently *non-localizable* ‘drawing hand’ (p. 3 in [4]) must be **nullified** at every spacetime point (MTW p. 467), yet it remains “spread over” finite spacetime regions, as **non-local gravity**. Ditto to the quantum Platonic state, dubbed **John** [8]: it must be **nullified** at spacetime points as well, by wave function “**collapse**”, leaving only its **non-local entangled** “jackets”.

Back to **gravitational radiation**: I have been arguing, ever since 16 December 2015 (p. 14 in [scam.pdf](#)), that its detector must be endowed with **self-action** (p. 3 and p. 12) resembling the **human brain**. Mind you, the gravitational “**waves**” may look **weird**: watch Wong Yi Feng at the link at p. 6. All *three* types of mass (equation at p. 4 and drawings [here](#)) have to be included in the theory of gravitational radiation in order to understand gravity (p. 7) and its “dark energy” and “dark matter” (p. 2) in **dynamic ‘tug of war’** equilibrium (p. 10). As a spin-off, we might avoid the deadly **climate catastrophe**: “At this rate, it’s going to take nearly 400 years to transform the energy system” (James Temple, p. 5 in [6]).

Finally, may I add a historical remark. Forty-seven years ago, in June 1972, after studying physics for little over five months (I started in January 1972 at age 19), I suddenly got the feeling that I’ve finally understood the so-called **fictitious force** in GR. It was a *beautiful* feeling, which lasted until the end of 1973, and of course never came back. But in June 1972, I was very happy that I can “understand” GR, and decided to ask a friend of mine (he was teaching theoretical physics at the University of Sofia) for help: could it be that gravity acts as “mediator” of the human mind on its brain? After all, gravity is not a physical field, so what if the brain is influenced by the *metric field* in GR, producing the neural correlates of mind and consciousness? The idea was seriously stupid, of course, yet many years later I found an unexpected similarity between the *physicalized*, **cloud-like** manifestations of gravity and the “action” of the mind on its brain: read p. 3 **above**. Namely, the mind does not act **directly** on its brain, just as gravity mediated by ‘geometry’ does not act **directly** on its physical source placed in the *right-hand* side of **Einstein’s filed equations** — see the drawing **above**. Due to the “speed” of light, we can observe only *physical* stuff in its past light cone, and can only infer that both the human brain and the *gravitalized* matter have become **self-acting** (p. 3), being influenced by some “dark” stuff (p. 2). Simple, isn’t it?

People “intuitively” disagree, yet decide to keep silent and ignore my theory, ever since January 1990 (p. 7). But suppose that the *atemporal* Platonic reality (see **above**) did not exist. Then, in the case of the human brain, you’re left with Marxist-Leninist philosophy, according to which ‘the brain is the hardware and the mind is its software’, and you have to locate some *humongous* super-computer in the human brain, producing “1,000 trillion calculations per second” (source [here](#); read also [HBP.pdf](#)). In the case of GR, you have to discover some (infinitely large?) “field” offering **stress-energy-momentum** *exclusively* to gravity (Einstein called it ‘total field’, p. 12 in [4]), which is impossible, as we know after **Gunnar Nordström** in 1914 (C2 at p. 8). What do you do, then? You decide to *confine* the influence of gravity (MTW p. 5) *only* to ‘bare spacetime’, that is, to “vacuum” spacetime with **stress-energy tensor zero** ( $T^{ab} = 0$ ), as **Kip Thorne** and his collaborators did (read (ii) at p. 13), so that the “mountain” is *dead frozen* (p. 14), and you can happily use the **linearized approximation of GR** viz. *linear* perturbations of Minkowski metric in which “the gravitational field remains a **powerless shadow**” (Hermann Weyl, p. 9 in [gwa\\_rip.pdf](#)).

To summarize, the roots of Platonic theory of spacetime [1] are the proposals by Plato and Heraclitus (p. 11 in [1]), which require the *atemporal* reality (p. 11) of *Res potentia* — “just in the middle between possibility and reality” (Werner Heisenberg, read p. 7). It (not “He”) inhabits the potential **future** of the so-called *atom of geometry*, denoted previously with  $\underline{AB}$  (p. 1). The latter has its own structure, dynamics and topology (p. 17 in [1]).

This is the alternative to the alleged “future pointing” and “past pointing” vectors, which are introduced by hand (Piotr Chrusciel at p. 5). We don’t like mathematical poetry [3].

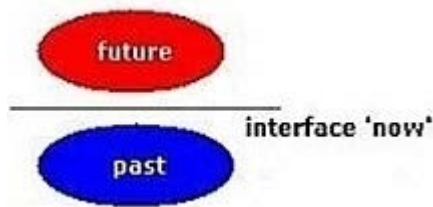


Fig. 3 at p. 7 in [4].

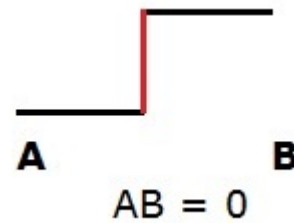
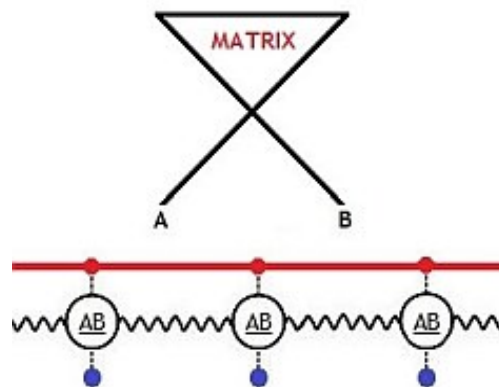


Fig. 2c at p. 14 in [4].

Let me zoom on the interface ‘here and now’ above, by “inserting” the *atemporal* global mode of spacetime (the ‘dark room’ at p. 5) “between” the infinitesimal  $\underline{AB}$ .



Drawing at p. 12 in [4].

At every consecutive interface ‘here and now’, the null interval  $\underline{AB}$  is *already* completed, as in Fig. 3 above.

**NB:** Notice that the Platonic reality or *Res potentia* does not exist *anywhere* in the **light cone** (p. 2 in [6] and p. 8 in viXra:1712.0017vA). It only has *physicalized* point-wise (Sic!) footprints in the form of matter or *Res extensa* in the **past** (p. 14) — see Fig. 3 above. Were *Res potentia* some **physical** field, it will have to be fixed in some section of the **light cone**, and one could place it on a timeline, like the water in toilet reservoir (p. 11), which will inevitably lead to **tachyons** and violation of **causality**. Bad idea, to say the least.

My model of causality, dubbed *biocausality* in January 1990 (link at p. 7), is **retarded** relativistic causality: the *atemporal* negotiation of Escher’s drawing hands (p. 14) is inserted “between” the infinitesimal  $\underline{AB}$  above (p. 1). The physicalized “cloud” (p. 7) as *Res extensa* is placed in the irreversible **past** in Fig. 3 above viz. at a “point” from the **real number line** shown with  $[AB]$  at p. 1 above. Hence the need for *hyperimaginary numbers*.

The best way to explain *biocausality* is with the problem to introduce ‘something else’ in canonical quantum gravity, which is the *source* of spacetime, yet is not ‘spacetime’ (p. 9).



Read the explanation of Zen by David Schiller (p. 17 in [7]): Before Zen, mountains are mountains and waters are waters; *during* Zen, mountains are no longer mountains and waters are not waters; after Zen, mountains are once again mountains and waters once again waters. If we place this sequence of events in the light cone (p. 16) and use the drawing at p. 9, it can be modified to *insert* Zen ]between[ 'mountains and waters'.

[---mountains and waters---] **Zen between** [---mountains and waters---]

But how come mountains are no longer mountains and waters are not waters *during* Zen?

