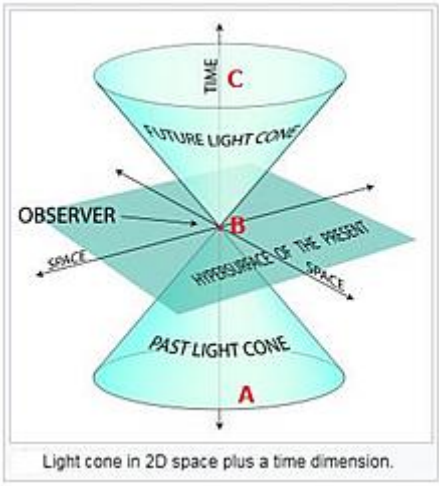
> We are here obviously faced with events whose regular and lawful unfolding is guided by a 'mechanism' entirely different from the 'probability mechanism' of physics. We must be prepared to find a new type of physical law.
>
> Erwin Schrödinger, *What Is Life?* February 1943, p. 28

The Physics of Life: Flipping a Quantum Coin



Light cone in 2D space plus a time dimension.

To understand the physics of life, first we have to understand Quantum Mechanics[(i)].

If Schrödinger's cat paradox is difficult, look at the light cone from Wikipedia above and consider flipping a quantum coin. Saul Youssef writes in quant-ph/9509004v1:

> The situation before the observation could be described by the distribution (1/2,1/2) and after observing heads our description would be adjusted to (1,0). The problem is, what would you say to a student who then asks: "Yes, but what causes (1/2,1/2) to evolve into (1,0)? How does it happen?"

To understand 'how it happens', try to trace back the relativistic history of your observation 'heads' (1,0) from the instant **B** 'here and now'. Before 'heads' (1,0) happened at instant **B**, the *same* 'heads' (1,0) should have been a quantum coin (1/2,1/2) in you past light cone **A**, in line with the axiom of causality (Wikipedia), **A** → **B** → **C** (Piotr Chrusciel).

Q: Can you trace back the quantum coin (1/2,1/2) in your past light cone **A** ?

1. If your answer is 'yes', please explain (**i**) the dynamics of converting the former quantum coin state (1/2,1/2) at **A** into definite state 'heads' (1,0) at **B**, and (**ii**) the history (if any) of the other definite state 'tails' (0,1), which is patiently waiting (where?) for the next (if any) flipping of the quantum coin, to get 50% chance to be observed at some future time and place at **C**.

2. If your answer is 'no', please explain why. Do not use schizophrenic "infinite worlds", please.

3. If your answer is 'the question does not have an answer', please explain why.

My answer to the quiz is (**3**): the quantum coin (1/2,1/2) is not a fact, like tossing a physical coin *in the air*, and therefore its "qubit" state {|1>,|0>} cannot live **anywhere** on the light cone. Even if the quantum beast has one observable 'face', like a quantum ball in **1D** Hilbert space, it cannot be observed in the quantum "**air**", like the intermediate "time" of a photon, "after" it was emitted but "before" it was absorbed (**A2** in Slide 19 in Quantum Spacetime).

But where is the "qubit" coin {|1>,|0>}? What kind of 'time' is implied in Schrödinger equation?

As Alfredo Macias and Hernando Quevedo explain in gr-qc/0610057v1, "time in quantum mechanics is a Newtonian time, i.e., an absolute time. In fact, the two main methods of quantization, namely, canonical quantization method due to Dirac and Feynman's path integral method are based on classical constraints which become operators annihilating the physical states, and on the sum over all possible classical trajectories, respectively. Therefore, both quantization methods rely on the Newton global and absolute time. The absolute character of time in quantum mechanics results is crucial for its interpretation, i.e., matrix elements are evaluated at **fixed** time (dubbed "filter" below – D.C.), and the internal product is unitary, i.e., conserved in time, and it implies conservation of the total probability. Therefore, time is part of the classical background, which is needed for the interpretation of measurements."

Fine, but again, is the quantum coin (1/2,1/2) located **anywhere** on ***any*** light cone, including those that are space-like separated from **B** 'here and now'? Read Erwin Schrödinger from 1935:

> In general, a variable has no definite value before I measure it;
> then measuring it does *not* mean ascertaining the value that it *has*.

Therefore, the quantum coin (1/2,1/2) cannot have definite values, neither before nor *after* (Sic!) we measure it. Surely the quantum coin has two *physicalizable* "jackets" (read below), either 'heads' (1,0) or 'tails' (0,1), and these "jackets" produce real physical effects. Yet their common 'coin' {|1>,|0>} cannot be observed, as we know since 1911 (Slide 7).

