Perspective

Borges and Subjective-Idealism in Relativity Theory & Quantum Mechanics

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ABSTRACT

This paper is intended to be a follow-up to our previous paper with the title "*Reinterpreting Tlön, Uqbar, Orbis Tertius: On the antirealism tendency in modern physics*." We will give more background for our propositions in the previous paper. Our message here is quite simple: Fellow physicists and cosmologists should become more aware of the Berkeley idealism tendency, which can lead one to so many distractions instead of bringing us closer to the truth. We observe that much of the progress of modern physics in the last few decades only makes us as confused as before, but at a much higher level. In the last section, we will give some examples of how we can do better than did practices of physics in the past.

Keywords: Realism, antirealism discourse, modern physics, theoretical physics, modern cosmology.

We don't need no education, [w]e don't need no thought control...
Pink Floyd - *Another Brick in the Wall*, part 2 (11)

1. Prologue

If we read Thomas Kuhn's *The Structure of Scientific Revolutions* [10], we can get the false impression that modern science is all about cooking up our ideas to the point that they will be accepted by a consensus among respected scientists. Yes, Kuhn's ideas are closer to *constructivism*. He seems to give this message: all activities in science are aiming to construct a model or theory that can be accepted by as wide a scientific community as possible. It is no longer about finding the hidden truth of nature.

But if we recall the history of science, individuals such as Tycho Brahe, Copernicus, Galileo and Newton seemed not to care about the consensus at the time. They just dug deeper with observations and also analytical work, and once they were convinced, they stood up because of their consciences.

Therefore, if we learn from a long history of such great scientists, all we can say is that science advances not because some people are trying hard to start revolutions (as suggested by Kuhn),

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but it advances because some careful scientists choose to stand up for their consciences, no matter what happens.

Yes, it is unfortunate that in most cases, a consensus of scientific opinion can be so wrong. As one wise saying puts it: "*Follow a thousand flies, and you will end up eating shit*." Such grave mistakes in the past include: epicycles in Ptolemian cosmology, which were then replaced with the heliocentric model of Copernicus. In modern physics, we find quite similar monsters as a result of widely accepted theories. Those monsters appear because we tend to call everything we don't know as dark or as ghosts; there are many ghosts in recent cosmology models, and there are dark matter and dark energy hypotheses too. All of them seem to indicate that we should begin to think in a reflective mode then find out where we have gone so wrong.

How can it be that such a consensus of scientific opinion can lead to terrible errors? Perhaps we can recall the lyrics of Pink Floyd above to remind us that in almost all levels of education, there is a kind of "thought control" that is no longer constructive. It also implies that there is probably a hidden force behind such thought control.

The possibility of existence of such a hidden force that exerts control over the entire planet has never been discussed openly in philosophy books, nor in Kuhn's book. But they are seemingly quite real.

These remarks lead us into the crux of this paper, i.e. Borges reminds us of a possibility that a bunch of academic luminaries try to create their own world out of pure fantasy. They are called the 'Orbis Tertius' society in Borges's short story. They start with Berkeley's idealism philosophy, but ultimately they want to reject the reality itself. Shall we label this move as "modern science"?

2. Why shall we start with Borges?

Some readers of our previous paper may wish to ask: Why shall we start with Borges? Or, is it possible to cure fantasy with fantasy?

We do start with Borges's fiction book, but only as necessary in order to expose paradoxes and difficulties with Berkeley’s subjective idealism, which is often ignored in contemporary discussions by theoretical physicists. Who can realize our own "rotten tomatoes" tendency to reject objective reality with our theories?

There is more to say about Borges, and his line of arguments using a method called "*reductio ad absurdum*." But we do not pretend to be well-versed in all related philosophical arguments.

Interested readers are advised to read Jon Stewart's study on Borges's short story referenced earlier [1].

3. Einstein as a subjective mathematical idealist

For those who find it difficult to accept that Einstein was a subjective idealist, albeit he was quite a realist compared to other QM proponents, let us begin with his own words [13]:

"If, then, it is true that the axiomatic basis of theoretical physics cannot be extracted from experience but must be freely invented, can we ever hope to find the right way? I answer without hesitation that there is, in my opinion, a right way, and that we are capable of finding it. I hold it true that pure thought can grasp reality, as the ancients dreamed." (Albert Einstein, 1954).

