

Mathematics as Reference System of Life: preliminary observations

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Abstract

We forward hypothesis that all what we refer to as mathematics are cognitive aspects of life, moreover, we have right to refer to mathematics as reference system of life. Mathematics and cognition are not distinguishable between themselves because what we call mathematics refer to the functionality by means of what (or via what) we are created by nature, or by God, be it question of our religious persuasion. Thus, according to this hypothesis, mathematics turns out to be considerably more primary with respect to other sciences than before, when we attributed to mathematics only some role of auxiliary technical tool to help in description of nature. When we are going to say that mathematics might be considered as reference system of life, we mean that today's mathematics is only some starting state of what might be referred to as mathematics as subject and/or object of reality.

Keywords: mathematics, reference system, physics, Omega point, singularity, gauge freedom, distinction, interpretation of quantum mechanics, anthropic principle

Introduction

Historically, mathematics has been considered as way of thinking where it would be distinguished among other ways of thinking with its strict and precise methods or rules used by it. That's all right. But thinking by materialistic way of thinking was suggested being only subjective, as opposite to objective, quality of functioning of our brain. From this on, we used to conclude that mathematics is sort of form of this subjectivity, as creative, as beautiful, as deferential it would be, nevertheless, only subjective quality of functionality of our brain.

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Today's theoretical physics shows that it can't be true. At least, there should be something more. There should be something what reductional approach in theoretical physics has missed. We may call it *unreasonable effectiveness of mathematics*, following Wigner (1), or somewhat else, but it looks like introducing some aspects of mystics in our understanding of reality if we lieve it as it is with this only designation as *unreasonable effectiveness* without questioning about what could stay behind this. Quantum mechanics puts to edge question about what we should understand about reality behind quantum observables where their realm of being determined is controlled by strict axioms. Another approach, that of David Bohm (2), may argue that that what we have missed is some order in nature that is more primary maybe than time itself, that what we assumed to be time actually is only some projection of time where time itself should be something multidimensional. So on and on, we try to find something that we have overseen in nature. But actually one of biggest questions of our scientific inquiry should be the principle of life (*vita principalis* (3)) itself. Up to now it is left to religious approaches and mystics, whilst mainstream science makes look as if life is some second order phenomenon, that can't be put in the ground of the building of nature and/or reality. Maybe it is so, but we as human beings can perceive world only via life. Thus, we live in the reference system of life in the very trivial sense of understanding of what this reference system should be. We can't step outside this reference system, we can't look on the world from the point of view of stones, cliffs, mountains, clouds, and so on. But, next consideration and very simple thought, but not trivial one, we are built physically, anatomically, our cells, our functionality, in this reference system of life, or, at least, when we ponder about how we are created, by nature or by God, then we may try to take a stand that we can do this only from point of view of this reference system, i.e., reference system of life. After all, we may look on ourselves only from within ourselves. But, trying to generalize what we told we may say, and this is not at all trivial, we are built using similar patterns on all levels of ourselves being humans. We hold to argument started by David Bohm, but maybe go further.

What should follow from the overestimation of the fact that we see whatever from within life and only? This from first glance somewhat bad argument may turn us to some sort of agnosticism, or maybe, quite contrary, it may turn to be not so bad and turn us to some new way of thinking and arguing in our questioning about reality we live in. If we are connected to this reference system, what we may call reference system of life, we may ask: what should be attributed specifically to the reference system itself and what we are allowed to see behind it in the nature itself. But now, when we come to this point, we capture that the first question is primary and forces us to start think otherwise we have used to, i.e., we must ask more directly and distinctly – “What we should attribute to the reference system of life?” And only then, only solving this question to some extent we may ask further, what we may see in the nature itself behind this reference system. We are as if in some confinement, and followingly, we must learn the rules of this confinement to set further questions about what is outside this confinement. Not solving our being from this point of view we incorrectly attribute all we see around us as being outside us. It is illusion. It is the same illusion what Medieval mystics called illusion about reality outside us. But we may now correct both us and mystics: part of previously sensed reality around us should be attributed to sort of optical illusions as result of our ignorance of the reference system of life. When we say optical illusion we mean it in cognitive sense.

