

The Fundamental Science Which Lost ... Its Own Fundament!

George Kirakosyan, matgeorg48@gmail.com

Abstract: We are talking here on the huge tragic misconception in theoretical physics - that can hardly be remedied in the near future.

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As a prologue

We are obliged to say thanks to FQXi community for this new opportunity to speak on such "anachronistic" matter as the philosophical aspects of the present science. Unfortunately, most advanced theorists now are sure that roles of philosophers and scientists has been irretrievably separated from each other long ago. Therefore, they will be right to think that there is no necessity to go back again to the darkness of middle centuries to find something useful for us there, from self-educated mentors, on the background of contemporary, unprecedented tech achievements. So, many of them can just rightly exclaim; "Is it appropriate to ask now - what is fundamental in science, when we are making quantum computers and artificial intelligence?"

However, we are more reasonable people here and without rushing into superficial conclusions, in the suggested theme we can see some disturbing signs of a serious trouble that has found place in our basic science. This simply formulated contest question together with previous ones from Foxy essays (*on the role of the observer; about the significance of mathematics, etc.*) push us to think that something goes not so smooth, and namely in the theoretical physics, because such unusual doubts on the basic concepts aren't seen in many other branches of natural sciences as well as in different applied directions and disciplines.

Meanwhile, we can't say that contest questions are enough clearly formulated to direct us to certain useful results or solutions, as they allow large arbitrary interpretations. I mean, if we say "something is fundamental" then we must at least speak about the subject it relates to, as something can be fundamental for the traders or politicians, for example, and totally other things in the other spheres.

Therefore, I will dare to edit the question a little bit to concretize it for myself and formulate it as; "what is fundamental in physics?"

What is Fundamental in Physics?

Theoretical physics is considered fundamental for the natural sciences by its original vocation. We will not spend time to discuss or explain here why is it so, as we are enough intelligent people with necessary knowledge, as we already declared above. So, we will briefly say only that we believe “fundamentality” is something out of doubt and can serve as an unshakable ground to build our buildings for the future. I.e. - ***we mean that “fundamental” concept can be put in the axiomatic basis of our knowledge.***

With this declaration, the first extremely important question for us becomes to establish on what fundament is (or, should be) based theoretical physics itself? I will just request here many advanced people not to exclaim in hurry; “How? It is the mathematics that is now well known to everyone!”

The matter is, it is out of my ability to listen to such absurdity because my naive teachers have taught me in time that ***mathematics is only an abstract language-tool that becomes very useful in variety of calculus***, which was created and developed by efforts of many talented people. I just can't lose my big respect to my kind teachers and forget their lessons, especially, if I don't see a smallest reason to do so. On the other hand, if I agree with the above-mentioned people, I must take something, which is obviously a ***human creation*** only, as a primordial beginning of everything! We must also clearly say that in fact, many advanced people have done this in contemporary physics, however, without openly declaring it. This issue is discussed [here](#). Meanwhile, I'm not going to ask anyone to follow me and carefully read my essays, because I understand that people have different characters and principles to accept some new things as unquestionable truth. Many prefer to trust and just follow known authorities, without risking their own responsibility, and others can't do this, without detailed passage of the issue through their own “analyzing device.” I write my works mostly for the second kind of people, without smallest intention to humiliate first category of thinkers.

Coming back to the stated issue, we must firstly emphasize the fact that ***physics is divided into two basic sections now, extremely different from each other by their ideological and methodological principles***, for some serious reasons that we will try to briefly represent here. Let us note first, that for a long time, researchers have proceeded from the basic belief in the existence of ***the principle of causality in the laws of nature***, in so-called ***classical physics***. Since classical physics serves properly for a long time and a huge number of applied disciplines are based on it, we can think that its basic principles of constructing (let's say “morality”) should not have been questioned or revised. However, it happened in fact, about a century ago!

Many of us may well know what is the mentioned principle of causality - it is when something happens, there should be certain reasons conditioning it and it can't happen out of nothing. This belief is expressed in math language with **differential relations**: $Y = f(x)$ and: $f(x + \Delta x) = Y + \Delta Y$ where Δx is the smallest "cause", and ΔY its aftermath change, or the "effect", and the equation $Y = f(x)$ quantitatively exposes the causal character (or, cause-effect mechanism) of dependence among them. So, our mathematical apparatus that is constructed and "working" according to the above presented principle is causal, and it will always be causal by its essence, no matter how we call it! Many educated readers probably will ask themselves; whether is required to spend time to read such elementary trivia? Then, I'll tell them; "Yes, my dear, because you will see soon in what kind of elementary trifles we were deceived!" However, let's go in turn.