**Zen** is Platonic *Res potentia* (drawing at p. 14) outside the light cone (p. 16). Insert the *non-event* ]Zen between[ within the infinitesimal AB (p. 1), namely, place **it** at the potential **future** in Fig. 3 above. Voila. Now you have EPR-like correlations at macroscopic scale (drawing at p. 16), for example, 100+ trillion correlations per second in your brain (C3 at p. 8). This is *biocausality*, as of January 1990 (p. 7). Thirty years later, I claim that we can explore the gravitational radiation (p. 15): Fig. E at p. 30. Ignore it at **your peril**.

Again, once we introduce global **non-relational Heraclitean time** — you cannot step twice into the same stream, p. 11 in [1] — we are dealing with *two* forms of reality: matter or *Res extensa* in the **past**, and Platonic reality or *Res potentia* in the **future**, depicted with Escher's drawing hands at p. 14 above. Due to the **invariant** "speed" of light, we can observe with light only the **past**, just as it takes roughly eight minutes to see the **past** state of the Sun (p. 31 in [1]). The photon itself is *atemporal*: read Kevin Brown at p. 4.

Thus, it is physically impossible (p. 16) to "see" the Platonic **matrix** (C3 at p. 8) with light. The latter shows only the irreversible **past**, whereas the Platonic *Res potentia* inhabits the *atemporal radius* of the 'inflating balloon' (p. 4) denoted with **W** at p. 5 and p. 21 below.

Many people are **still ignoring** my project, since January 1990 (p. 7), although they don't hesitate to **speculate** about some "invisible" forms of gravity, which cannot be traced back to any physical "**turtle**" *whatsoever*, so they called them "dark" (p. 2). This "dark" agent is supposed to operate *only* on 3D space, as if the latter were some "absolute space" (Michal Chodorowski, p. 10 in [4]), like the grin on cat's face *without* the cat (p. 15 in [1]).

My *conceptual* solution is spelled out at p. 10 above. People will probably complain that my evolution equation is still in symbolic form (p. 4), but what is the benefit of offering **mathematical equation** describing some "**dark**" mythical ghost that simply *cannot* exist? Just try the puzzle of Schrödinger time "parameter", known since 1911 (Charles Wilson).

We belong to the interface '**here and now**', like the ancient **Ouroboros** with two *dual* states (p. 3 in **Penrose-Norris Diagram**) and the god **Janus** looking simultaneously at the **past** and in the **future** (p. 2). We exist as perpetual 'flashes of light' (p. 5) denoted with AB (p. 1) — **one-flash-at-a-time** (Plato called it 'shadow', p. 11 in [1]) cast on a *perfect* continuum, without *any* gaps *whatsoever* (p. 1). This is how Time and Continuum are **interrelated**.

Thus, we can capture **absolutely all** points in [AB] (p. 1) with Finite Infinity (FI, p. 16 and p. 25 in [1]), as the "edge" of every point in [AB] is placed at its Platonic potential **future**, depicted in Fig. 3 above. There is no "boundary" of spacetime at the so-called 'omega point' ( $\Omega = 0$ , Roger Penrose). We don't accept the mathematical poetry of **Penrose-Norris Diagram** or the mathematical errors of their colleagues [3]. They simply cannot "install" **GW "mirrors"** at **null-and-spacelike infinity** and somehow "confine" the spacetime of the *entire* Universe to '**isolated system**', so that "its total energy-mass stays **constant**".

We need the so-called *evolution equation* in cosmology (p. 4), which re-sets (Sic!) the total energy-mass to zero — once-at-a-time.

Don't ever say that you knew nothing about it (p. 9).

In January 2020, commemorating 30 years of my first paper 'How to Bind Mind to Matter?' (p. 7), I will release the results from the experimental verification of RS spacetime (p. 10) and 'reversible elimination of inertial mass' (REIM), currently labeled as AAV (p. 12). Read the **Addendum** below.

D. Chakalov

June 4, 2019

Last update: January 15, 2020, 10:30 GMT

## Addendum

Today is Wednesday, January 15, 2020. Seven months ago, I uploaded this paper to viXra (viXra:1904.0315vG, 2019-06-22), and I've been waiting since 22 June 2019 for the reaction of my readers (p. 9). As stated at p. 1, the full (and perhaps quite boring) manuscript is available upon request. I zoom there on some issues in GR (p. 15), such as the Christoffel connection (Eq. 3.21, p. 60 in Sean Carroll) and the reason to "forget about the Christoffel symbols defining a tensor" (Edmund Bertschinger, p. 21). How come nobody mentions 'the elephant in the room' — the ubiquitous gravitational rotation (p. 7)? Bottom line is this: we cannot use tensors to describe the *not-yet-physicalized* gravity and inertia (C2 at p. 8).

As to present-day Quantum Theory, the mathematical presentation of 'the quantum state' (John) is completely unknown (p. 6): recall (i) Erwin Schrödinger (p. 7) and (ii) the famous Kochen-Specker (KS) theorem, by Helena Granström, at p. 2 in [6]. Regarding (i), Erwin Schrödinger explained the problem with using probabilities in QM on 18 November 1950: *the quantum state does not possess 'full reality' — it is not context-independent state*, like the Moon when no-one is looking at it. In GR parlance, it cannot be full-reality tensorial quantity (cf. Edmund Bertschinger above). If it were 'full reality', it will be like a dice in the air, before landing on a table to show one of its sides, with 1/6 probability. Or like a spinning coin (p. 14 in [6]). No way. As to Kochen-Specker (KS) theorem (ii), what kind of stuff are those 32% **Uncolorizable** (whatever)? If the *colourable* fraction "tends to 68% as N approaches infinity" (Helena Granström, arXiv:quant-ph/0612103v2, p. 2), the remaining 32% will be the **Uncolorizable** 'monad without windows' (Slide 13 in Quantum Spacetime). Sounds complicated, so let me explain the crux of KS theorem. Suppose you have three guys ( $H_{\text{dim}} \geq 3$ ), who can show *simultaneously* either their right hands, or their left hands, or their two hands. If the three guys could *simultaneously* do it, the "colouring" of KS sphere will be 100% complete. Only it isn't, because it can't. Suppose the first guy shows 'two hands', and at the same instant the second one shows 'right hand': which 'hand' will show the third guy? His 'left hand', correct? **Wrong**. The poor guy will not have *any* arms. He will be shifted to the 32% **Uncolorizable** above. But if the next time he shows any of his hand(s), one of the remaining guys will have to be shifted to the same 32% **Uncolorizable**.

Crazy, isn't it? Yet in many instances QM and GR work very well, despite being essentially incomplete theories. The situation resembles the 'yellow button' story at p. 15 in [7]. We don't know how it works and can only try to understand its mechanism (pp. 41-46 in [1]).

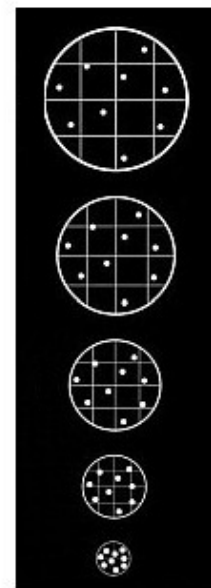
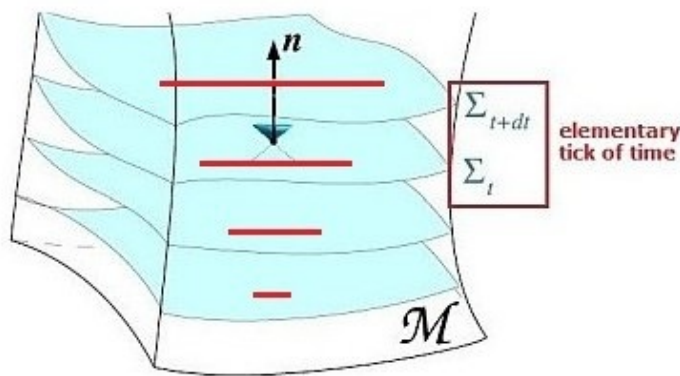
Let me first explain the puzzle with the *non-tensorial* Christoffel symbols denoted with  $\Gamma$ .