All this said before may seem to be some sort of useless or weak speculation. But it turns out that our epistemology has pushed us toward this functionality called mathematics, what plays

incredibly more crucial role than simply creativity of our brain. We may exercise creativity of our brain as we like, but we can't lift single stone using it, or fly like birds, or catch mouse like a cat. But using this same creativity we may see incredibly deep in the laws of nature, as deep as quarks, as smallest particles, as farthest nebula. Why? We are clever as gods? No, we are not much cleverer as pigs, which are clever nevertheless. We are diligent? No, quite contrary, we are lazy as bears before brumal sleep. But, it suffices for some of us to exercise very little ingenuity and before us start to unfold incredible pictures of reality in the language of mathematics. Were we more diligent we would see wonders even more and more in what mathematics could provide us with. Now computers come to help us and we start to see real miracles (4). Why or how this all comes to us? And why we take this all as granted? Have we earned this because of being, next to be created in similarity of God, arrogant, greedy, stupid, selfish, crude and rude? Or, we are under some spell or mystic which is so merciful to us? No, there is no mystics at all. All we need is to remember that *we are alive*. We live in the grace of life. Religious way of thinking says this in its own way: we live in the grace of God. But it doesn't matter who tries to catch this phenomenon, religious human or atheistic: the life is the greatest grace we are granted with. That is life who procures for us four-manifold what we call space-time that we incorrectly take for reality independent from the principle of life (*vita principalis*) (5; 6; 7).

Now, being alive and using the principle of life (*vita principalis*) as base of understanding of world around us, we discover some order that may be not obligatory be some ground stage of nature, up to our knowledge at least, but this order is what we perceive ourselves as being alive, being implemented in the nature. This order is the order of life from our reference system where we live in being alive. This same order we are gradually discovering and revealing, and we call the result and the process of this mathematics². In (8) we called this order *cone of creation*.

'Theories of everything'

In the most technical sense theories of everything are these that try to unify ground forces of nature (9). Starting from simple Einstein's idea what were considered by some ones as kind of obsession turned out to be serious theoretic-physical approach after electroweak unification performed by Salam, Glashow, Weinberg was done, and Young-Mills generalizations of gauge symmetries in SU(2) and further in SU(3) left only gravity outside grand unification. Now, simple theory of Lisi (4) argues for some winning approach based on exceptional group E8 what concerns gravity too. Let us put aside whether this all goes in direction of *guessing mind of God* according Einstein, or not. From our point of view, this all is too tightly connected with linear notion of time³. We tend to considering these 'theories of everything' as

² In (3) we called it *cognitum* what may be put in analogy with mathematics in the sense we are now going to use it. In Greek μαθήματα mean acquired knowledge by perceiving (μαθεῖν). Ability of perceiving what is in our disposal is the same that creates us, only these two things being incomparable in sizes, but assuming perceiving as collective and cumulating process we may come to more proper picture. If we assumed Omega point picture from (16; 17) we could say that *cognitum* reaches μαθήματα at point of Omega.

³ In (8) we compared linear time (or projection of time) with something like path of fly in the sea of real time. From this comparison, in order to 'see mind of God' we need to depart from reference system of 'fly'.

great, even gigantic steps in the development of theoretical physics in general and nothing more.

All along with this said before, string theories have developed unexplainable ability to explain in some incredibly way, almost mystical way, many fundamental aspects in this grand unification process. This is not yet all, there are supersymmetry approaches which seem to be outside string theoretical zeal. Truly, this is not yet all, it seems rather if only some ingenious mind develops some new mathematical theory with more subtle symmetrical approach it as a rule gives new approach in theoretical physics. James Gates in (10), maybe following other similar thinkers, says that if some mathematical discipline has not yet been implemented in physical theory then it is only question of time and not yet sufficient exercised effort made in the necessary direction. Why mathematics is so incredibly effective (1)?

In (11) we argued that actually we are not searching universe but we are searching something else that may be called our (or of *homo sapiens* in general) cognitive machine, and our mathematical mind is that instrument via which we make to work cognitive machine in ourselves. But, this cognitive machine must be something outside ourselves, it must be objective reality. This was, as we distinctly stated, according *strong principle of cognitive machine* as observer in theoretical physics. In this work we argue that we may use *weak* version of this principle too, i.e., we don't need to maintain strictly about objectiveness of the universal cognitive machine, rather using as some principle of epistemology in theoretical physics which works in a way just as if such universal machine would exist. *Id est*, we can't decide from within ourselves, or reference system of life, whether cognitive machine exists outside humans or not.