We wish to highlight the last phrase here: "pure thought can grasp reality, as the ancients dreamed." This phrase captures the essence of Einstein's idealism philosophy. He strived to prove that pure thought alone is sufficient, based on human imagination. That is why his other famous saying goes: "Imagination is more important than knowledge." What he meant with this saying seems to be obvious: he is very sure that human knowledge is a result of free invention out of imaginative minds. Einstein rejects the possibility that God is the ultimate source of true knowledge. Yes, Einstein wants to know how God thinks and created the world, but by his own imaginative way, not by following God.

We can recall a paper by Kurt Godel around 1949 [28]: "*Remark about relationship between Relativity theory and idealistic philosophy*." This paper indicates that such a debate on idealism in the context of Relativity Theory was not really new at all, at least to some philosophers at the time.

Therefore, we wish to emphasize here that while we admit that Einstein stood against *Quantum Solipsism* (their way of playing with reality), he was ultimately also one of the key figures in opening up such a, idealistic position, i.e. with his invention and adherence to Relativity Theory.

In this way, we can understand why there were no longer discussions on the substratum structure of ether, after Relativity Theory was widely accepted by the scientific community. It was fortunate that after some years from inventing General Relativity, Hendrik A. Lorentz apparently persuaded Einstein to admit to the role of ether. And Einstein apparently listened to the advice of his senior. He made a public statement that went something like [26]: "*General relativity without ether is unthinkable*." See his Leiden Lecture, 5 May 1920.

After all, Einstein was a human being with the same confusions as many of us at a deeper level. He made his own mistakes, but he tried his best to repair his mistakes, just like in the Leiden Lecture (Ether and Relativity) and in his strong refutation to probabilistic view of quantum mechanics (Copenhagen school).

4. Bohr and Heisenberg’s subjective idealism attitude

As Henry Lindner puts it [6]: '*Einstein was a subjectivist mathematical idealist. ...His physics consists of mathematical models of subjective experience - his sensations and measurement*."

This approach can be observed clearly in his special relativity theory paper, where he used the synchronization of clocks while trying to prove his arguments. Furthermore, in his general relativity theory paper, he also began with a mental imagination, which he called "*gedanken-eksperiment*." In other words, in developing these two theories, Einstein relied on his mental models instead of seeking a deeper truth of electrodynamics or gravitation. Yes, history told us that his approach won him fame and glory at the time, and many people believe that his theory of gravitation superseded so many other gravitation theories, including those by famous experimenters at the time such as Nikola Tesla (who proposed "Dynamical Gravitation Theory," where he unified electromagnetic theory and gravitation).

Such an emphasis on measurement and the role of subjective sensation seemed to inspire younger generation of physicists at the time, perhaps including Bohr and Heisenberg, who held the viewpoint something like: "it is not our task in physics to speak about the truth, but only what we can speak about experiments."

Again, to quote Henry Lindner [6]: "*Quantum Mechanics - evolved from Einstein's Quantum Theory- is instead a probabilistic model of observer's experience of quantized light/matter interaction*."

It is no surprise therefore that quantum mechanics leads to so many contradictions and confusions; one such paradox is known as Schrodinger's cat paradox.

5. Berkelian-idealism in Quantum Mechanics and its resulting contradictions

Let us begin with a quote from Einstein [12]: "*Quantum mechanics is very impressive. But an inner voice tells me that it is not yet the real thing. The theory yields a lot, but it hardly brings us any closer to the secret of the Old One. In any case I am convinced that He doesn't play dice*." - Albert Einstein.

This view can be rephrased by quoting remarks by Marcoen Cabbolet [7]: "*a form of Berkeley idealism is entailed in the Orthodox Quantum Mechanics."* Cabbolet also concludes that it is therefore impossible to try to derive quantum mechanics in curved space, because curved space in general relativity requires energy, i.e. they require objective reality without observers [7]. If we follow his argument, it is clear that all attempts to find *a correct theory of quantum gravity is just a matter of contradiction and confusion of their basic concepts*.

Einstein took a position against other QM proponents, especially the Gottingen trio and Niels Bohr in Copenhagen. It was unfortunate for him that after a series of debates, Bohr won the heart of mainstream physicists at the time.

But Einstein remained steadfast in his position. For example, he expressed his views in a famous paper published at 1935 discussing the incompleteness of QM.