Suppose you are located in London, and speak over the phone with a friend of yours in Paris. It's a clear night and you see the Moon. You ask your friend if he can see the Moon, and he says — yes, I can see it, too. Which means that the Moon has 'full reality' (p. 18) and its state can be described (if needed) with a [tensor](#). But if only *you* can see the Moon from London, whereas your friend in Paris (with different coordinates) cannot, we have a *non-tensorial puzzle*. This is the mathematical "answer" by classical GR to objects that are 'potential reality' (p. 15) — classical GR can handle *only* 'physical reality' placed in the past (p. 14). Here's a remote analogy: if the only tool you have is a hammer, everything will look to you like a **nail**. So, if you're dealing with a stone, your "answer" will be that it is some "**non-nail**" stuff. There's *nothing* more you could say about such **non-nail** stones.

There is no physical field offering [stress-energy-momentum](#) *exclusively* to gravity (p. 15), and GR "answers" this fact by *camouflaging* the stress-energy-momentum from geometry (MTW p. 467) as *non-tensorial* object (p. 15) — it may show up in [London](#), but not in [Paris](#). Otherwise gravity will be *bona fide* classical field, and there could be *conservation* of the total energy. Instead ([Hermann Bondi](#)), we have perpetual energy **non-conservation** (p. 3).

Not surprisingly, the most powerful phenomenon, driven by *non-tensorial* gravitational energy (MTW p. 467), cannot be captured with classical GR, and many (otherwise [smart](#)) people called it "dark" (p. 2). Why "dark"? Because it *cannot* be traced to any physical 'turtle' (*ibid.*) that can emit or reflect light. If it could, gravity will be *bona fide* classical field, like electromagnetic (EM) field described with [tensors](#). Simple, isn't it?

Now look at the alleged "accelerated expansion" of the Universe ([Nobel Prize in Physics 2011](#)) depicted with the **red lines** below, and with the [balloon metaphor](#) (p. 5) depicted in the drawing at right.



See the drawing at [p. 6](#).

Drawings at [p. 5](#) and [p. 21](#).

Do you smell rat? The "accelerated expansion" of space does *not* affect the "orthogonal" vector  $\mathbf{n}^\uparrow$  in the left drawing above, introduced in numerical relativity with the idiotic "splitting" of spacetime into 'space + time' (p. 6). We end up with the fictitious "absolute space" (Michal Chodorowski, p. 17), which is now subjected to "accelerated expansion", as depicted with the **red lines** above and with the balloon metaphor (p. 5) at right above. People look at the **red lines** with *increasing* length and wrongly claim that "more space" has been "created", as if they evaluate digital images build up with identical **finite-size** pixels (p. 17 in [1]), and now these images are expanding, hence capturing "more space".

Well, if you use Archimedean topology (p. 16 in [1]), you will use metric and hence will be able to *count* the individual **red** pixels in all **red lines above**, one by one, or to calculate them by dividing the length of the **red lines** by the length of one **red** pixel. For example, in the so-called loop quantum gravity, mathematical physicists have “calculated” their **red** pixels, roughly  $10^{99}$  “atoms of volume” in every cubic centimeter of space (Lee Smolin).

However, it is impossible in principle to *count* the spacetime “points”, because they are *uncountably* infinite (p. 18 in [1]). Unless of course you’re Chuck Norris or Roger Penrose.

NB: There is no metric in the *pre-geometric* (P1 at p. 8) realm of *atemporal* Platonic *Res potentia* (p. 14). There is no water ]between[ (p. 17) two molecules of water, yet the “water molecules” (*Res extensa* in the past, p. 16) must be separated by ‘something else’ (p. 9). Otherwise there can be no motion (p. 1) and hence no Time and Continuum (p. 2).

For example, look at the three “water molecules” denoted with AB in my clumsy drawing at p. 16: the stuff marked with wave line ]between[ them (p. 17) is the entire Platonic Universe as ONE (C2 at p. 8). If you wish to place the latter in the **light cone**, you may need “transcendent tachyon” (Erasmus Recami), which should be at absolute rest (notice the **red line there**), being absolutely everywhere in no time, with infinite speed. Instead of fictional “tachyons”, I use the proposals by Plato and Heraclitus (p. 11 in [1]) and eliminate all “gaps” in the spacetime continuum (p. 5), made by ‘something else’ (p. 9).

The alternative to the alleged “expansion” of the physical world (p. 19), based on the so-called relative scale (RS) spacetime, is explained at pp. 4-5 in [4] and at pp. 10-12 **above**. Let me go back to the predictions of RS spacetime, mentioned in June last year (p. 18).

If you see people flying in the air (p. 9 in [4]), don’t call it “magic” (p. 6). Read p. 15 and pp. 41-46 in [1] instead. You have to get a grip on the Platonic **matrix** (C3 at p. 8), which controls the *not-yet-physicalized* gravity and **inertia** (C2 at p. 8), and follow the Law of Reversed Effort (p. 9 in [1]). It is a very simple skill, like juggling three balls (p. 9 in [6]). And you will never fall on the street, just as you won’t fall on the floor while walking on it. Don’t drink and fly, of course! ☺

Watch ‘Spacetime Engineering 101’ (text version **below**) from 15.01.2020 at this http URL.

January 15, 2020, 10:30 GMT





## Spacetime Engineering 101

This is the symbolic presentation of spacetime engineering (p. 5 in [4]): you only have to swing the carrot (the *potential* future, C2 at p. 8) toward your desired destination in the future, and the donkey (p. 16) will carry you and the cart there (p. 4).



But where is the *potential* future? It is Platonic reality, called *Res potentia* (p. 16), which (not “Who”) lives along the (hyperimaginary) axis **W** depicted in Fig. A and in Fig. B below.

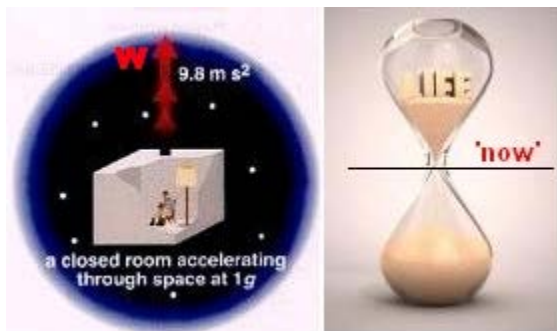


Fig. A

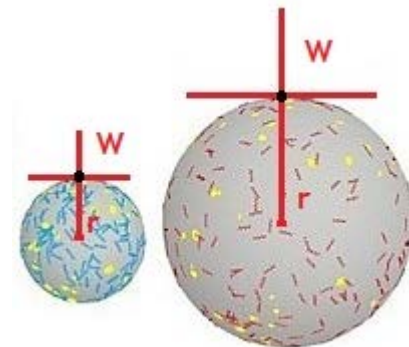


Fig. B, p. 11 in [4]

The axis **W** in Fig. A is shown in the drawing at p. 5. The two black dots in Fig. B denote two *consecutive* 4D events ‘here and now’, which have only *footprints* in the irreversible **past** (Fig. 3 at p. 16) in terms of geometric “points” from the real number line shown with [AB] at p. 1. Also, the two black dots in Fig. B are light-like intervals with **zero** duration. As explained previously in Wikipedia, “in a light-like interval, the spatial distance between two events is exactly balanced by the time between the two events. The events define a **squared** spacetime interval of zero ( $s^2 = 0$ ). **Light-like intervals** are also known as “null” intervals.” Notice the importance of the (hyperimaginary) axis **W** “erected” at light-like intervals — it is both along the **radius r** (Fig. B) of the inflating “balloon” (p. 5 and p. 19) and orthogonal to it. Read about the normal and tangential directions at [this http URL](http://www.kevinbrown.org/). It will be difficult to overestimate the importance of this mathematical fact (Kevin Brown).