Theories with singularities

In (3) we posed idea that Big Bang might be interpreted as singularity in time only with reference to ourselves, i.e., within reference system of life. BB is sufficiently fundamental point in epistemology of physical sciences (12; 13). It shows itself up as singularity in solution of Einstein's equation of GR, agrees with expansion of universe, it is fundamental element in Standard Model of structuring of matter and must work accordingly this model, or at least similar, as matter producer in depths of stars. As a consequence, physicists in popular books write and pupils in their school books read that universe was created thirteen with something billion years ago. Science has affirmed it as a fact, at least on physically speculative level because nobody can travel as far in past to check the fact actually. But what is the sense of this 'fact'? If we put several well confirmed interpretations together, it may turn out that resulting interpretation is false or without sense (7). This is just the case in this occasion too. Some theologians are satisfied because according BB universe is created. Someone or something created it. Materialistic scholars assume it be something, religious ones assume it be Someone. Both are satisfied in their own way. But this question is outside science inquiry, at least up to now.

We argue that, whatever interpretation of BB with time aspect in it be, it is nonsense outside reference system of life. Either it is only solution of equations of GR, or pulled down within linear time projection, it may acquire sense of physical interpretation but only within aspects

that performed this pull down, what should be connected with context of life. This is our approach to BB.

We say that we are these, i.e., living creatures, with respect to whom BB has real sense with time aspect in it. We live within BB. That means that theories of BB work within reference system of life. More generally, theories with singularities work and has sense within reference systems of life. May we turn our physical world (and *sic!* its description) the wrong side out? Compare Rudolf Steiner what he said about this, or maybe made only an insinuation that he can do this within his secret teaching, seeing (14; 15). Compare with his idea of inner infinity (15).

Most closely questions about singularities in physical sciences covers physicist Frank Tipler (16; 17). General community of mainstream physicists turn little attention to what is doing Frank Tipler, because they say they are not much interested in questions of Christianity in connection with physics and even less in reverse. It would sound reasonably. But not in this case. Beyond Tipler's maybe naive interest in Christianity new fundamental branch of physical science is springing up. We are going to add one aspect to the approach of Frank Tipler.⁴ After all, all his approach could be interpreted as new conceptual approach how to treat time. Replace God with new time-concept, and all goes quite under another conductor.⁵

In our approach, we apply Tipler's models with singularities to reference systems of life, i.e., to human beings, to animals, to alive cells, whatever up to smallest carriers of life.

How we would see Tipler's models working? Let us take his Trinitarian model of multiverse with three singularities that comprise one cosmological singularity. We do not know whether this model works or not, but it may be good illustration of theory with singularities. We hope that his model somewhere works, even more, we hope that some scientist may one day elaborate quantum mechanical version that directly comes in concordance with Omega point approach of Frank Tipler, at least as its interpretation. But let these be hypotheses. Let us take interest now in something else. Let us assume that theory with singularities work, if it works at all, within whatever reference system of life: in simplest sense we would detect this as temporal functioning within observables without singularities, but via singularities „outer world” suggestively operating on parameters within, but in some, say, atemporal way. In Tipler's model „outer world” could be interpreted as that of God or immortality, but for us, if we are, say, on level of cells, this question stands quite in different appearance and maybe as less pernicious for atheists.

⁴ One could wonder about how scientists are judging about scientific facts. As if, if we published genial physical idea under some completely nonsensical headline, nobody would take seriously our theory due to no ability to detach headline from content of the published thing. Nonsense. But in case of Frank Tipler this turns out to be fact.

⁵ Author of this article is priest, and, thus, maybe consentaneous with Tipler's aspiration to find God's place in nature and physical science, but as scholar he well sees that behind Tipler's God may be concealed whatever one finds for most subject of interest for himself.

Collective thinking

In the same article (3) we suggested idea that thinking could be considered as collective process and has something [or someone?] as its collective representant. [Vernadski this, or what would be analog of this, named noosphere [from Greek word νοῦς] (18). For Teilhard de Chardin it was crucial term too (19). It may be mentioned that noosphere should culminate in Omega point at the end of times.] We said in (3) that time and thinking (where thinking is some mode of motion and designated as θεωρημα [compare Bohm's insight] as dual notion to *cognitum*) would stand behind the same thing or should be considered as the same thing.