Only a few physicists agreed with him enough to stand against those who held the mainstream Copenhagen interpretation, notably Louis de Broglie and Erwin Schrödinger. Later, Schrodinger also made a public statement something like this around 1955 while he was in the Dublin Institute of Advanced Studies: "I reject the whole of Quantum Mechanics." That statement must have been heard because it was spoken by one of the inventors of QM theory. In his later life, Schrodinger publicly declared that he refuted the wave-particle duality theory that was widely accepted at the time (until now), and instead he suggested a "*wave only*" view. See also [27].

6. What can we do now?

In the previous section, we discussed Einstein's subjective idealism tendency. But regarding his attitude to cosmology, we have great respect for his humble attitude toward God, as expressed in the following quote [12]:

> "*We are in the position of a little child entering a huge library filled with books in many different languages. The child knows someone must have written those books . It does not know how. It does not understand the languages in which they are written. The child dimly suspects a mysterious order in the arrangement of the books but doesn't know what it is. That, it seems to me, is the attitude of even the most intelligent human being toward God. We see a universe marvelously arranges and obeying certain laws, but only dimly understand these laws. Our limited minds cannot grasp the mysterious force that moves the constellations.*" - Albert Einstein.

Therefore, we should accept that a humble attitude toward God is a good starting point in all kinds of theoretical physics, mathematical physics, particle physics and ultimately in developing cosmology models. We shall admit with modesty that we do not know either the smallest entities of elementary particle world, nor we know the largest structure of void, filaments, nor galaxy clusters and so on.

In almost every case, the entirety of modern physics relies too much on feeble guessing and rough experiments and also on observation apparati with all their shortcomings and limitations. We shall also admit that since no one has traveled over the entire Milky Way galaxy, we shall keep ourselves in humble admiration toward God, the Ultimate Creator.

We do not wish to ask all of you fellow physicists and cosmologists to return to the old days of physics in the 18th or 19th centuries. We can however mention a few physicists who admit that perhaps modern physics has gone astray:

a. Dirac tried to develop a classical model of the electron and published his paper around 1951, although his paper is less known compared to his famous equations in 1927. See [23].

b. Richard Feynman admitted that the complicated renormalization procedures in QED are nothing more than "sweeping under the rug" [24]. He seems to call for better ways to deal with the infinities problem. Feynman's remark perhaps can be understood better if we remember an old joke: "*The problem with computer programmers is that they often cheat in order to get results. The problem with mathematicians is that they often work with simple models in order to get results. But the problem with physicists is even worse: they often cheat with models in order to get results."* (We are aware that we should not include a joke in a scientific paper like this, so allow us to apologize for this. But we also know that sometimes a good joke can be much more insightful than ten or twenty mediocre papers.)

c. Peter Woyt also laments the recent trend of so many talented physicists to relying too much on celebrated superstring, string, or M-theories. Woyt is a Canadian mathematician who felt so uneasy with such a marching crowd of string theorists that he published his book with title [25]: "*Not even wrong*."

d. Sir Roger Penrose also reminds fellow theoretical physicists of possible distractions caused by following fashions, faith, or fantasy.

Now, if some readers want to ask us: so what do you advise? Again, it is not our aim to return the whole physical sciences to their 18th or 19th century phases. What we have in mind is that perhaps it would be a good start to begin with a "*retro-classical physics."* What we mean with "retro" here is to return to some old ideas while reworking them in new approaches. Let us give a few examples of what we mean with retro-classical physics:

a. Timothy Boyer has published a series of papers where he proves that the Planck blackbody radiation law can be derived from (stochastic) electrodynamics theory. The message here is not to rework Planck law from classical physics, but to introduce a new stochastic assumption.

b. Pierre-Marie Robitaille has published a series of papers where he proved that Kirchoff is flawed. Does it mean that Planck's law is also flawed? It is a deep question that needs to be clarified [14].

c. George Shpenkov and Leonid Kreidik analyzed errors in the Schrodinger equations, then worked out a new method to derive a periodic table of elements that is similar to the Mendeleev table. Their novel method is based on working out a spherical solution of the classical wave equation.

d. These authors have also published a few papers where we further extended Shpenkov's spherical classical wave equation to become a "*fractal vibrating string*" model. We admit that our model is in its early phase, but this model offers the same conceptual simplicity of string theory without complicated problems caused by its supra-dimensionality (26 dimensions) from which some variants of string theories suffer.
e. AdS/CFT. We heard that there is recent progress i.e. that some mathematicians have proven that there is a theoretical correspondence between AdS/CFT and Navier-Stokes turbulence [15]. If we are not mistaken, this result brings us to the possibility of considering cosmology starting from turbulence theory. To compare it to other papers discussing

connections among the Zeldovich approximation, Burgers' turbulence, and the adhesion model (Johan Hidding), see our paper [16].