But again, is the quantum coin (1/2,1/2) **anywhere** on ***any*** light cone? If not, where *is* it ?

Plato suggested the answer twenty-four centuries ago. In modern parlance, the inevitable non-definiteness of the *uncolored* Kochen-Specker sphere (Helena Granström) is noumenal 'monad *without* windows' (Leibniz). It defies any mathematical logic: we cannot determine whether a proposition about *Das Ding an sich* is 'true' or 'false', if the Noumenon itself does *not* have any 'windows'. Read p. 30 and p. 44 in 'Platonic Theory of Spacetime' from 4 November 2018, available at my website below. Both the quantum coin and the Schrödinger cat exist 'out there' as Platonic reality known as *Res potentia*. The Moon (David Mermin) also exists 'out there', but as physical reality of 'facts' (*Res extensa*), placed only in the past light cone **A**. Which is why every physical fact "definitely either ***is*** or is ***not***" (Erwin Schrödinger, 18 November 1950).

The Platonic *Res potentia* neither ***is*** nor is ***not***. It is a different kind of reality, "just in the middle between possibility and reality" (Werner Heisenberg). It quietly resides "inside" the null intervals, that is, "between" photon's emission and absorption (Kevin Brown). It communicates with the physical world once-at-a-time (Slide 7), as recorded with a clock — only at the event **B** 'here and now', and only by its *physicalizable* "jackets". Forget about those mythical "qubits".

The generic quantum state {|1>,|0>} is Platonic *Res potentia* (see again Slide 7). It cannot be manipulated over a *finite* (not zero) time interval by any inanimate (dead) object. The physical world at the length scale of tables and chairs can "**filter**" (Sic!) only the *point-like* "jackets", either 'heads' (1,0) or 'tails' (0,1), but *never* {|1>,|0>}. It is impossible *in principle* to employ and control the unobservable, **intact**, and *atemporal* quantum state {|1>,|0>} *solely* from its fleeting *physicalized* "jackets". Sheeple can only play with "quantum error correction". Other sheeple, mostly at CERN, are trying to assemble the proton *solely* from its "jackets" (Slide 10), until they fail and declare proton's unobservable, **intact**, and *atemporal* quantum state "dark".

This is the physics of life (Erwin Schrödinger), without the '*verdammten Quantenspringerei*' (*idem*, p. 9 in FRAUD.pdf). The "quantum jumps" are inevitable *artefacts* from the "filter" above. Dead matter makes quantum jumps; the living-and-quantum matter is smarter. RDFM.

Needless to say, the physics of life cannot be understood without gravity. Many people are brainwashed with the current textbooks in General Relativity, and will claim that gravity is classical phenomenon, because it always has definite values, both before we measure it and after we measured it. But what makes up 'gravity' to become *geometric*, and not physical, "field"? What is the *origin* of gravity? Let's try to find out what this phenomenon is not.

The origin of gravity is not some quantum phenomenon, like the quantum dice above, but the origin of gravity is not some force field either: read the first paragraph in p. 45 and follow the links. Surely the physical *contributions* to gravity, placed in the right-hand side of Einstein field equations, have *always* definite values, like the 'heads' (1,0) and 'tails' (0,1) above, but 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', 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?

The only possible solution — Gravity-Matter Duality — requires Platonic theory of spacetime. The quantum-gravitational *Res potentia* does not live anywhere on the light cone, but only "inside" (pardon my French) the event **B** 'here and now'. We can observe only its *physicalized* "jackets" (p. 3 in CEN.pdf), and only *post factum* (**A2** in Slide 19 in Quantum Spacetime), only *after* they were cast in our past light cone **A** — one-jacket-at-a-time. We may detect these ***gravitalized*** "jackets" iff their detector is endowed with **self-action**, just like the self-acting human brain. Forget about the fake "GW astronomy". Welcome aboard and RDFM.

If you are not interested in Mathematics and theoretical physics, and are only curious about the basic principle of the physics of life, check out p. 4 and the *continuum* on p. 39 in the "manual". The quantum-gravitational, *atemporal*, and **pre-geometric** *Res potentia* springs "within" every geometric point/event, that is, "between" photon's emission and absorption (Kevin Brown). Its duration, recorded with a *physical* clock, is **zero** — read the Greek story on p. 31 therein. In the so-called Arrow of Space (p. 7), time comes from *both* 'change **in** space' (the coordinate time, recorded with clocks) *and* 'change **of** space'. The latter is *completely* nullified, being "inside" every geometric point/event. Hence we have *perfect* (Sic!) spacetime continuum in the light cone, whereas the Platonic *Res potentia* is shifted to the **potential** future (see the carrot below). It is accessible only to the living and quantum-gravitational world (p. 7). All you need is a brain. You don't have to learn exotic techniques like meditating on a rock or solving differential equations: spacetime engineering works like a **black box** (p. 43; see also Slide 14).