In the context of the idea that reference system of life should play more crucial role in epistemology of physical science than simple non-mentioning it at all, collective thinking would become that what we use to call time. Of course, whatever idea around time is very hard for discussion, and we may try to maintain only idea that every life system, be it *homo sapiens* or living cell, lives in its individual time (making thus actually many times). Using updated Tipler's model, every system or subsystem of life lives within its own multiverse, at least from within the reference system of life: what goes on outside, or, how all this is organized from outside, it is question of its own; at least we must accept as a starting point that we are separated each from another, life system from life system, in the same sense as universes are separated mutually each from another in multiverse.

But what then is the world outside us? What is objectivity? It might be common to us or not, we can't decide up to now. But, in order to take things first simpler, if we can't decide anything distinctier, let us assume our conventional way of thinking that that outside world is the real one. In our approach the only difference is that, whatever we *see* or *perceive* about world outside, should be attributed to reference system of life, and, whatever is left outside this, i.e., whatever we couldn't perceive, is left to some suggestible reality outside. Let it be *res in se* or Parmenides still-world or dark matter or whatever else. Up to now we can't judge or know about this more definitely.

The fact of collective thinking should be important for epistemology on very general level with most serious ethical implication. Up to now we see the world of science guided by mostly egocentric attitudes of ways of thinking. We are honoring Nobel price winners and so on. We are striving most desperately to receive scientific names and qualifications. From practical point of view all this is mostly necessary to organize the process of epistemology itself. But for us these same organizational paradigms become elements of struggle between us, scientists. Cutting short, we say that it is all nonsense. If we could think otherwise about what science is doing and scientists in it, it would help us incredibly. We tried to speak about in (3). We think that there should be more scientific effort exercised to stop nonsense and start to recognize ourselves as conscious agents of functioning of noosphere. Why we are so divided? Because we are living in separate reference systems. It is objectivity. But, in the moment we come to know and comprehend this, we may want to start to live in collective world. All religions are about this desperate tendency. Mainstream science seems to remain one of the last zoos where rules of rude animals are at work. At least all in concordance with Aristotle's ζῶον πολιτικόν.

What is observer in physical systems?

In (20; 7; 11) we considered question about missed observer in contemporary physical theories. We directed problem to the fact that observer in the direct sense, *homo sapiens*, physicist in person, was that that was eliminated from physical observation. Principle of this type of exclusion, i.e., exclusion observer from physical system to be researched, has served as stimulus for incredible success of physical science, yes, of course, it can't be denied, and maybe because of this simple fact, up to the present time, nobody nowadays seriously thinks about correction of this principle. We started to do this in (20) in order to explain unexplainable action or effectively of mathematics in theoretical physics (1).

Our idea is simple: mathematics itself is somewhat much more deeply connected directly with this missed observer. If we put some imaginable mystical supermathematician in the physical system, all starts to work incredibly fine. We would start to know at last what quantum mechanics mean and so on. But what is this mystical super mathematician? We have chosen simplest of all possibilities. The super mathematician is really super mathematician, it is our mathematical mind under development, it might be some hypothetical cognitive machine. Now we come to concluding idea: this mathematical machine is functionality what we are built from as systems of life , with one addendum: this functionality comes within reach of ourselves from within ourselves, i.e., in the reference system of ourselves who (we) are distinctive instances of the reference system of life.

What else supports the idea of cognitive machine? We call this *knowledge of the past*. This may be called *peripheral knowledge* too. This may be call *knowledge from future* too. It is thus some sort of atemporal knowledge that we perceive all, but we hardly know what to do with it if this knowledge comes in weak connection with what we use to do or to know in our everyday life. For nonscientists it would be simply nightmare or vague ideas for artistic activities, say. But for some scientist this peripheral knowledge is very useful in the very direct sense because they can use and actually do use it in their discoveries. Why people of science so unwillingly tell where from they take their most productive scientific ideas? Sometime someone says. Mendeleyev said, after all, many have said, but only somewhat vaguely. But not all have said. At all, not all. People use to fear for their scientific laurels? The scientific world would become incredibly more interesting if all started to tell about their sources of inspiration. It would be incredibly useful too. We think that this is an option of the science of the future.

