Borges and the Subjective-Idealism in Relativity Theory and Quantum Mechanics

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ABSTRACT

This paper is intended to be a follow-up to our previous paper with title: "Reinterpreting Tlon, 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: allow us to remind fellow physicists and cosmologists to become more aware of Berkeley-idealism tendency, which can lead us 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 something better than existing practice of physics in the past.

Keywords: realism-antirealism discourse, modern physics, theoretical physics, modern cosmology

Quote:
"We don't need no education,
We 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 a false impression that modern science is all abou cooking up our ideas to the point that they will be accepted by the consensus of 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 which can be accepted by as wide as possible scientific community. It is no more about finding the hidden truth of nature.

But if we recall the history of science, since Tycho Brahe, Copernicus, Galileo, Newton...they seem to care not about the consensus at the time. They just dig deeper with observations and also analytical work, and once they were convinced, they stood up because of their conscience.

Therefore, if we learn from such a long history of great scientists, all we can say is that science advances not because some people trying so hard to make revolutions (as suggested by Kuhn), but it advances because some careful scientists choose to stand up for their conscience, no matter what happens.

Yes, it is unfortunate that in most cases, a consensus of scientists can be so wrong. As one wisdom saying puts it: "*Follow a thousand flies, and you will end up eating shit*." Such a grave mistake in the past includes: epicycles in Ptolemian cosmology, which then it was replaced with 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 ghost: there are many ghosts in recent cosmology models, and there are dark matter and dark energy hypothesis too. All of them seem to indicate that we should begin to think in reflective mode, and find out where we have gone so wrong.

How can it be that such a consensus of scientists 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," and it is no more education. And it implies that there is probably a hidden force behind such a thought control.

The possibility of existence of such a hidden force who 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 put us into the context of this paper, i.e. Borges reminds us of a possibility that a bunch of academic luminaries tries to create their own world out of pure fantasy. They are called '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 call 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?

Well, yes we start with Borges's fiction book, but only as per necessary in order to expose paradox and difficulties with the Berkelyan 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 with all related philosophical arguments.

Interested readers are advised to read Jon Stewart's study on that Borges's short story (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:

"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) (13).

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: "*Remark about relationship between Relativity theory and idealistic philosophy*."(28) This paper indicates that such an idealism debate 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: while we admit that Einstein stood against *Quantum Solipsism* (their way of playing with reality), in the end of the day he was also one of key figures in opening up such an idealism position, i.e. his invention and adherence to Relativity Theory.

In this way, we can understand why there were no discussions anymore on the substratum structure of aether, after Relativity Theory was widely accepted by scientific community.

It was fortunate, that after some years from inventing General Relativity, apparently Hendrik A. Lorentz persuaded Einstein to admit the role of aether. And Einstein apparently listened to his senior's advise. He made public statement something like: "*General relativity without aether is unthinkable*." See his Leiden Lecture, 5 May 1920 (26).

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

4. Bohr and Heisenberg's subjective idealism attitude

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

This approach can be observed clearly in his Special Relativity Theory paper, where he used the synchronization of clocks to prove his points. And in his General Relativity theory, 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 deeper truth of electrodynamics or gravitation. Yes, history told us that his approach won the fame and glory at the time, and many people regard that his theory of gravitation supersede so many other gravitation theories, including 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 seems 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: "*Quantum Mechanics - evolved from Einstein's Quantum Theory- is instead a probabilistic model of observer's experience of quantized light/matter interaction*."(6)

It is no surprise therefore that it leads to so many contradictions and confusions, one of paradoxes 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: "*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(12).

This view can be rephrased by quoting remarks by Marcoen Cabbolet: "*a form of Berkeley idealism is entailed in the Orthodox Quantum Mechanics."(*7) 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 requires 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 confusions of their basic concepts.

Einstein took a position against other QM proponents, especially the Gottingen trio and also 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 in his standpoint, for example he expressed his view in a famous paper published at 1935 discussing incompleteness of QM.

Only a few physicists agreed with him to stand against the mainstream who held the Copenhagen interpretation. Notably, Louis de Broglie and also Erwin Schrodinger.

