

Cogito

ergo sum

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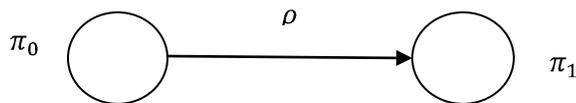
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2008. 25th September

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Pythagorean numbers

Let Pythagorean number Π be triple (π_0, π_1, ρ) , with first two elements as projections and third as arrow of Π where π_0 is called projection of distinction and π_1 projection of hologram. Pythagorean numbers should be used both as cognitive and mathematical term, but, of course, in different outline. For Pythagorean number in mathematical outline we may always attribute as its meaning cognitive Pythagorean number, either in trivial sense or as physical interpretation or maybe in some other sense. Taking Pythagorean number in cognitive sense we of course maybe loose possibility to find directly corresponding mathematical pair, but we may assume always its existence as we will soon see. Main element that makes Pythagorean number be Pythagorean number is its arrow: If there exists transform $\rho: \pi_0 \rightarrow \pi_1$ then this transform defines pair (π_0, π_1) as Pythagorean number.



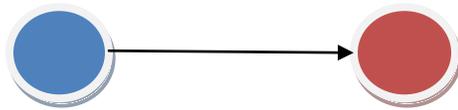
Pythagorean number $\Pi = (\pi_0, \pi_1, \rho)$

Arrow of thinking or arrow of *cogito*.

For a Pythagorean number Π being triple (π_0, π_1, ρ) , arrow ρ , if we use Pythagorean number in cognitive sense, we call arrow of thinking or arrow of cogito. We suggest for thinking simple model with base element as pair for Pythagorean number where one element $[\pi_0]$ from right hemisphere maps into element $[\pi_1]$ of left hemisphere where for map we use denotation ρ . In cognitive model ρ denotes arrow of thinking or elemental act of thinking. With ρ we may connect a choice too when π_0 from right hemisphere chooses appropriate element π_1 from left hemisphere. We are not trying up to now to specify which direction is more proper for thinking, from right hemisphere to left or opposite, i.e., ρ or reverse of ρ . We do not do this because we do not know. Thus our ρ direction is simply conventional one. Following our model thinking consists of elementary acts of ρ mappings, i.e., from arrows of cogito. Thus, in our model we come to natural *Cogito ergo sum* existence formula. Even more, not only thinking may be characterized by these arrows. Actually this principle must work on all levels of existence, thus, *Cogito ergo sum* formula is general.

Following idea of [(1)] we assume time consisting from acts of thinking, thus *Cogito ergo sum* formula works for what we accept as feeling of time flowing.

If we come to this model of existence of life then formula *Cogito ergo sum* we use for time in general and all follows as consequence from this general principle.



Physics is Mathematics

Let us follow idea from [(2)] that all mathematical facts may be described using Pythagorean numbers. Actually this idea wants to say that building mathematical theories from all arbitrary transformational laws may be chosen as base transformations these that constitute Pythagorean numbers. At least it sounds very credible; actually, all depends in our capability to distinguish these transforms that may be characterized as Pythagorean numbers.

Now, let us formulate a hypothetical principle that physics uses mathematical theories which consist from all possible choices what may be organized in whole system. Using language of transforms we may say that mathematics of physical theories uses all possible transforms that may be organize itself in a whole system. Following such principle we would further assume

that physics and mathematics actually are the same thing with assuming that physics consists from objects [or processes following Lee Smolin [(3)]] and mathematics from transforms.

Such principle sound not very credible but if we in place of arbitrary transforms take only these which have Pythagorean numbers in correspondence then we may start to gain credibility in this principle. If further we observe that laws that are applied to Pythagorean numbers may be used in case of transforms that do not have Pythagorean numbers in correspondence, then we gain credibility of the general principle without necessity of distinguishing particular Pythagorean numbers. Thus, principle *Physics is Mathematics* may start to have sense and live.

How we come to formula *Cogito ergo sum*?

In [(4)] expresses general principle that mathematical description of physical reality is fitted by use of physical experiment, i.e., physical experiment is that that decides either mathematical theory works for physical realities description or no. Moreover, physical experiment is that that decides the values of eventual constants in mathematical theory, i.e., choosing other values of constants we are calculating some maybe possible but not existing world or reality. What would occur if we allow all constants go astray and all theories on whatever nature go astray? We would calculate some non existing worlds and non existing realities which maybe are realized in some parallel worlds or in what else other aspect. But we are fixed only to level which is accessible to for today's science. If we could see the same sciences in some future point we maybe would find that some theories of today that are not suitable now for some physical purpose may become suitable then. Another aspect is of some eventually large model calculations that are not possible technically today but they are possible in principle. These are theories that we can not check as to their applicability. Moreover, if we would start to thing of all possible physical descriptions in whatever time on whatever level of development of human mind, of course, we would find that we can say nothing of them or almost nothing. But maybe one thing we could find, and this would be just this one, that mathematical theories developing and acquiring their inner restrictions and generalizations are going towards one theory which is nothing else but the model of our universe in the sense that we were using higher: physics as world of objects or processes coincides with mathematics as world of choices.

We can not directly today to approve or deny this principle, at least today not. Let us try to give some encouraging aspects in this direction at least. All of them should be as if working against these main general principles that are used in [(4)] to describe the physics of today.

The main principle of mainstream physics, that life is planted as if in the lifeless and inanimate world, or, in other words, life is local aspect of worldlife in general, and world could be involved in evolution without life too. Or otherwise, life is not obligatory aspect of universe, universe may get without life too. From this follows that time is not aspect of life, but time 'runs' outside life too, i.e., stone, for example, 'lives' inside time-running too. In [(5)] we assume that

observer is that that 'knows' mathematics and sees world around using these eyes of 'his' mathematics.

Using [(6), (7)] we come to think that both cognition and mathematical observation bases on duality between distinction and hologram. This direction is mostly arguable and of need for investigation and specification.

For support to ideas higher we may use references to D'Aquila and Newman [(8)] for their model of mind functioning. The mind we use for physics is the same we use in our linguistical application in the very trivial sense. But consequences from this we gain very hard. Let us see, for example, Benjamin Lee Whorf [(9)].

Other references we add without comments.

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