f. Yang-Mills. If we recall that Yang-Mills theory is originally a classical field theory, then it seems possible to argue for a classical model of hadrons. A few years ago, one of us tried to publish a short paper discussing a possible extension of classical Yang-Mills theory to a fractal case [17]. We are aware that this is an unpopular approach, but again it seems worth to ask: is it possible to describe hadrons and leptons in terms of classical electrodynamics?

g. Isomorphism. For those readers who are adept in QM, allow us to say that there is a known derivation of the Maxwell-Dirac isomorphism. Refer to our recent paper in Prespacetime Journal, October 2017 [18].

h. LENR. Usually nuclear fusion is explained in quantum mechanical way. But in a recent paper published in JCMNS, we argue that Coulomb barrier suppression can also be thought of from a pure classical standpoint. Refer to our paper [19].

i. Friedmann. In the cosmology setting, it is known that Friedmann equations can be derived from Newtonian arguments, i.e. without complicated general relativity as starting point. While it is good to start afresh with such a Newtonian-Friedmann approach, we shall also keep in mind that Friedmann equations have limitations, i.e. that they do not take into account the rotation in the early universe. In a recent paper, we prove that if we consider vortical-rotation in the early universe, then we obtain an Ermakov-type equation. We already have a numerical solution and plots of such an Ermakov-type equation in a cosmological setting [20].

j. 3D Navier-Stokes. After several futile attempts, this year we have found a numerical solution of the 3D Navier-Stokes equations with the help of Wolfram Mathematica. We presented this result at a mathematical conference held in Bali, July 2017. Check also [21]. This result rekindled our previous cosmology model based on Navier-Stokes equations in Cantor sets [22]. Whether this model has a theoretical correspondence with AdS/CFT theory (string-turbulence) or not, remains an open question.

7. Concluding remarks

We have explained some arguments that both relativity theory and quantum mechanics have Berkeley's subjective idealism tendency. The same tendency has plagued almost all aspects of modern physics as we know it today. Other authors discussing this point of view have been cited too, although there are few who tried to defend quantum idealism (see Mikhail Popov [5] and Erik Haynes [8]).

In the last section we outlined a few examples of recent developments in theoretical physics and cosmology. We hope that those examples are sufficient as illustrations of what we meant with retro-classical physics, and it seems that they are worth exploring further.

This is our message in a bottle, and we wish that some readers will find it on Bing's or Google's shore. We wish we could have conveyed this message better, but we are not professional philosophers by training. All we have are just our own mistakes in the past, and a little gut feeling that keeps telling us that we have made terrible mistakes. Yes, all of us have made mistakes in our own ways. We will take these mistakes to our graves, and even to eternity. Now is the time to repair those mistakes as much as we can.

We have heard about secret societies here and there, but it is not the purpose of this paper to disclose any secret society, let alone the Orbis Tertius. All we can say is that our feeble minds are so prone to fall into so many distractions, including but not limited to subjective idealism. The history of quantum mechanics in the past taught us that rejecting reality led us to nowhere. In fact, this antirealism tendency has led us to endless paradoxes and contradictions in the last 90 years. Therefore, the best way to repair our grave mistakes is by returning a healthy dose of realism into our theoretical models. Let the younger generations of physicists learn to respect realism. They should unlearn and relearn from so many mistakes in the past including our own.

All in all, allow us to end this paper with a quote from George Orwell: "*In a time of universal deceit - telling the truth is a revolutionary act.*"

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References

[1] Jon Stewart. Borges and the refutation of idealism. *Ideas Y Valores* no. 101, Agosto 1996, Bogota - Colombia.
[2] Miles Mathis. http //milesmathis.com/quant.html
[3] Berkely's ideas in physics. http //goodxbadx.blogspot.co.id/2009/07/berkelys-ideas-in-physics.html
[4] Lothar Schafer. http //realitysandwich.com/217334/is-quantum-physics-a-sort-of-idealism/
[5] Mikhail Popov. In defence of quantum idealism. Physik-Uspekhi 2003. http //www.johnboccio.com/research/quantum/notes/popov.pdf
[6] Henry H. Lindner. Beyond consciousness to cosmos. http //henrylindner.net/Writings/Cosmism/Trilogy1.pdf
[7] Marcoen Cabbolet. Berkelian idealism regarding properties of the Orthodox Quantum Mechanics. https//www.researchgate.net/profile/Marcoen_Cabbolet/publication/279220880_Berkelian_Idealism_