Later on, Schrodinger also made a public statement around 1955 while he was in Dublin Institute of Advanced Studies, something like this: "I reject the whole Quantum Mechanics." That statement must be heard because it was spoken by one of the inventors of QM theory. Schrodinger in his later life declared publicly that he refuted the wave-particle duality which 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 have discussed that Einstein has subjective idealism tendency. But regarding his attitude to cosmology, we have great respect on his humble attitude toward God, as expressed in the following quote:

"*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(12).

Therefore, apparently 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. Because 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, and galaxy clusters and so on.

In almost every case, the entire modern physics rely too much on feeble guessing and rough experiments and also on observation apparatus with all their shortcomings and limitations. And we shall also admit that no one ever travels yet over the entire Milky Way galaxy, so we shall keep ourselves in humble admiration toward the God, the Ultimate Creator.

Beside all of these, of course we do not wish to ask all of you fellow physicists and cosmologists to return to the old days of physics in 18th or 19th centuries. Yes, we can mention a few physicists who admit that perhaps all the whole modern physics have gone astray:

a. Dirac tried to develop a classical model of 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 a better ways in dealing with infinities problem. That 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, and 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 about the recent trend of so many talented physicists to rely too much in celebrated superstring, string, or M-theory. Woyt is a Canadian mathematician who felts uneasy with such a marching crowd of string theorists, then he published his book with title: "*Not even wrong*."(25)

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 got in mind is 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, but 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 Planck blackbody

radiation law can be derived from (stochastic) electrodynamics theory. The message here is to rework Planck law from classical physics, but 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 the Planck law is also flawed? It is a deep question which needs to be clarified.(14)

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

d. These authors have also published a few papers where we extended further Shpenkov's spherical classical wave equation to become a "*fractal vibrating string*" model. We admit that our model is in early phase, but this model offers the same conceptual simplicity of string theory, but without complicated problems caused by its supra-dimensionality (26 dimensions) that some variants of string theories suffer.

e. AdS/CFT. We heard that there is recent progress i.e. that some mathematicians have proved that there is theoretical correspondence between AdS/CFT and Navier-Stokes turbulence.(15) If we are not mistaken, this result brings us to possibility to consider cosmology starting from turbulence theory. And compare it with other papers discussing connection between Zeldovich approximation, Burgers' turbulence, and also 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 possible extension of Classical Yang-Mills theory to 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 known derivation of Maxwell-Dirac isomorphism. Check our recent paper in Prespacetime Journal, October 2017.(18)

h. LENR. Usually a 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 pure classical arguments. Check our paper (19).

i. Friedmann. In 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 limitation, i.e. they do not take into account the rotation in early universe. In a recent paper, we prove that if we consider vortical-rotation in early universe, then we will obtain an Ermakov-type equation. We already got numerical solution and plots of such an Ermakov-type equation in cosmological setting.(20)

j. 3D Navier-Stokes. After several futile attempts, this year we have found a numerical solution of 3D Navier-Stokes equations with the help of Wolfram Mathematica. We presented this result in 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 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 Berkelyan subjective idealim tendency. And the same tendency have plagued almost all aspects of modern physics as we know today. Other authors discussing this point of view have been cited too, although there are few who tried to defense quantum idealism, see Mikhail Popov (5) and also Erik Haynes (8).

In the last section we already outlined a few examples of recent development 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 these are worth exploring further.

This is our message in the bottle, and we wish that some readers will find it in bing or google's shore. We do hope that we can write this message better, but unfortunately we are not professional philosophers by training. All we got are just our own mistakes in the past, and a little gut feeling that keeps telling us that we have done terrible mistakes. Yes, all of us have done our mistakes in our own ways. And we will take these mistakes to our graveyard, and even to eternity. Now is the time to repair those mistakes as far 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 the 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 as we have observed in the last 90 years. Therefore, the best way to repair our grave mistakes is by returning back a healthy dose of realism into our theoretical models. And let the younger generations of physicists to learn to respect the realism. They should unlearn and relearn from so many mistakes in the past including our mistakes.

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

Acknowledgment

This paper is part of our investigation in the last eleven years, and perhaps earlier, on what are the true physical meaning of Schrodinger's wavefunction and also quantization rules in astrophysics. You can check our book in 2006 discussing Schrodinger equation from the perspective of multivalued logic. We admit that we have also followed fancy and fashion, and we made our mistakes too. We were so blind and got lost from reality.
Thanks God, He made us to see again with clarity. This paper is our act of repentance.
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VC & FS***
***From two unprofitable servants.

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