But how this could help to our idea? One idea we would try to forward, and this is idea of Pythagorean numbers (6). We attribute it to Pythagoras because he first in history left this type of idea of numbers as ground of the world. After all, our idea of cognitive machine and mathematics as reference system of life are only variations of the idea of Pythagoras that numbers comprise everything in the world. Now we make correction: within reference system of life, because we need this addendum for scientific precision. In times of Pythagoras this wasn't necessary: all was perceived in the reference system of life. If someone would have tried to specify what from inside and what actually outside (what concerns life) there haven't been means to test anything like this. Today we have? Even today it remains as problem. But, at least, we come to points to start to acquire such ability, or, at least, to try, albeit waguely.

We remember words of Galileo Galilei that nature is written in the language of mathematics. Yes, from within ourselves. Maybe, from outside too, but we do not possess tools to check

this. Frank Tipler's Trinitarian multiverse with Omega point acting operationally toward us may do this? Let us hope.

Let us add that from our point of view Pythagorean idea of numbers could be more sophisticated than that what has been traditionally assumed by history of epistemology. The idea is expressed in preprint articles (20; 6).

The world of distinctiveness

Now we come to the main point why question about reference system of life comes so necessary before us. After all, main argument against us is, that this question is trivial: from within we see the same what is seen from outside, as opposition to our main idea would say. Just mathematics is the most powerful tool to perform whatever transformations, be they upside-down, or wrong side out, or whatever, even more, mathematics language is just the language of transformations. As kind of joke it may be said, that we can't change observable picture looking directly to observable object or from within the bowel of Diogenes Laërtius. Much doesn't change if in place of the "bowel" stands human body with feelings, senses and so on. Yes, of course, be it so.

But what if we are wrong in these traditional speculations? What would correct these simple statements that stand behind traditional understanding of things? What makes us ignorant if we are ignorant of something indeed? What we have overseen? This must be something very simple that we took as granted even on more plain ground as inside/outside, as up/down, as motion/stillness. We think that this simple or most simple thing is *distinctiveness*. Before God created anything there was only void and nothing except void, i.e., of course, what concerns us. Maybe there were whole heap of persons, He (God) himself or counsel of Gods (אלהים), or worlds of Angels or whatever higher us, whatever outside reference system of life granting us life in the moment of creation. But what came with life? The answer is simple. The name of grace of God for us in physical science is the *distinctiveness*.

Who gave us distinctiveness or ability to distinct whatsoever? Why we are distinguishing things? After all, why we consider as granted that we have ability anything to discern or distinguish? We have colors; we have "one-two-three-mystery", we have inside/outside. Who or what gave us these qualified or quantified distinguishers, what we call colors, numbers, order relations, and, after all, who gave us possibility to distinguish in whatever aspect? We say or are used to say that mind is that that discerns. Let us start to detach this feature of mind, to discern or to distinguish, from mind itself. After all, this is our speculation that mind can discern. What we actually must discern that via distinction God has granted to us whole world. How we are using our mind let us leave this to our responsibility before God.

If we are going to building robot we may would like to put different operational abilities in him to specify what robot is suggested to distinguish (in his realm of his operability). But it must be put inside the robot. Being clever developers, we may build robot giving him distinguishing abilities according mechanisms what should be used in robot for him to functionate at all. Thus we would come to principle: robot is built from the same "stuff" what he should do. But this is true otherway too. This is the cleverest what we would assume God, or nature, have done with us, too. [Nowadays an idea is valiant that nature has used its own

resources very uncleverly and profligately, but, maybe this point of view rises only from our weak ability to read and understand genetic information.]

Physics today show that matter consists from waves, fields and so on, matter itself, to functionate, doesn't need to be distinguishable or with ability to distinguish, we might live in the "porridge" of energies too, the stones actually maybe live so, who knows. From side of living creatures, life would be not very interesting without possibility to distinguish things, but, does we actually need to distinguish in order to exist? Who knows it: we live within some mercy with this ability being granted to us by God, and/or by nature.

Let us come to idea that we actually need the possibility to distinguish, i.e., it was granted by God who, if looking from our side of existence, didn't know any other way how to create us without this ability.

Kerson Huang in his book (9) gives illustration of how God, creating world, turns light on. In Huang's illustration, God first creates the matter Hamiltonian. With words "Let there be light" God switched light on with action $p \rightarrow p - qA$, i.e., gave gauge freedom.