As we know, physicists have faced certain serious complications at the beginning of past century, related to behavior of the elementary particles in microcosm, when they could not clarify the cause-effect essences of some phenomena and established facts. Meantime, they have managed to find mathematical relationships, which consisted unexplainable phenomena in certain cases (we mean **the wave-particle duality principle, de Broglie wave and Schrodinger's equation.**) You can imagine the confusion of physicists in their time if you remember our school problems, experienced in dealing with complex exercises, referring to the water pools and pipes with different diameters, etc. In such cases, we often have tried to get the right answers probing different manipulations with the initial numbers, without delving into the essence of the question to form the correct equations to the task. When it succeeded as sometimes happens, we have tried then to find some reasonable explanations to our actions, to satisfy our teacher. A similar situation was created in the physics. Thus, the reasonable explanation wasn't found for that group of phenomena. Meantime, the correct-working math equations have been organized, somewhat corresponding to observed phenomena and behavior of primordial objects in microcosm! Then, our wise teachers have found nothing better than to announce the discovered math relations as "**new kind of natural law** (or principle) that controlled the microcosm"! Reader has probably understood that above relates to the creation of a totally new section in physics which was called "**Quantum theory**" (QM). However, we must also say that there was no unanimous approach among scientists making this important decision. Moreover, there have been dramatic disputes and categorical objections, mainly from coryphées side, without whose merit it is difficult to imagine the formation of present physical science. Such eminent physicists as **Planck, Schrödinger, Einstein, de Broglie, Heisenberg, Dirac** as well as other luminaries have warned that **physics transforms into a kind of doctrine that becomes beyond objective criticism by definition.**

It was quite obvious to them that the above innovation was nothing more than a political decision! However, their protests and appeals to reason remained in vain for the majority of pragmatic scientists who maybe were in hurry to show themselves, by "significant shift" of basic science. Thus, the majority of theorists have **decided** (!) to consider established equations as a manifestation of a new type of natural laws ("**quantum**" or, "**probable-statistical**" laws) that governed the behavior of primary particles in microcosm. The whole importance and curiosity of question for us here from scientific methodological viewpoint, is that **physicists have declared the existence of different principles in nature, which are manifested in various phenomena** (!)

We can't bring here all controversial viewpoints and criticism arising from this declaration, on which uncountable pages are written remaining unanswered. We will confine here only with some simple human aspects of the matter.

At first we suggest to pay attention to the fact that almost all the well-deserved physicists, whose efforts brought to creation of QM, remained extremely dissatisfied with the accepted interpretation, actually did not accept it! So, maybe, we need to think that the above-mentioned indisputable luminaries were somewhat slow-witted? Let's say OK! However, all of them, at the same time? Of course, it is reader's own decision how to look at this, and here I can only say - excuse me, this is not for me! For me personally this historical episode of basic science seems as one unprecedented wildest mythology, from logical and moral points of view. Brilliant Erwin Schrodinger, for example, has bitterly yelled; "guys, what have you done? I meant completely different thing!" And the answer was approximately like so; "dear professor, we are very grateful for your creation, but we know better how to use it!"

The unique genius of physics; Einstein, spoke more specifically, such as; "we need to leave all this stupidity and start everything from the very beginning!" And wisest Planck has advised; "we need to wait, - until all these fools die!"

We know already what happened next: all the old knights of honest science died of grief and the pragmatic scientific bookkeeping began to blossom uncontrollably! Then the scientific community began to reap the abundant fruits of science-like works, unprecedented-unimaginable and not subject to comprehension in usual sense of this word. It even happened that gulls cried out¹ the existence of **quarks**, greatly helping physicists to unravel the secrets of the structure of the most important particles of matter – **hadrons**! However, the birds did not say anything on how those quarks are so firmly attached to each other that they give **proton**, for example, an unimaginable long time of life, whereas the quarks forming it are so unstable that they simply cannot exist independently! But the birds have given the main thing and only some trifles were left to be solved by scientists. Well, since the

¹ See "*Finnegan's Wake*", by James Joyce

quarks are already there and they firmly stick to each other, there must certainly exist other special particles that glue them together, and this can be the only mission for their existence! Scientists have discovered new fundamental particles in such “comprehensive” way; that is the *gluons*, etc. You and I should not show any smallest doubt in rightness of such wonderful discoveries and in this kind of science in general, because all the advanced luminaries of present physics and authors of similar openings are Nobel laureates! I mean this circumstance is actually evaluated higher than any logical or other kind of argumentation in our present science!

