

Hologram and distinction.

The physics of time

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30.12.07-08.01.08

There are two times in Greek kairos (καιρός) and chronos (χρόνος). There are two cerebral hemispheres, left and right, correspondingly, left which communicates via kairos, and right – via chronos. The time which we use is somewhat mixture of both proper times, psychological time, that does not have adequate equivalent in nature. If we are interested in science, we should forget, at least for a while, about this conventional time that can't be associated with some physical notion, and use in place of it time notions kairos and chronos. Left cerebral hemisphere perceives outer (according Rudolf Steiner inner) world via distinctions and gives ahrimaic picture of world, according Rudolf Steiner, but right cerebral hemisphere – via holograms and gives luciferic picture of world, according Rudolf Steiner.

Let us start with holograms. We see outer (or inner, we are not going to repeat it further) via pictures, which are projections of our brain, which are holograms, which procure to us left cerebral hemisphere, which are (infinitesimal) projections of chronos. Details in these pictures would be distinctions, which procure to us left cerebral hemisphere. Actually, simple distinctions we can't perceive in some sensible way, details that we see as details in our pictures, already are holograms. These holograms that would correspond to sensible details procure to us our consciousness already in some processed form as cognitive substrates, which may be called distinctions with regard to more global picture. The level as low as simple distinctions are not perceivable directly by our senses. Nevertheless kairos gives to us distinctive world picture and chronos gives holographic picture of world.

Hologram is main notion for us, because all we perceive via holograms. Distinction level is not accessible for us on level of perception. Vision gives us holographic pictures; smell gives us holographic images of smell. Hearing gives us holographic images of audition. In similar mode the touch gives us holographic touch images. Even more important for us is that our linguistic ability works in holographic mode. Each language is hologram but more probable that language is built up from holograms that are building blocks of hologram of all languages.

Our cognitive consciousness is built up from holograms and works in holographic mode. But holograms are impossible without distinctions that are building elements of all. Both holograms and distinctions construct our traditional sensation of time, which we experience as sequences of infinitesimal holograms. In our consciousness we reconstruct distinctions, which actually are holograms, but we perceive them as distinctions. Thus our cognitive machine works as using distinctions that are actually holograms.

If all in our consciousness works as holographic apparatus, what doesn't? Is there anything not holographic in our consciousness? Yes and no. Yes, because we try to reconstruct scientific world picture that wouldn't be holographic but pure aggregation of distinctions. It is our scientific method, or at least, we call it scientific method to detach holograms from their holographic nature and reflect as distinctions or heaps of distinctions. Using conventional time notion and causal relationship, we see things and phenomena as distinctions with holographic aspect destroyed or smeared out. What we call phenomena, are sequences of

distinctions with holographic aspects ignored. Causal relationship itself perceiving distinctive aspects of what goes on ignoring holographic aspects. Actually it wouldn't be possible, but we reconstruct phenomena as sequences of causal events, thus destroying their holographic aspect. We register only distinctive aspect and forget to use holographic aspect. Using it from generation to generation, we unlearned to see world from holographic aspect. We called it rational development of thinking, but forgot to ask whether this is the only way of thinking. Or, more probably, we had to go through this stage of development to reach eventually higher level of consciousness when this way of thinking, so called rational way of thinking, would exhaust itself. But holographic is all our perception. Nothing in us by nature is non-holographic. How it was possible? But holographic view without distinctiveness doesn't give one possibility to discern, this means, to think. At least, for a while, how we understand thinking up to now. Thus, for us, in our consciousness, in our thinking, discerning of things is also thinking. We associate thinking with discerning of things, of notions. Notions in our consciousness are distinctiveness providing cognitive machinery, as we understand it up to now.

But, our cognitive machine is holographic by nature. Thus, what comes out from it must obey some holographic rules. All is holographic. Cognitum is holographic. How it comes that we see phenomena as simple aggregations of distinctions without their holographic aspect? We break down symmetries; we break holograms in order to reveal distinctive nature of things. After all is broken, we reconstruct the picture of world using only distinctions. Actually, they are holograms nevertheless, but we use to ignore these aspects and feel mostly happy, when we can them ignore completely. Our world picture should be aggregation of distinctions, according our, as we think, scientific method, with some allowed low level proportion of holograms in them, but only because mathematical argument forces us to do this. Without this last drive our theories were without holograms at all. We do not feel comfortably with too many holograms in our theories. This is why most of scientists hate string theory. This relates all highly forwarded mathematical theories, quantum mechanics in general, and only concord with experiment force scientists not to throw all modern physics in waste bin.