Fig. 10, p. 11 in CEN.pdf
You only have to swing the carrot (**potential** future) toward your desired destination, and the donkey will carry you and the cart there.

In a nutshell, every **next** event 'here and now' along the Heraclitean *flow* of events is **jointly** determined by its irreversible history and **potential** future. This new form of *retarded* causality (the cause and its effect are timelike separated) was called 'biocausality' in January 1990. The **potential** future (the "carrot" above) is, of course, *Res potentia*. It is always *flexible* (p. 33), and we can practice spacetime engineering effortlessly (p. 38), by altering the *phase* of the "carrot". It (not "He") is *atemporal* **pre-geometric** *Res potentia*, resembling a single geometric point stretched to infinity. It does not have metric, so it is neither "small" nor "large", just as we cannot measure the Platonic *ideas* of a tree and a mountain, to find out which one is larger or heavier. It is simply 'the grin of the Cheshire cat *without* the cat' (p. 15) and 'that which has no part' (Euclid). Just like the human thoughts, it has no mass and no inertia. All humans have access to the mental ***correlates*** (quale) of *Res potentia*, and these *correlates* build up our subjective world called *Res cogitans*, whereas the inanimate quantum-gravitational world is only bootstrapped by its *Res potentia*. If we get access to the "carrot" of steam turbine rotors in nuclear power plants and to its mental *correlate* (qualia), we should be able to "swing" the **entangled** (Sic!) carrot-and-rotor by gravitational rotation *effortlessly* (p. 35) and produce electricity without water supply, steam, or hazardous nuclear fuel. It shouldn't be a problem to rotate a chunk of metal — gravity can *effortlessly* rotate a whole galaxy *en bloc*. This is just one possible application of spacetime engineering. Many people may not like it, but recall that the only available alternative would be to invest *every year* **€180 billion** in renewable energy, energy efficiency, and clean transport until 2030 (p. 38). That's **€2.16 trillion**. Read my mind.

In summary, we can *evoke* the appearance of various *physicalized* "jackets" (p. 3 in CEN.pdf) of Platonic *Res potentia* at macroscopic length scale, producing unlimited and perfectly clean energy (pp. 38-45): read p. 9 in Gravity-Matter Duality. If the gravitational rotation above seems a bit too exotic, recall the quantum vacuum (Peter Milonni): "all fundamental fields, such as the electromagnetic field, must be quantized at each and every point in space" (Wikipedia). Fine, but each and every point in space acts like a "filter" (read above) for *physicalizable* "jackets", and this "filter" *irreversibly* eliminates the Platonic *Res potentia*, depicted with the "carrot" above: the relation between QM operators and 'points in spacetime' is like one-way street, in the sense that we cannot recover the hypothetical 'quantum state' from its point-like "jackets" cast by the quantum coin {|1>,|0>} above. With spacetime engineering, we can avoid those "quantum jumps" (Erwin Schrödinger) and access the **intact** *complex phase* of what we call 'virtual particles', then carefully tweak it and *evoke* the appearance of real physical stuff at macroscopic length scale. The latent energy pool stored in the vacuum is just mind-boggling. For example, if we could somehow capture all energy from GRB 080916C and convert it into electricity at 100% efficiency, it will supply the entire planet for 13.10^{27} years (Wikipedia). The trivial law of energy conservation is not applicable here (Paul Steinhardt): the physical section of the universe is not 'isolated system', because it is coupled to Platonic *Res potentia*. I have suggested a new equation, dubbed 'evolution equation', but it is still in symbolic form (p. 40). We need new Mathematics to unravel the so-called hyperimaginary numbers, in the first place.

Many sheeple strongly oppose my proposal and ignore it, but that's quite a different matter. As of today, people can tweak electronic devices, freeze water (p. 19), and fly in the air over the streets of London. I bet their Chinese colleagues practice spacetime engineering much better, because Chinese can do everything and anything, but this is entirely different issue. Point is, there is no sense to keep silent and pretend that this is some "magic" that should be studied only by special government agents behind closed doors. The underlying phenomena are known since 1911, thanks to Charles Wilson (Slide 7), and were studied by Erwin Schrödinger in 1935. There's no "magic" in chemistry (p. 44), right?