Yet mathematical relativity cannot suggest any ideas about the origin of **Time**: What is pulling **up↑** the entire universe *en bloc* (Fig. A) and *simultaneously* “**inflating**” it (Fig. B)?

We know from observational cosmology that this immensely powerful phenomenon *cannot* be traced to any physical ‘turtle’ (p. 2), which can emit or reflect light (p. 19). Secondly, can we nevertheless access it with our brains (C3 at p. 8), to ‘swing the carrot’ (p. 21)?

The answer offered to the first question goes back to the **Unmoved Mover** by Aristotle. He suggested a new type of ‘limit’ in the **infinite regress argument**, namely, “there cannot be an **infinite series** of moved movers. If it is true that when A is in motion there must be some B that moves A, then if B is itself in motion there must be some C moving B, and so on.” This series cannot go on forever — it must come to a halt/limit in some object that is the universal cause of motion and **Time**, because it (not “He”) is moved *only by itself* — the **Unmoved Mover**, depicted at p. 12. Thus, the final **Unmoved Mover** *cannot* belong to its set of ‘moved movers’ (turtles, p. 2), which leads to the Zenon manifold (P1 at p. 8).

The second question can be reformulated in the following fashion: can we access the final **Unmoved Mover** with our **brains**? If the entire Universe is designed like a Brain [6] — maybe we can, provided that we also include the proposals by Plato and Heraclitus (p. 11 in [1]).

Let me offer a simple experiment, which you can perform with your own brain (p. 2 in [7]), to show how your brain can **act on itself**, thereby utilizing the **Unmoved Mover**. Otherwise you’ll need some super computer in your brain (p. 15), or parapsychological “ghost” (p. 3). Have you asked yourself, what could be the **physics** of the **human brain** (p. 7), so that it can be equipped with mind, consciousness, memory, volition, and all the rest labeled with *Res cogitans*? If you don’t accept Marxist-Leninist crap (p. 15) nor paranormal ghosts (p. 3), read the story from June 1972 at p. 15 and p. 8 in [6], and then try the experiment below.

Consider the *meanings* explicated with the four sayings below:

1. You can’t hide a piece of broccoli in a glass of milk.
2. Who has no horse may ride on a staff.
3. Don’t wear polka dot underwear under white shorts.
4. Faute de mieux, on couche avec sa femme.

If you can understand these sayings, which of them presented similar meanings? My answer: 1 & 3 and 2 & 4.

Surely all words, in all languages, *must* be somehow “**encoded**” in the **human brain**, but **not** their *meanings*. The latter (**not** the encoded **words**) are *invariant* in all human brains, despite the inevitable structural and neural differences between these brains (HBP.pdf).

But here we’re facing another phenomenon: the **action on** your brain, *by* your brain, to reach the answer 1 & 3 and 2 & 4 above. You “operate” with some **UNSpeakable** cognitive vacuum, from which you can freely, upon your free will, **pull out** particular ‘meanings’ in all four cases above, *examine* them, and deliver the answer. This action is exactly brain’s **self-action**: your brain is **acting on itself**, thereby utilizing the **Unmoved Mover** (p. 21).

Why? Because, on the one hand, your brain does keep “**encoded**” neural *correlates* (Sic!) of all words in the four sayings above, but on the other, your brain does **not** interact, in any way, shape or form whatsoever, with the *atemporal* **UNSpeakable** cognitive vacuum. Why not? Because it **can’t**. Your brain **cannot** access some sort of “superposition” of all possible knowledge stored in the **UNSpeakable** cognitive vacuum, including the one pertaining to ‘the *unknown* unknown’. This is what makes it **UNSpeakable** (p. 18). Your brain operates **only with/by** the neural *correlates* **acting on themselves**, thanks to the **Unmoved Mover**.

These **self-acting** 'neural correlates of consciousness' (NCC) are EPR-like *entangled* (Henry Stapp), exhibiting **wave-like holomovement**. (QM can offer only one single glimpse at it, because the wave function must be collapsed in the *inanimate* macroscopic world, p. 15.)

Again, the *origin* of biological entanglement is **UNspeakable** and **UNcolorizable** (p. 18), which leads to the Zenon manifold (P1 at p. 8). Thus, we can observe **self-acting** NCC only. By the same token, the 'closed room' in Fig. A above is indeed **closed system**, which is why it is also endowed with Aristotelian **self-action**. Ditto to the *non-localizable* origin of gravity, which must be nullified as well (p. 15), leaving only its **non-local** and **self-acting** 'clouds' (p. 7). This is the price to pay for *metric* theory of gravity. As Wolfgang Rindler noticed (p. 22), "The equality of inertial and active gravitational mass then remains as puzzling as ever. It would be nice if the inertial mass of an accelerating particle (Fig. A above — D.C.) were simply a **back-reaction** to its own gravitational field, but that is not the case". The universal 'back reaction' (Dennis Sciama) is highly non-trivial phenomenon (p. 7), as every object 'thinks globally and acts locally' (C2 at p. 8).

If you disagree, you have two alternatives to explore: either Marxist-Leninist crap (p. 15) or paranormal ghosts (p. 3), whichever comes first.

I prefer to postulate a *dual* Cognitive-and-Quantum Vacuum (CQV) as the field of spacetime engineering. To understand the phenomenon of *duality* in the doctrine of *trialism*, read pp. 11-12 in [6], and also p. 8 *therein*. We are not dealing with some "magic" (p. 6 and p. 12).

Nowadays people speculate about negative mass (Wikipedia) and **negative pressure**. They imagine a pair of positive and negative mass, and claim that the resulting **runaway effect** (see the drawing below, from Robert Nemiroff at pp. 13-14 in [7]) will be "anomalous".



However, the speculations about negative energy densities are *not* applicable to Platonic theory of spacetime (p. 16). The irreversible **past** in the *atom of geometry* (Fig. 3 and p. 17 in [1]) contains only positive mass: any time we look *with light* at the **past**, **Macavity** has **already** disappeared (p. 17), as it has exactly **zero** chance to exist as physical reality. We can only notice that the *physicalized* reality has been **acting on itself**, thereby utilizing the **Unmoved Mover** (read above). Hence the need for a brand new theory of gravity (p. 15). Just don't call gravity "dark" (p. 2). The *medium* of **GWs** to **travel through** is not "dark". It is an instantaneous global phenomenon, felt by all objects with mass in the Universe, all at once, thanks to which every object 'thinks globally and acts locally'. Here's an example.