But what is responsible for this way of thinking? The only one to be blamed is our understanding of linear time. Linear time „feeling“ gives us causal relationship argument, which actually is hologram-destroying-distinctiveness-aspect-overestimating principle generalized as main rule of nature. But causal relationship principle is not general principle of nature itself; it only shows us what we may perceive from our point of vision, where by vision we understand comprehension in general sense. This same causal relationship principle, if properly considered, shows that we do not see things how they look like both in kairos and chronos, it even does not show phenomena in each of the time aspects, kairos and chronos, separately, but only in some mixture of both, what we call our conventional time and should call psychological time. Thus, causal relationship is as psychological argument of our reason as time itself. Actually, they are interchangeable notions, as long as they can't be considered one from another separately.

What we gain as result of non-correct using of our conventional time? All sciences, which crucially depend from this time notion, mainly, physics and biology, are under threat to fall into senseless interpretations of their inventions. In case of physics, we experience extraordinary development and delusion in the same time. Or rather mixture of both, what we see in contemporary theoretical physics. All what tells mathematics in theoretical physics is correct, all what tells physics about its inventions is complete nonsense. We see this in BB, exemplis gratia.

Is it all nonsense what say physics? There are too aspects. If we interpret physical facts as solutions of equations with time parameter in it and we say that this time does not have anything common with reality, but only some imaginative picture of reality, then all would be OK. If we start to relate time in equations with time in reality, we fall in nonsense. This concerns, for example, BB in its global aspect. Connection BB with time interval $13, x$ years in past we may only in some imaginative picture that would interpret solution of Einstein-Friedmann equation. This doesn't have any reality's aspect as to our wish to interpret it with some event in past. We do not know what sense has to prolongate linear conventional time in past from point of view of physics. How far this prolongation should run? Maybe one hour, maybe one year, maybe millennium? But more probably, that such prolongation in direction in the past does not have any sense even for a second. Quantum mechanics should give proper answer to this question, whereas physicists up to now did not have adequate understanding of the problem to solve it ad hoc.

Mathematics is science, which is principally free from time notion. As a consequence, mathematics is the only apparatus, which conveys us picture of reality, or rather deep realities, taking into account that other tools to convey reality we do not have. Using mathematics in mathematical physics, we may use it to describe pictures of phenomena when we do corresponding effort for conformity with physical experiment. Nature may be described using mathematics. Physics falls out from the play because of nonsensical time notion. Using mathematics, incredible precision may be reached. This we see in quantum electrodynamics and quantum field theories. Reading modern theoretical physics texts, we see more and more mathematics, and less and less physics in them. If traditional scientist is tempted to believe more in physical argument than in mathematical, he or she gets shocked and can't comprehend "what is going on". Scholars should change their minds toward mathematical comprehension and learn to see world via mathematical thinking. It is in case, they want to see reality. Every attempt to see things via eyes of physics or say something in language of physics with conventional time use forces us to speak nonsensical things and loose comprehension of reality.

In last years we see tendency to develop theories which are purely mathematical, quantum field theories, string and superstring theories, loop gravitation theories, gauge theories. We see development of quantum field theories as purely mathematical theories that force development, for example, such mathematical theories as algebraic geometry. All this show the way out from the corner where contemporary physics has come using outdated time notion. Developing these theories, physicist hope some day to come to new time notion. But to expect miracles, without courage, may turn out crucial for mankind. Three great revolutions already prompted time notion to be changed radically, Newtonian, Einsteinian and quantum mechanical revolutions, but time remains as it was. We are deceivin ourselves that Minkovski space-time notion has changed our understanding of time radically. The best test procedure is BB.

We should ask us, how long time we still have for our development. More courage time notion acceptation would give us more dynamic development, and, mostly important, more balanced development. Courageous hypotheses should be forwarded, new radical theories developed. If scholars are challenged to throw out old physics, the challenge should be accepted with even more aptitude. Old space and time notions are the main brake to scientific machine of modern sciences. They are real trouble for physics, forcing real trouble with physics, using language of Lee Smolin. Not the string theory.

It is mathematics that created for us SM, standard model, model of elementary particle physics. Mathematics created BB theory, Big Bang theory, that explains creation of mater in stars. They are wonders,

but they remain wonders if we do not try to interpret them in terms of psychological time notion, what does not exist in nature.

What does then exist? What is *cairos* and *chronos*? We do not know it; we perceive only them as aspects of multitime via functioning of our brain, via functioning of our cognitive machine. For us it is more appropriate to assume all cognitive machine to be multitime where we live in, all living creatures. At first it may seem without any ground, but after we come to simple understanding that time can't be separated from anything what can be attributed to all being, that it can't be separated as something distinguishable that could be called time, even together with space as in Einstein relativity, but it must come together with mass, even with massless matter as light too, thus with all matter, then most clever assumption is to assume time being something general that comprise all matter and all physically comprehensible essence. Another assumption may be taken to support our time notion in order not to turn it in some mystic "One"; we may assume that time is perceivable through our cognitive machine, and we may confine time, at least that what we may perceive as time, only with cognition and equal time with our cognition; we may follow Descartes and apply his formula *Cogito ergo sum* for our purpose. Thinking is being, thinking is allowing time going on, but in all aspects of perceptiveness and not confining it to one man, but to all men, thus, to all cognitive machine. May time have other aspects outside our thinking, but it isn't possible to perceive this and thus to let it exist. It seems mystics, to allow us to thing like this? No. It explains all too well, to be nonsense. From global outlook we have simply assumed that time has to be connected with life, with being alive. The same assumption we used in [Zep 05].