We can continue our sarcastic remarks for long, since the last century of theoretical physics contains many similar tragic-comical errors, if we look at them from logical and moral points of view. However, it has been done by many people already and did not bring to any response, as the “advanced leaders” of basic science have already built their “unshakable temple” even though it is not even based on sand but “it hangs in the air!” I mean on its fundament are not even proven facts but different kinds of irrelevant fantasy creations and arbitrary-political decisions.

Let us turn to classical physics again and to the above-mentioned principle of causality. The fact is that with the abandonment of this basic principle, the “new physics” has lost its *main analytical tool that was our ability of logical thinking*, given by God. Usually we first think and figure out for ourselves the causal essence of the phenomenon of interest, from which the quantitative expression of this mechanism is formed (thus, we compile math equations.) Then, after working with mathematics and getting results, we pass again to the descriptive language to rightly evaluate and apply received quantitative results. Thus, we can say that we permanently use the mutually translations from descriptive-logic language to math symbols and vs., i.e. from equations to descriptive-logic language in the analytical process. The matter is that in the QM methodology the mentioned first tool is just absent! So, if someone naively asks, example, such natural question; “why this phenomenon goes by this way and not other?” then he can get such an answer only; “we just do not speak about this, this show the experiment and we take it as a fact that we consider an issuing point to get next quantitative results!” It actually means; “everything goes as God decided and our job is only to reveal and to register what is in the nature!” Thus, I think the reader can now understand how the contemporary theorists mostly look like accountants rather than philosophers.

Another section where physicists also have left aside the causal-logical discussion of phenomena is the so-called *relativistic physics* that is closely related to the problems of *light velocity*, with unexplainable properties of so-called “*space-time*” and further, with unrevealed *physical nature of gravity*. This concerns to works of famous *Minkowski, Poincare* etc. that have been finalized in Einstein’s *Special and General Theories of Relativity* (ST) & (GR). Above mentioned new theories are definitely different from the “good old” physics, first of all, in terms of methodology

used in them. As we have tried to show, the physicists of these sections no longer think (or almost do not think) of how and why certain phenomena occur, but they try to somehow find or adjust their formulas to the observed phenomena.

This unprecedented situation has been created in physics because scientists have gone away from the belief of existence of cause-effect principle that was indisputable-fundamental before this. As a result, our fundamental science has gradually evolved into some grotesque kind of elitist-artistic works, with completely erased boundaries between reality and free fiction.

Meanwhile, if we look carefully it is easy to disclose that in these sections there are clear ***discrepancies between the verbal declarations and actual facts***. Paying attention, we see, for example, that ***Schrödinger's equation is a differential*** in its essence and by its structure. Then its declaration as something "statistical or probabilistic" can be estimated as a simple and inadmissible mistake! However, this is an obvious fact and nobody sees such a simple mistake or, trick! Above we have shown what differential relation is. So, ***if we have in hand "working" differential relations it means there are causal relationships; therefore, the possibility of representing it in logical-descriptive language should be out of doubt.***

Another curious thing relates to above-mentioned Einstein's equations and GR. Author of these lines just assures that ***equations of GR are related to a movement*** - by its components and measures. However, ***Einstein's equations are verbally declare as "field's equations"*** (it causes whole misunderstanding in this field!)

If, however, we interpret equations of GR correctly, then we will get the key to opening causal-physical essence of GR and ***to solve the mystery of gravity*** as well.

Epilogue

I realize how bitter or outrageous it will be for many honorable scientists, who have spent enormous time and efforts on physical science, to listen to what is being said here. I can apologize to them thousands of times, if this can alleviate the situation. But I will try offering them one friendly advice; on what is right to do, instead of this. So, first of all, you need to collect all the modern theories and achievements in the mentioned areas of physics, such as ***quarks, gluons, physical vacuum, space-time, standard and non-standard models*** and sets of other similar things. All these things you need to tie carefully with strong ***superstrings*** and shove this huge bundle somewhere in the far corner for a while. It will not be a big problem if you do not find it after, because you, probably, will not be looking for your trash in future! Then you need to study a new knowledge that is the ***physics, based on the unshakable fundamental causality principle***. Moreover, it accepts:

The single physical reality has acting in our physics as the primordial source of everything, which are the electromagnetic field.

It remains me to assure that it is possible to build one harmonious, comprehensive and all-embracing picture of the material world in this way, that can give [reasonable answers](#) to almost all possible reasonable questions, excluding the main one, of course. It can be addressed to God only; who, how and to what has made the same primordial thing, i.e. - the electromagnetic field.

Thus, I have tried here to suggest you what I believe can somewhat help you to penetrate the admirable questions of natural science.

However, it is up to the reader - how much this work can be useful for him!