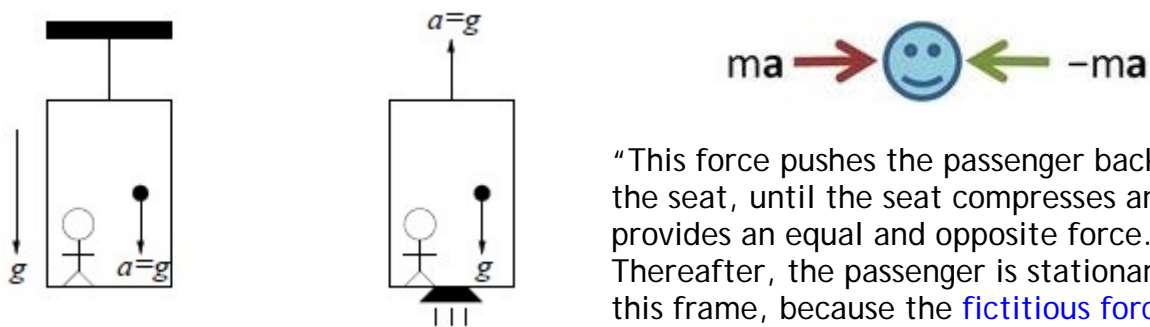
Did you notice the "dark space" around the "elevator" as '**closed system**' in Fig. A above? It is pictured as "dark", because it exists **between** light quanta in Fig. 1a at p. 9. People call it "vacuum", but it does *not* exist as 'physical reality' (p. 11), as we know after the **Michelson-Morley experiment**. In other words, the omnipresent **luminiferous aether**, called also **Macavity**, is *atemporal* Platonic reality (p. 16). Thus, you may not interpret EM radiation as 'light waves' travelling in any *physical* medium (**Zen**).

As Justin Christensen explained (December 26, 2017), "waves travel in water because the water molecules pile up and then push other water molecules out of their way as they try to move downward under the force of gravity, and sound waves move in solids, liquids, and

gasses because the atoms in these act like springs that oscillate when compressed or stretched from their equilibrium position. All of these examples only work because there is *something* there for the waves to **travel through**. If you take away the medium there are no waves." Yet we "take away the medium" — there is no **physical absolute reference frame** — and nevertheless observe EM radiation with **invariant speed**. In short, read p. 5 **above** and keep in mind that every photon (p. 8) is Wheeler's 'cloud' (p. 7). **Simple, no?**

These are the basic basics of **spacetime engineering**, in just sixteen pages (pp. 16-31). But there are many references and links, which you should follow and study thoroughly. Point is, there is nothing "mysterious" here, and you don't need any special "gifts" either. It is all about *learning* (p. 43 in [1]), like learning to juggle three balls in the air (p. 9 in [6]). Once you *understand* the Platonic theory of spacetime, your **brain** (Sic!) will develop the **mental image** from the Platonic **matrix** (C3 at p. 8) and you will be practicing spacetime engineering, too (p. 20).

Watch the demonstrations of 'reversible elimination of inertial mass' (**REIM**), released to the public on 15 January 2020, at [this http URL](#). The first demonstration involves an apple, which can fall from an apple tree, as observed by **Isaac Newton**. If you place the same apple on the driving seat next to you in your car and press the accelerator, the apple will "**push back**" the seat due to its **inertia**:  $(g \downarrow) = (ma \rightarrow)$  (see the drawing at right below).



$$(g \downarrow) = (ma \rightarrow)$$

See Fig. A **above**

"This force pushes the passenger back into the seat, until the seat compresses and provides an equal and opposite force. Thereafter, the passenger is stationary in this frame, because the **fictitious force** and the real force of the seat are balanced."

Adapted from [Wikipedia](#)

But the two **non-relational** "directions" along **W** in Fig. A and Fig. B **above**, **up↑** (p. 19) and **←sideways→** ("dark"), are *precisely* nullified in the physical world, leaving only their **non-local** 4D footprints (p. 16). As explained by **Laszlo Szabados**, "the gravitational energy and the spatial stress *cannot be localized at a point*, i.e. they suffer from the ambiguity in the gravitational force **above**." I believe have offered the **solution** to this "ambiguity".

Now look at the REIM equation below (p. 20 and pp. 41-46 in [1]):

$$(g \downarrow) = (ma \rightarrow) = \sim 0. \quad (\text{Eq. 1})$$

The gravitational and inertial mass are not exactly zero (Eq. 1), but are asymptotically approaching zero (e.g., "positive energy density of about  $6 \times 10^{-10}$  joules per cubic meter", **John Baez**). Can we tweak (reversibly, of course) their *atemporal* CQV state (p. 23), just "before" it will become a *physicalized* 'cloud' (p. 16)? Can we 'swing the carrot' (p. 21)?

Yes we can. Have you noticed that your thoughts do not have inertia? You can "accelerate" them instantaneously, like AAVs (p. 12). So, take *this* apple (app. 230g) and **let it become** — **effortlessly** — an CQV "thought". This is **REIM**, not some weird eldritch "magic" (p. 6).



Taking the risk to be very boring, I will again stress that the **self-acting** activity of the **human brain** (p. 22) — the brain acts on itself, *by itself* (p. 3) — is “counterintuitive” due to the nature of the new **pre-geometric manifold**, called Zenon manifold (P1 at p. 8): the cognitive-and-quantum vacuum (p. 23) does not belong to the set of its non-denumerable explications, both cognitive (*Res cogitans*) and neural (*Res extensa*), which is why this **dual CQV** (dubbed ‘trunk’, p. 11 in [6]) is **UNspeakable** (p. 22) and **UNcolorizable** (p. 18). The way we “operate” with CQV is indeed paradoxical. In the context of ‘John’s jackets’, we are only EPR-like *entangled* “**jackets**” (p. 2), both mental and physical ones (p. 22).

Let me compare the way we “operate” with CQV with fishing at a lake: you sit at the lake and have caught many fish, which you dump in a bucket next to you. Simple and clear. Now try to imagine the following situation: you are *always* ‘sitting at the lake’, only you can never see, touch, smell, or in any other way detect the lake itself. Why not? Because it is ‘**vacuum**’. Also, you *always* release every fish in your bucket back to the lake (vacuum), yet you can *always* pull it out of the lake and drop it in your bucket, anytime you need it (**memory recollection**). Then you notice that all *real* fish in your bucket (not the “**virtual**” ones in the “**nullified**” lake) are correlated and have become somehow **non-local** (p. 15), being directed by their *atemporal* Platonic **matrix** (C3 at p. 8), for example, by the **matrix** of creating identical photons (p. 11) or protons (Slide 10 in **Quantum Spacetime**). Capiche?

Thus, all Platonic **matrix** are “embedded” in each other, being ‘both one and many’, like the **Leibniz monad**. They build the Platonic **memory** of the Universe. For example, suppose you are slicing onion with a kitchen knife and accidentally cut your finger — you put plaster on it to heal faster and after a few hours it won’t bleed, and on the next day your skin will recover completely. Looks trivial, but recall that there is no ‘skin computer’ and custom-made software application nor some ‘skin ghost’ (p. 23), which is “inserted” in every **skin cell** to execute such process, *just* in case you cut your finger. It is the Platonic **matrix** of your body, which acts as body’s **memory**: *if* A, then B. Ditto to the entire ‘Brain of the Universe’ (p. 22). As John A. Wheeler stressed (MTV p. 1215): “No acceptable explanation for the miraculous identity of particles of the same type has ever been put forward. That identity must be regarded, not as a triviality, but as a *central mystery* of physics.”

There is no “uncertainty” in the quantum world. None. God casts the **matrix**, not the dice. Der Herrott würfelt nicht, wirklich (p. 26 in [1]). Dead matter makes quantum jumps; the living and quantum-gravitational matter is smarter. Read p. 16 **above**.

The second REIM demonstration is a bit similar to the one by **Steve Freyne**, also in London. It required permission and logistical support by the municipal authorities, coordinated by a number of journalists at **BBC Four** and other individuals (pp. 4-5 in [6]). First, some history.

On **16 July 1997**, I tried to address the **UNdefinable Matrix** (p. 5 and p. 26 in [1]): is it real, or not? Or perhaps **both**, being some kind of cognitive-and-quantum vacuum (p. 23)?

But what if **nobody** cares? My first paper from January 1990 (p. 7) didn’t spark any interest, perhaps because it was too philosophical. But look at the bold facts, both physical and mathematical, about the so-called GW150914 at p. 13: how come *nobody* is interested?