Finally, I wish to explain why I wrote this paper. Back in November 1989, I completed my first manuscript on the physics of life, entitled: 'How to Bind Mind to Matter?'. It was dated 15 January 1990, to mark eighteen years of study and research, which I started in January 1972, at age 19. I am old and probably won't be around to witness the devastating climate catastrophe, but many younger people, including my loved ones, will. I feel like being brutally forced, along with my children and grandchildren, to take a seat in a rubber boat, surrounded by a bunch of crazy idiots, who enjoy rafting on a mountain river toward a gigantic waterfall a few kilometers ahead (p. 38). I can only shout at these morons to stop immediately *our* boat, before it is too late. For if we pass the tipping point, we will be dead close to Climageddon and WWIII.

Now, thirty years ago, I was speculating about the physics of life and quantum gravity, but nobody showed any interest, maybe because these issues looked purely academic. But now the situation is totally different (p. 45). We *all* are in the same 'boat', but we're not building clean energy anywhere near fast enough: "At this rate, it's going to take nearly 400 years to transform the energy system" (James Temple, *MIT Technology Review*, 14 March 2018). Forget it.

There is no viable alternative to the proposal for clean unlimited energy from March 1994 (p. 9). I am not exaggerating a bit, the situation is deadly serious. Get professional and RDFM, again.

What will you do, my dear reader? Pretend that you've heard nothing and know nothing, and keep rafting on Niagara River?

ADDENDUM

I believe it is not entirely impossible that some day, in the distant future, there will be people interested in Platonic theory of spacetime, and they will be studying the 'manual'. But before diving in the details, such as the so-called hyperimaginary numbers, the atom of geometry, Finite Infinity (FI), Maximal Set Theory (MST), the doctrine of *trialism*, physical theology, and the evolution equation (still in symbolic form), you should know whether it is worth your time. As a friend of mine put it (Stavros, p. 31), "But where's the beef? And what can I cook from it?"

Perfectly reasonable questions. Let me try to answer the first one and suggest what you could 'cook' from Platonic theory of spacetime. Needless to say, I offer my personal, and perhaps strongly biased, opinion. Take it with a grain of salt.

There is an enormous, perhaps unlimited, treasure 'out there', and we only need a navigation map to find it. This 'map' is our theory. Let me show you 'the beef': the Platonic *Res potentia* (read above). It is not physical reality (*Res extensa*) nor mental thing (*Res cogitans*). It creates and controls the entire physical world (p. 26) modeled as 'Brain of the Universe'. Keep in mind that there are three very different "components" of what we call Platonic *Res potentia* (p. 11): (**i**) the observable and *physicalizable* "jackets", such as the 'heads' (1,0) and 'tails' (0,1) above, (**ii**) their unobservable, **intact**, *atemporal*, and **pre-geometric** source ('the matrix', p. 5), and (**iii**) the noumenal 'monad without windows' or *Das Ding an sich*. The latter is 'non-reality', and **it** (not "He") is *not* comprehensible with human cognition (the Eskimo, Slide 14). It can only be described mathematically (p. 30), *Deo volente*.

Regarding (**i**), recall that in QFT we can have "superposition" of |cat> + |dog> (Erich Joos), whereas their sub-quantum matrix (cf. (**ii**) above) covers all possible 'animals'. Hence we can suggest (not define) the *undefinable* matrix pertaining to 'the Universe as ONE' (pp. 29-30). A simple *illustration* of the "jackets" (**i**) is offered with their mental *correlates* (quale): check out the experiment, which you can perform with your brain, at p. 2 in Hyperimaginary Numbers. The matrix (**ii**) is demonstrated on p. 3 therein and also in Slide 10, 11, and 12 from Quantum Spacetime. It cannot *in principle* be located on the light cone. In this sense, the *self-acting* matrix is "dark" (Wikipedia) and cannot be traced back from its ***gravitalized*** "jackets" above.

These are the facts, to name a few. What can you 'cook' from them? Save the planet, of course!

Bjorn Lomborg warns us that even "if *every nation* fulfills *every promise* by 2030, and continues to fulfill these promises faithfully until the end of the century, and there is no 'CO_2 leakage' to non-committed nations, the entirety of the Paris promises will **reduce temperature rises by just 0.17°C** by 2100." The 2015 Paris climate agreement cannot achieve its goal. No way. Not even if we manage to squeeze our budgets and produce **€2.16 trillion** until 2030 (read above).

The only possible solution — spacetime engineering — is in your hands.

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Cf. *Platonic Theory of Spacetime* (about_spacetime.pdf), 46 pp., 4 November 2018, at this http URL.

[i] Download the latest version of q_coin.pdf from my website at this http URL.