Regarding_Properties_in_Orthodox_Quantum_Mechanics_and_Implications_for_Quantum_Gravity/links/55f5e97d08ae1d9803974e24/Berkelian-Idealism-Regarding-Properties-in-Orthodox-Quantum-Mechanics-and-Implications-for-Quantum-Gravity.pdf

[8] Erik Haynes. A case of monistic idealism. Thesis defense 2016. http //digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=1414&amp=&context=masters

[9] Matthew J. Donald. Realism, the interpretation of Quantum Mechanics, and Idealism. The Cavendish Laboratory, Cambridge. http //people.bss.phy.cam.ac.uk/~mjd1014/real.html

[10] Thomas Kuhn. The structure of scientific revolutions. Second edition. http //projektintegracija.pravo.hr/_download/repository/Kuhn_Structure_of_Scientific_Revolutions.pdf

[11] Pink Floyd. Another brick in the wall, part 2. http //www.metrolyrics.com/another-brick-in-the-wall-part-2-lyrics-pink-floyd.html

[12] Albert Einstein. http //www.alberteinsteinsite.com/quotes/einsteinquotes.html

[13] Albert Einstein. http //www.spaceandmotion.com/Albert-Einstein-Quotes.htm

[14] Pierre Marie Robitaille. Check his papers in Progress in Physics. http //ptep-online.com

[15] Gravity and the shape of turbulence. String Phenomenology 2009. http //www.fuw.edu.pl/~sp09/StringPheno09/StringPheno09_files/oz_sp09.pdf

[16] Victor Christianto & Florentin Smarandache. From Zeldovich Approximation to Burgers' Equation a Plausible Route to Cellular Automata Adhesion Universe. This paper has been submitted to Prespacetime J. See also Vixra 1710.0012 (2017).

[17] Victor Christianto. An Extension of Maxwell Representation of Non-Abelian Su(3) Yang-Mills Theory on Cantor Sets. Vixra 1505.0214 (2014).

[18] Victor Christianto & Florentin Smarandache. A Review of Two Derivations of Maxwell-Dirac Isomorphism and a Few Plausible Extensions. Prespacetime Journal, oct. 2017, www.prespacetime.com. See also Vixra 1705.0357 (2017)

[19] Victor Christianto, Yunita Umniyati, & Volodymyr Krasnoholovets. On Plausible Role of Classical Electromagnetic Theory and Submicroscopic Physics to Understand and Enhance Low Energy Nuclear Reaction (Lenr) a Preliminary Review. J. Cond. Mat. Nucl. Sci. Vol. 22, april 2017. http //www.iscmns.org, see also vixra 1611.0161

[20] Victor Christianto, Florentin Smarandache, Yunita Umniyati. Solving Numerically Ermakov-type Equation for Newtonian Cosmology Model with Vortex. Prespacetime J, oct. 2017, www.prespacetime.com. See also vixra 1708.0189

[21] Victor Christianto & Sergey Ershkov. Solving Numerically a System of Coupled Riccati ODEs for Incompressible Non-Stationary 3D Navier-Stokes Equations. Presented in ISCPMS, july 2017, https //iscpms.ui.ac.id/. See also Vixra 1705.0035.

[22] Victor Christianto. A Possible Route to Navier-Stokes Cosmology on Cantor Sets. Prespacetime J, 2015, www.prespacetime.com. See also vixra 1508.0042

[23] P.A.M Dirac. Proc. London Soc. 1951. See also Max Born, http //www.nature.com/articles/doi 10.1038%2F1691105a0

[24] Richard Feynman. http //caltechcampuspubs.library.caltech.edu/662/1/1965_10_22_67_5_.05.pdf

[25] Peter Woyt. Not even wrong, ten years later. http //www.math.columbia.edu/~woit/rutgers.pdf

[26] Albert Einstein. Ether and relativity. Lecture given at University of Leiden, 5 May 1920. http //www-history.mcs.st-and.ac.uk/Extras/Einstein_ether.html

[27] Erwin Schrodinger. "Against the stream - Schrodinger interpretation of QM," https //www.sciencedirect.com/science/article/pii/S1355219897000129

[28] Kurt Godel. Remark about the relationship between relativity theory and idealistic philosophy. In Albert Einstein Philosopher Scientist. Evanston Library of Living Philosophers, 1949, p. 555.