The **only** reason to go public is to trigger professional discussion of the origin of gravity and inertia (p. 7), including the **gravitational rotation** (p. 11 in [4] and pp. 34-36 in [1]), and expose the insoluble problems with the so-called **GW150914**: was it some Biblical “miracle” or plain **FRAUD**? Have you seen pink unicorns dancing with red herrings? That’s **GW150914**.

But here's the point: I need financial support to organize a large-scale REIM demonstration in London. Don't want to advertise some beverage, like [Steve Freyne](#), or new cat food, say. Moreover, I have to convince all administrative officials and journalists, who can organize such demonstration, that I am *not* offering some "street magic" to entertain the tourists in London, but a groundbreaking theory of the *origin* of gravity ([p. 3](#)), which can be accessed by every human [brain](#). Nothing more, nothing less. How can I do that, in under 5 minutes?

It's very simple. All effects of gravity, including gravitational rotation ([Richard Feynman](#)), are *mediated* by geometry — the grin of Cheshire cat *without* the cat ([p. 15](#) in [\[1\]](#)). Thus, people offer two alternative options to "explain" the *action* of geometry on its material source ([MTW p. 5](#)): (i) either gravity is some physical field, like electromagnetic ([EM](#)) field, or (ii) gravity acts on matter like some paranormal "ghost" that acts without being acted upon. My solution is totally different ([p. 3](#) and [p. 15](#)). Let me compare it to option (i).

For example, the *origin* of pizza is ... pizza. Suppose you order a pizza, which is delivered at your doorstep, and then you bring it in your kitchen. The pizza you have in your kitchen, and the pizza cooked previously in the restaurant, are *identical*, so if you think of gravity as a pizza, you must conclude that the contribution of gravity to your lunch (the right-hand side of Einstein's field equations, [Mendel Sachs](#)) is *exactly* the same 'pizza' that was cooked in the restaurant earlier. If true, gravity will be some *physical* field (i), and the conservation of the total mass of the system 'the pizza shop & your house' will not be violated. It is like withdrawing cash from ATM ([p. 3](#) in [CEN.pdf](#)). It may look simple and "intuitively clear", only there is a problem: this is *not* the case chosen by Nature ([p. 16](#)).

Namely, the *shape* of a pizza is like the *shape* of a mountain ([p. 14](#)). The 'shape' has its source — the physical pizza in the right-hand side of Einstein's field equations — yet the 'shape' can feed back ([p. 14](#)) its physical source and instruct it how to *move* ([MTW p. 5](#)), by *injecting stress-energy-momentum* ([Robert Wald](#)) into the *gravitalized* pizza/matter. It should be agonizingly clear that the [classical physics](#) *cannot* explain the gravity  $\rightleftharpoons$  matter conversions ([p. 15](#)) and their "waves" ([p. 13](#)): read [p. 21](#) in [\[1\]](#). Forget about (i) and (ii).

To sum up, the origin of gravity *cannot* be explained by any classical 'pizza' theory, such as General Relativity ([p. 19](#)), yet my theory is *not* similar to the current Quantum Mechanics either ([p. 3](#)), as I've been arguing since December 2015 ([p. 15](#)). We need a brand new theory (forget about tensors, [p. 15](#)), which could also explain the *origin* of inertia. The latter is a total mystery. People read in [Wikipedia](#) that clocks that are far from massive bodies *run* more quickly, compared to clocks close to massive bodies, which *run* more slowly: if we consider the time-span of Earth (4.6 billion years), "a clock set at the peak of Mount Everest would be about 39 hours ahead of a clock set at sea level."

But how could we define the *rate* of time? One second per second? We may not even *think* of the fundamental 'tick of time'  $dt$  ([p. 6](#)) as some *finite* "tile" ([p. 20](#)), as shown below.



Compare the tiles with Fig. 9 at [p. 11](#) [above](#).

Again from [Wikipedia](#): “Gravitational time dilation has been experimentally measured using atomic clocks on airplanes. The clocks aboard the airplanes were slightly faster than clocks on the ground.” Fact. Read about the corrections to GPS Navigation System at p. 20 in [1].

What if we tweak the [rate of time](#) of an apple (app. 230g, [p. 24](#)) at sea level (London) to match the *rate* of time of the same apple in a space ship orbiting Earth at [stationary orbit](#)? The apple will become [weightless](#). This is ‘reversible elimination of inertial mass’ (REIM), also known as AAV ([p. 12](#)). Only our perception of the passage of time might “slow down” a bit, as if we’re watching a video clip recorded at 60fps, at 30fps (30 “tiles” [per second](#)).

Needless to say, we have many more open questions in GR ([p. 15](#)), including the ubiquitous gravitational rotation ([p. 7](#)): read [Richard Feynman](#). We do need an extensive professional discussion of the origin of gravity and inertia ([p. 25](#)), because in the presence of gravity (Carl Hoefer, [p. 196](#)) the total mass-energy is not conserved in the first place ([p. 19](#)). The speculations about some “[gravitational quadrupole](#)” are **false**. We have to examine the *three* types of mass ([p. 15](#)) and the possibility whether the **non-linear** ([Ruben Aldrovandi](#)) mass-energy monopole radiation could “leak” *positive* mass-energy, both in and out of a system, as suggested in the evolution equation ([p. 4](#)). This isn’t “magic” ([p. 20](#)). Although “there has never been a confirmed direct [energy transfer](#) to a detector via gravitational radiation” ([Fred Cooperstock](#)), we do know that the genuine [gravitational radiation](#) exists.

But *where* does it come from and goes back to? [Sean Carroll](#) claims that “spacetime can give energy to matter, or absorb it from matter, so that the total energy simply isn’t conserved”. Correct. But how can we square the circle? Perhaps the metaphoric elevator as “closed room”, shown in Fig. A ([p. 21](#)), is immersed in physically unobservable (P3 at [p. 8](#)) Aether *with respect to which* we define the physical 4D universe as ‘[closed system](#)’ that is [isolated from](#) the Aether, and *by* the Aether ([p. 14](#)): the [atemporal](#) Platonic *Res potentia* ([p. 16](#)). As [Arthur Eddington](#) stressed in 1928 (*The Nature of the Physical World*, [p. 291](#)): “*Something unknown is doing we don’t know what* – that is what our theory amounts to.”

For the record: fifteen years ago, on 17 July 2005, I wrote in my paper ‘[Are Gravitational Waves Directly Observable?](#)’ the following: “a hypothetical case related to the so-called dark energy would render the task impossible in principle.” Why? Because Kip Thorne and his LIGO collaborates use fictitious *bare* spacetime, modeled only with laser beams, to imagine some cyclical “distortions” of the spacetime metric due to two superposed metric fields, which they denote with  $h_+$  and  $h_x$ : read [p. 13 above](#). These GR “experts” are abusing the spirit of the Theory of Relativity: there is no “bare” spacetime, resembling the grin of Cheshire cat *without* the cat ([p. 26](#)), which could be filled only with “gravitons” ([Kip Thorne](#)). Not convinced? Try the experiment suggested by Kip Thorne at [p. 16](#) in [4]. That’s it, straight from the horse’s mouth.

Regrettably, my paper from [17 July 2005](#) was deleted by the talebans at arXiv.org, without any explanation, just as they deleted my initial two-page paper on 25 April 2019 ([p. 3](#)).

This is brutal vicious censorship. **Billions** of US dollars and euros – all taxpayers’ money – could have been saved, including those 450+ million EUR for the so-called [LISA Pathfinder](#), and [Kip Thorne](#) and his LIGO collaborators could *not* fool you and get the [Nobel Prize 2017](#).