How to live without conventional time notion in physics? Is it possible?

We are forced to live without time, and build new science based on holographic theories. Holograms are proper aspects of multitime. We have to get used to build our mathematical theories as balanced theories built from holograms and distinctions. In cases when crucial errors do not arise, we may use traditional Newton or Einstein-Minkovsky time notions. At last, we may find some corrected time notion, for local use, for quantum mechanics that should arise from proper mathematical theory.

Mathematics has created quantum mechanics, biggest achievement in science of all times. Feynmann said that nobody knows what is quantum mechanics. He wanted to say, nobody knows what is time. With quantum mechanics all is OK. Troubles start when we want to use old time in new theory not adequate for this use. Because of this, parallel universes and all other strange things spring out as from nowhere. By quantum mechanics, mathematics created for physics the place to develop; now it is physics turn to use it properly. Up to now it wasn't done in aspects what concerns time.

In quantum mechanics, we know two dual aspects, these of particles and waves: particle aspect looks like distinctive aspect, where wave aspect looks like holographic aspect. This may be ground for something further. Fields are ready holograms, where particles are distinctive aspects of some holograms that register matter presence in universe. Higgs particles are these registrators of holograms responsible for matter with mass. In [Zep 07] we tried to explain that linear time projection and Higgs field are two aspects of multitime. As we told, time is present as if in two aspects in universe, via time projections, and via Higgs fields.

When we put question before us, what time is, we must think in general, what we are researching from the place where we as human beings and in the same time as measuring instrument of outer world are displaced.

For this reason it is appropriate to capture a simple thought. What we are researching, is cognitive machine we live in, not some mystic nature that is outside us. Maybe something is outside us there, but we do not have any possibility to look outside there until we have learned to use our own cognitive machine adequately. Mathematics we build is reconstruction of our cognitive machine. Building mathematics we try, step by step, to reconstruct our cognitive machine, but we do it very slowly because we are not aware of what we are doing. And further, before we end with this task of building complete this machine, we do not have any chance to look somewhere out there. We may recall Descartes and his thought of first preparing his house of cognition, and then start process of proper investigation.

One thing is mostly important to comprehend. Our cognitive machine is much bigger than we were thinking. All what we perceive are as if effects of interactions in our cognitive machine.

But what is reality what we want to perceive with eyes of scholars? May we somewhat reconstruct reality what we see around us when we remove ourselves from what we see abandoning our conventional time notion? Yes, we may try and not at all with such desperate look as if this used time notion is something we can't do without. We must recall that one of main principle of physics is that human being must be excluded from objective picture of reality to speak of this reality as physical reality. Now, accepting new approach in attempt to search universe, we must change this principle and enter our presence in this relation, observer and objective reality. We can't any more speak about observer (O) as if some mystical being that explores universe (U), but replace observer with cognitive machine (CM). When restoring reality, we must speak not about O->U relation, but about CM->U relation. Simply, observer is our cognitive machine. Next step is to acknowledge that CM we reconstruct as what we call mathematics. Next step, CM is instrument via what we see universe properly, as scholars, not simply as observers with our anatomical eyes. It is our CM that is seeing universe. Or otherwise told, we see our universe with eyes of mathematics. But one more necessary conclusion we must make that we ourselves are build by the same cognitive machine. From side of universe we are not anatomical beings but first of all our cognitive machine.

Now we may put all this in some order.

Its is CM that observes universe: we may denote with relation CM->U.

We are build as CM not only on level of thinking, but on all levels of our being: our bodies are build, from lowest level of genes, genetic codes all that, up to highest level, anatomic body, our brain and all that, as CM, using by nature the same pattern. If we accept this simple principle, we may look to what is outside ourselves, our body, using principle of analogy, as something similar to us. The only thing what we may perceive is to accept, that universe outside us must be in some analogy with our cognitive machine.

Is it there something quite different in the universe, that couldn't be present in our cognitive machine? We do not know it before we have investigated our cognitive machine sufficiently properly. Thus, first thing in searching universe, is to search our cognitive machine. In [Zep 05] we suggested as Cognitum hypothesis to assume that matherial world and cognition is the same thing. Now we may formulate the same thing more properly, for a time being, we may assume that searching universe we must first search our cognitive machine as if it is the complete universe.

Thus, restoring reality, we replace relation O->U with CM->U, assuming that we ourselves are CM on all levels of our being.

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