Huang's picture is within grasp of reductionists, without life on the stage of creation. But we may correct the picture and make it more realistic. First of all God should give ability of distinction to forms of life, at least on level of animals and human beings. This would be achieved via clever organization of hierarchy of worlds of life. In (3) we consider for this level ideas of Ouspensky and his world organization scheme. All life might use the same rule to be produced by God as incidences of life. For this purpose Tipler's cosmological picture would be one possible solution. But we know that BB theory should work within SM, and BB itself acquires time aspects in the reference system it creates. Let us attribute for this stage of God's pondering on Hamiltonian in order for him to define structure of matter, how life would discern matter in its system of reference. This would be vehicle of how life itself should start to operate.

But the way of thinking Huang suggests has possibly one big fault: God acts in the time order we are used – from past to future. From side of Huang this is more scientific entertainment than theology, but we may things easy correct using Omega point type theories which suggest time ordering from Omega to Alpha as more sensible for God to act than in the way we do. And then questions about sequence of actions achieve another aspect: time sequence from past to future has sense only within reference system of life. What we read in Bible should be considered as such speaking to us as if from point of view of our reference system, i.e., that of life. Actually, what God does as reasonable being of higher consciousness, is outside our reach principally. We do not have information about this on none of levels, not even on level of empty time with singularity in the beginning. Bible starts with word "In the beginning" (בְּרֵאשִׁית), but Hebrew allows it translate also as "In what concerns Head", or even "By means of what concerns Head".

Well, let us be created and by God presented with ability to discern quantities and qualities according different qualified abilities. We may discern these qualities that are given to us for life support, and these should cover all perceivable things we possess as human beings. These qualities already contain senses that are very complicated abilities, say, vision. But we possess many many abilities that are not accessible for us directly, but which, without doubt, are necessary for our bodies (and our brain sic!) to functionate. We have, besides left cerebral

hemisphere, right one too which has connection with time aspects outside time projection we experience, about what contemporary physicists are in complete ignorance (21).

If somebody wants to argue and direct our discussion with notion of God within to theology, we object and suggest to replace word “God” with other word, say, “oracle” or “ἄθεος μυστικόν”, similarly to praxis used in mathematics. Contrary to mathematics, where the notion oracle is defined, we do not define God, because He is outside our reference system and can be registered only by action directed to us.

Many worlds of life systems: possibility?

Contemporary quantum mechanical interpretation of many worlds suggest that our universe is in fact multiverse (22), consisting from many worlds, but these worlds may live without life too, i.e., life in no way is some necessary building block of multiverse in general. Life emerges as something not obligatory necessary condition for universe to exist. Life could not emerge at all, the universe could start in Big Band and end in Big Crunch without life at all, maybe. This is point of view of reductionists, who do not require that some complementary (to reductionism) holism as general principle should work in nature or our universe or multiverse.

Of course, some one could suggest, and maybe already did, that many worlds may be connected with different ‘alive’ worlds, i.e., that each human being lives in his or her separate universe or multiverse, and these multiverses are distinct and not communicating between themselves (at all or at least to certain degree). But then next question would arise: what is the objectivity and the common world for all us we are living in? ‘Objective world’ around us would require that we couldn’t be separated in our multiverses absolutely, or too far at least. We live in some common ‘objectivity’ and are interacting with things in this common world and between ourselves too.

But, let us assume another scenario of organization of many worlds. Let us say that many-worldness applies only to life and is feature of life. Let us say that that what is divided in many worlds are living beings: things can’t be separated; electron (as *res in se*, as the essence of electron that belongs rather to world outside the reference of life than to world we distinguish or create by distinguishing) can’t be living in many worlds in sense quantum mechanics many world interpretation would require. We see electron as if choosing world to be ‘captured’ before experiment, but actually we are who do this, we choose, we migrate, or, we are some collections of many worlds that form myriads of observing instances that give at the end the quantum picture of experiment we perceive. For person as myriad consult Rudolf Steiner, e.g. (15; 14).

πάντων χρημάτων μέτρον ἄνθρωπον εἶναι

πάντων χρημάτων μέτρον ἄνθρωπον εἶναι = *Man to be measure of all things*. What Pythagoras was understanding by saying this, or Plato quoting him? We can’t guess it now, but we extract, or try to extract from this maximum. Why maximum? Because extracting

maximum from these words would give us just what we are arguing: mathematics is reference system of life.