NB: Don not allow Kip Thorne and his [worldwide collaborators](#) to fool you again ([p. 25](#)). Fool me once, shame on you; fool me twice, shame on me.

Let’s go back to where we started – the second [REIM](#) demonstration, in London ([p. 25](#)).

The issue is very intricate. Watch, for example, [Paul Hellyer](#) in [April 2008](#).



Paul Hellyer (7:05–7:22): “What progress has been made in the development of clean energy sources that could conceivably replace fossil fuels and save the planet from becoming avertable wasteland?”

We try all sorts of [renewable energy sources](#), but cannot eliminate coal. It is still the prevailing energy source, most notably in India and China. Germany, for example, has **84** coal plants. Quote from [Wikipedia](#) (emphasis mine):

On 26 January 2019, a group of federal and state leaders as well as industry representatives, environmentalists, and scientists made an agreement to close all **84** coal plants in the country by **2038**. The move is projected to cost **€40 billion** in compensation alone to closed businesses. Coal was used to generate **almost 40%** of the country’s electricity in **2018** and is expected to be replaced by renewable energy. 24 coal plants are planned to be closed by **2022** with *all but 8* closed by **2030**. The final date is expected to be assessed every 3 years.

Great. Germany might end up with relatively small number of coal plants by **2030**, in the best case scenario, “to be assessed every 3 years”. But according to James Temple at MIT (p. 5 in [\[6\]](#)): “At this rate, it’s going to take nearly 400 years to transform the energy system”. In 2018, the UN Intergovernmental Panel on Climate Change estimated that we have to invest *every year* **€180 billion** in renewable energy, energy efficiency, and clean transport until **2030** (p. 38 in [\[1\]](#)). That’s **€2.16 trillion**. My project ([p. 26](#)) is cheaper.

Pin down year **2030**: we have no more than [ten years](#) to constrain and (hopefully) avoid the devastating [climate catastrophe](#). We do need a breakthrough, and the first step is to organize a professional discussion of the origin of gravity and inertia ([p. 25](#)).

Here’s the first off puzzle, from [James Woodward](#) (emphasis added): “How did the stuff out there in the distant **past** (Sic! – D.C.) *know* that we would try to accelerate, say, our car at any specific instant and, in the distant past, move in just the right way to launch the right **A** field in our direction? [Inertial reaction forces](#) are instantaneous; there’s no doubt whatsoever about that. When you push on something, it pushes back on you [immediately](#). If they’re caused chiefly by [the most distant matter in the universe](#), how can that be?”

But in our case, “the stuff out there” is not in the past, because it is not on the light cone ([p. 16](#)). If you place it on the light cone, you will have insurmountable problems ([p. 26](#)). Read my proposal at [p. 27](#). I only need financial support ([p. 26](#)) from people interested in Mathematics ([p. 1](#)), quantum gravity ([p. 9](#)), cosmology ([p. 21](#)), and [life sciences](#) ([p. 8](#)), or from those who care about climate change (p. 5 in [\[6\]](#)) and new energy sources ([p. 21](#)).



Regarding the latter, recall that your *brain* – not mind – used energy to ‘swing the carrot’ (p. 21) and deliver the answer to the quiz at p. 22. How much energy is needed to alter the *boundary conditions* of a system undergoing perpetual emission and reabsorption of virtual particles (BAVER, p. 9 in [1])? Quote from Peter Milonni: “An atom, for instance, can be considered to be “dressed” by emission and reabsorption of “virtual photons” from the vacuum.” Sure enough, the emission-and-reabsorption is *already* completed event (p. 16).

Namely, every physical, 4D event has *atemporal* (hyperimaginary) component: with respect to physical clocks, the photon “during” its flight, “after” being emitted but “before” being absorbed, lives over null intervals (p. 4 and p. 8), as *already completed 4D event* (p. 16).

There is no “magic” here, again. We know the implications of this phenomenon (p. 23), and now have to explore all possibilities for its explanation: “When you have eliminated the impossible, whatever remains, however improbable, must be the truth,” says Arthur Conan Doyle. Look at my application at 2004 Rolex Award for Enterprise, from September 9, 2003, at this [http URL](#). Back in 2003, it was ‘business as usual’, as nobody was concerned about climate change (p. 5 in [6]) and the ultimate need for new energy sources (p. 28).

Has the situation *changed by now*? According to Donald Trump, it isn’t. We’re experiencing perfectly natural and certainly reversible temperature “fluctuations”. According to a study published in the Chinese Science Bulletin on 10 December 2010, the current global warming “cycle” is the result of a natural 21-year temperature oscillation, followed by a “new cool period in the 2030s.” Do you prefer to wait until 2030 for this “new cool period” (p. 28)?

Let’s go back to the *atemporal* Platonic **matrix** of photon *per se*, “during” its flight (read [above](#)): it is *not* shown in the two drawings below. Fig. C shows an *already* completed 4D event, located in the *past* (Fig. 3 in p. 16). For example, you create light with a light bulb, which emits photons with rate, say,  $1.8 \times 10^{20}$  *identical* photons per second. Read the ‘dark room’ analogy at p. 5 and p. 8, and the juxtaposition of photons and water at p. 11. Recall also Justin Christensen and the explanation of *physicalized* photons at pp. 23-24 [above](#): the Platonic **matrix** (p. 25) of photon *per se* “during” its flight is *perfectly* hidden (P3 at p. 8).

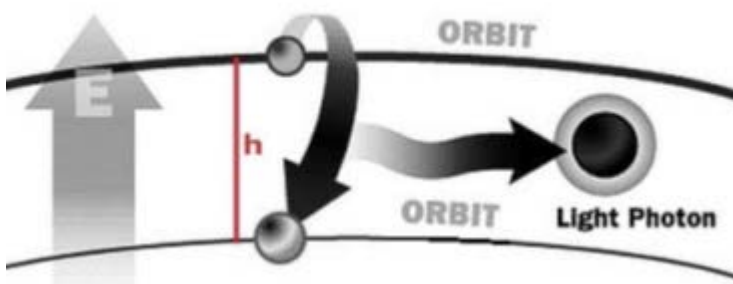


Fig. C

Slide 9 in [Quantum Spacetime](#) and p. 3 in [7]

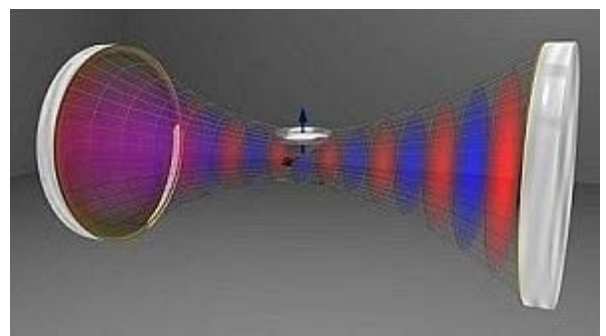


Fig. D

Visualization of photon's [wave function](#)

We can only picture photon's wave function, pertaining to specific (not universal) case, e.g., to the *propensities* for *physicalized* photons in the case shown in Fig. D above. To quote Mark Fernee (March 21, 2019): “Photon's description is dependent on the boundary conditions that define the field. A photon in an optical cavity (ie. trapped by mirrors) has a well-defined field mode, which in the limit of just a single photon, is still the field mode defined by the mirrors. A photon is *not* some billiard ball (or water, p. 11 – D.C.) bouncing between two mirrors. It is the field mode defined by the mirrors with one quantum of

energy. In the above diagram (Fig. D [above](#) – D.C.), the photon wavefunction would be the red and blue discs that represent the alternating electric and magnetic field maxima. It may be tempting to think of the field itself to be the photon. However, even an empty cavity has a the same field with exactly half a photon of energy: the [vacuum energy](#)."

We have Platonic [matrix](#) (p. 25) also in the living world (P3 at [p. 8](#)) and in cosmology: read Slide 12 in [Quantum Spacetime](#) and recall the latticework of meter sticks and clocks, from Edwin Taylor and John Wheeler ([p. 11](#)).

All you need is a [brain](#), to access the Platonic [matrix](#) and practice REIM, from 'reversible elimination of inertial mass' ([p. 27](#)). It is not "magic" ([p. 20](#)). Watch it at [this http URL](#).

My first announcement of spacetime engineering was dubbed MAVER, on [31 October 1995](#). To avoid possible misinterpretation, I renamed it to BAVER, from Brain-Aided Vacuum Energy Release (p. 9 in [1]). BAVER is the alternative to [Wendelstein 7-X](#) in Germany. People dream to achieve "up to approximately 30 minutes of continuous plasma discharge in 2021." So far [well over €1 billion](#) – all taxpayers' money – were invested in it, as some "potential of stellarators as power plants". No, it won't work. [No way](#). I emailed the chief scientist of [Wendelstein 7-X](#) twice, but he didn't even confirm the receipt of my messages. Needless to say, I will be happy to explain my [objections](#) during the professional discussion of the origin of gravity and inertia ([p. 25](#)). I very much look forward to seeing how these German experts will "intuitively" disagree ([p. 15](#)), just as their Bulgarian colleagues did in February 1987 (p. 4 in [Penrose-Norris Diagram](#)).

Again, here's my proposal (p. 8 in [Wendelstein\\_7-X.pdf](#)): swing the [steam turbine rotors](#) in the current nuclear power plants with spacetime engineering (Fig. E). No water supply, heat, or hazardous [nuclear fuel](#) are needed. It shouldn't be a problem to rotate a chunk of metal – gravity can *effortlessly* rotate a [whole galaxy en bloc](#). First, we must figure out the *origin* of gravitational rotation ([Richard Feynman](#)). This is the way to solve the task for unlimited clean energy and save our planet ([p. 28](#)). Not the nasty [nuclear fission](#) (Fig. F).

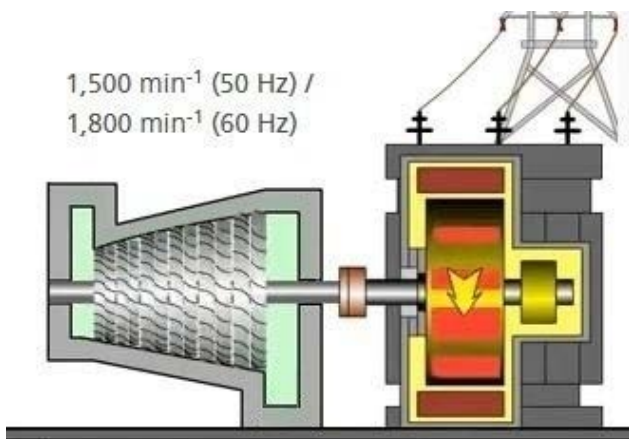


Fig. E

Spacetime engineering, [p. 21](#)



Fig. F

[Flamanville 3](#) in north-western France

Read again James Temple at [p. 28](#). Can we plant 1 trillion trees ([Thomas Crowther et al.](#)) to suck up carbon dioxide from the atmosphere? The year [2030](#) is just around the corner. Once we trespass the [tipping point](#), we will be dead close to [Climageddon](#) and [WWIII](#). Don't even think that WWIII cannot happen because governments were "smart". Read p. 5 in [6].

The only solution is [spacetime engineering](#). We must focus on the *rate* of time (p. 27) and the *origin* of gravitational rotation (p. 7) viz. on the *hyperimaginary* (p. 21) centripetal “force” in the drawing at p. 46 in [1] and the drawings at p. 42 [therein](#). The anomalous gravitational rotation, exhibited for example in [galaxy rotation curves](#), can be harnessed to produce unlimited electricity (Fig. E [above](#)). This gravitational rotation does not come from the conventional *physical* source producing [energy-momentum](#) and [angular momentum](#) in the [steam turbine rotors](#). It is manifestation of the *topology* of spacetime and what we call “vacuum” in theory of relativity – recall the interpretation of Aether (p. 27) as *atemporal* Platonic *Res potentia* (p. 16 and p. 20) and read Justin Christensen at p. 23. In QM, the same phenomenon is presented with *atemporal* (Erwin Schrödinger, p. 6) “quantum waves” (p. 7), which again do *not* exist as ‘physical reality’ (p. 23). It will be [ferociously difficult](#) to ‘connect the dots’ (p. 9) and reach quantum gravity [8], and the first step is to organize [professional discussion](#) of the *origin* of [gravity](#) and inertia (p. 28). **First things first.**

I am fully prepared. Praise the Lord and pass the ammunition!

At the end of the day, I expect that the three types of mass (cf. the equation at p. 4 and the diagram [here](#)) and the phenomenon of [self-action](#) (C2 at p. 8 and p. 23) will find their places in our *Weltbild* effortlessly, like pieces from [jigsaw puzzle](#). We will also develop physical theology (pp. 29-30 in [1]): from physical perspective, God ([John 1:1](#); [Luke 17:21](#)) is always “nullified” (p. 5 and P1 at p. 8), being *both* at the Beginning *and* at the End of spacetime, as well as “inside” the *interface* ‘here and now’ (p. 16). This interpretation of God and the new notion of Zenon manifold [8] are also based on the topology of spacetime, as I boldly speculated in January 1990 (p. 7). God is unique *mathematical* object, which is not comprehensible with human cognition. It (not “He”) is unique non-relational object, which includes ‘absolutely everything’ (p. 4), and hence God is *not* a proper ‘set’ anymore. Our [binary logic](#) is not applicable to the case of *absolutely* undecidable propositions, which can *never* be proved nor disproved, as they do *not* refer to a ‘set’. We can never prove nor disprove the existence of God with science or Mathematics. Thank God, this is impossible.

Back to the origin of [spacetime engineering](#): I denounce the “alternative” options, physical (i) and paranormal (ii) (p. 26), and choose a brand new approach based on the *atemporal* Platonic *Res potentia* (p. 3 and p. 15). The latter occupies the *potential* future in the so-called ‘atom of geometry’ (Fig. 3 at p. 16), thanks to which it is *perfectly* decoupled from the physical world placed in the irreversible *past*. Namely, the *atemporal* Platonic *Res potentia* has exactly *zero* chance [8] to exist as physical reality (p. 2). Hence the need for so-called hyperimaginary numbers ( $|w|^2 = 0$ ) and brand new spacetime manifold, dubbed Zenon manifold (P1 at p. 8). The end result is [self-acting](#) physical world (p. 3), including the [human brain](#) (p. 22), and the possibility to alter the state of all physical systems with spacetime engineering (p. 23), by tweaking their *potential* future (p. 21). This is not some paranormal “magic” (p. 6 and p. 20) but the [macroscopic effects](#) of so-called topological bridge (COV) connecting the *potential* states of the human brain (p. 22) with the *potential* quantum-gravitational states (p. 29) of the physical system entangled with the brain, for example, the turbine rotor in Fig. E [above](#). Let me demonstrate this ‘bridge’ (COV) with an apple (p. 24 and p. 27), as the proof of the concept. Watch ‘Spacetime Engineering 101’ (summary at p. 17) released on 15.01.2020 at [this http URL](#). To obtain the password for the video, follow strictly the instructions at pp. 2-3 in [4]. I will reply within five working days.

For the record: This paper was submitted to [viXra:1904.0315](#) five mounts ago, 2019-08-13.

D. Chakalov  
January 15, 2020, 10:30 GMT