What stands for what? if we want to establish one-to-one match between our argument and what said Pythagoras. Life stands for man; mathematics stands for measure; and reference system matches all things, but in what sense? Or otherwise, what are things, or, what we perceive as things? With no way to precisely regard thing as something perceivable unambiguously, we say that just reference system is that that registers something what we distinct as thing. We may say that we perceive things via reference system, but actually reference system is functionality that registers all that what we perceive around us.

What could be justification of our way of interpretation of Pythagoras? First of all, this is most general interpretation of words ἀνθρωπός ἐστι μέτρον πάντων χρημάτων. At least most general for time being. But why we try assign to ancient man Pythagoras and his words most advanced way of thinking? He could not think in such elaborate way. He was too primitive. He didn't know what is computer. He haven't seen our TV sets. He was driving hoarse cart not modern car of our modern time. You see, I am joking. Because this is way we are thinking. We do not know what Pythagoras actually knew. We can't comprehend the experience of whole of his life. He had sources of information other than we have now. We can't in any way comprehend what his subconsciousness was saying to him. We do not understand so many things after all. And because of all this we have long ago lost any reasonable way to interpret what ancients really knew and what didn't.

And of course Pythagoras didn't think in the way what we could connect with notions of contemporary mathematics and general principles of life and of reference systems and whatsoever like this. He had imagination, and, using imagination from our side, we may build some model of how was thinking Pythagoras, and, as if matching to this, what we could assume under reference system of life in our reconstruction. Behind all things Pythagoras could really think all universe, and that what had real power to encompass all this was ψυχή. But how? By measure, but measure in most general sense, by power of measure in all possible ways, in all functionally available ways. Thus, for Pythagoras to reach this great thought was necessary to comprehend the notion *measure* in most general sense, in most of his imaginative power. And he did this.

In Pythagoras model of universe human being may be put in the centre of it, namely, human being via ψυχή, i.e., via himself, comprises all universe, but only in sense of distinguishing the universe by his mind, by his perceptive power, by perceiving world via measuring it. All what is left outside this comprehension is of no importance. Of course, ancients have advanced question what is outside this what can be captured via ψυχή. Generally the answer was that there is nothing left outside, but it could mean something other, namely, that that what could be outside, could not affect the world in the way that world would be other than it used to be by perception of man. In contemporary argument, we may replace this by speaking about reference system in order to escape consideration of things that are outside our reach of perception. For example, today we know that maybe parallel worlds are outside our reach of whatever information from their parts.

Quantum distinction turned on by gauge freedom

Whatever is quantized in quantum mechanics, is due to gauge freedom (9; 26). All grand quantum superposition may be considered as one grand distinction that may be called universal quantum distinction or simply quantum distinction that would confirm what was considered in (5). Gauge freedom switches on universal quantum distinction in whatever sense we could use this term, but all this has sense only within our reference system of life, in BB that has (or have in many instances) created us. Thus, we may apply this principle of gauge freedom's effect to maximal effect applying it to life in general saying that gauge freedom switches reference system of life on with respect to ourselves. What is outside this reference system is outside from our reach and thus is attainable for us in no way.

Of course, such point of view is in controversy with traditional comprehension in mainstream science which does not recognize universal principle of life approach. But within positivistic science, if it consequently stands to its positivistic principle that all should be decided by physical experiment, and outside it nothing of importance should be treated, only physical interpretations, and we would say, wrong physical interpretations are these, that stand in the way of understanding our picture of reality by treating it via reference of life. Whatever other decides experiment. We can't simply build speculative ways of thinking and ask how reference system of life reaches far distant regions of universe, where we might assume that there no form of life exists at all. Such may turn out to be whole galactics, such may turn out to be whole metagalactics, and maybe so on. Nevertheless only physical experiment should decide whether our assumption of general principle of life (*vita principalis*) and our approach of general reference system of life is completely wrong or not. *Pro tempore* we suggest that our approach of multitime (8) and that of Bohm (2) are reasonable and lead us to the point discussed in this article.

Quantum distinction as interpretation of quantum mechanics

Pythagoras principle of *homo* as measuring instrument of all and Plato's $\psi\upsilon\chi\eta$ that comprises all universe are first formulations of quantum mechanical principles with quantum distinction as ambient aspect of grand quantum state within reference system of life. General gauge freedom turns grand quantum state by quantization conditions on and as an effect turns grand quantum distinction on.

***Vita principalis* as generalized anthropic principle**

Similarly as anthropic principle has at least two formulations, weak and strong, *vita principalis* should generalize anthropic principle in two formulations too.

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