

Modern physics, for example Prof. Kulhanek, declares (I quote him) :

„ Time interval between two events is the shortest one in self reference coordinating system. Elsewhere time interval elapsed between beginning and the end of that process seems to be longer”.

It means that rate of passage of time is the fastest in the observer's system. Then in this basic system of the chosen observer information from moving accelerating objects about their time flow is observed to be dilated. Longer time interval between otherwise same events is observed. (as even so called "same events" are disputable).

It is necessary to emphasize and recall that **every** observer in the universe (every star, hundreds of billions of stars) can declare themselves to be a basic observer and thereby to have the fastest rate of passage of time. Thus every star can declare that there is slower passage of time on the other observed objects because they are moving toward this reference star. Observer – static star – put himself into state without movement. Observer has to be always put into such state in order to observe and give out **statements**. It corresponds to the physical process which physicists call as a STR: (special theory of relativity)

I am convinced of "**transformations**" not to be transformations but indexing coordinating systems instead between system of Observer and accelerated system of moving object. "Self-system" of observed accelerated body is indexing towards basic Observer's system and in this way it is possible to comprehend an *e s s e n c e* of the time dilatation and contraction of lengths. Data are scanned as indexed, it means that there is nothing like "transformation" there.

Unanswered and mysterious question is whether or not *local earthly passage of time* is indeed **the fastest one** thus whether or not very this passage of time is somehow set up already in advance, within the Big-Bang itself and spreads = unwinds in this rate everywhere in the universe.(?!). There are two different declarations there: **a)** local, earthly passage of time is uniform in whole universe or **b)** it can be different on other objects, other galaxies. I can't attach myself to a) nor to b). I can't attach myself even to statement that passage of time can differ historically on the same universe object in question. This is an immense mystery. If it would be such case that there would be different rates of passage of time in different areas of the universe (in every other galaxy) then we would get information (that detected red shifted radiation) to be in undecipherable states.

I think that it is unlikely to be truth. I even can't imagine of "how" observed galaxies would appear in their shapes and forms if passage of time differ (?). The next question is how this rate of passage of time is influenced by very fact of the space-time expansion. After Big-Bang there was a) phase of inflation, then b) phase of steady expansion and now – since 6 billions of years after Big-Bang c) phase of accelerated expansion of the *s p a c e*? (Is space-time rate of expansion equal to that of the space?). There is still an open question "why those phases". Are they really confirmed to be real or it is still just speculation? There is still one fact to be accounted that no physicist dealt yet with "determination of "rate" of passage of time... or so ?

Another thought can be taken regarding this: if 3D space is expanding into its three dimensions no matter of whether with acceleration, equally or with inflation it has to be expanded "spherically" into these three axes, "from the **point or moment** of the Big-Bang". It is unlikely to be expanded chaotically and randomly in different rates into 3D.

It would be similar to admit that time as physical quantity has got also three dimensions collateral with those of time. Time would also expand into its three dimensions. Why not? Who forbade it? Time flow – its expansion in one direction (alongside its three dimensions) is analogous to that of space, time is expanding in the same manner like space also only >forward<; Space is not expanding backwards either time so. Every point in the universe "is expanding" by speed of time. (((Quasar at the end of the observable universe can observe us – the Earth – as an object drawing apart from him by nearly speed of light. ... every point observes another point "at the end of observability" to be drawing apart by speed of light – but this is but indexing of coordinating systems. Whole universe curves, bends itself, it is not Euclidean. We observe some dilatations or contractions of which base is nothing else

but “curving – cornering of very space-time on the very big scales etc. But this will be discussed later))).

Objections of opponents can be of that kind that bodies at any place of space-time can move both directions “forward” and “backward” alongside the same dimension of three ones. But... but it is not truth if universe is expanding!!!!!! And at the line of observability even by speed of light. Therefore no physical body moving “backwards” cannot get itself into initial position where it was before “backward movement”.

Let's follow movement of the car that initially stood at certain place at the car park. The car had chosen any direction or, let's say, trajectory of its motion. After any length of time it had chosen the same or different trajectory to get itself back at the exactly same place where it was before. But **exactly same place** – point like position already doesn't exist because whole planet is moving through the universe also whole galaxy does. Starting point of previously standing car disappeared and became unrepeatable.

“Feed forward” progression of the car including motion of the Earth, solar system and whole galaxy is so >fast< that subtraction of “the backward” car motion against global motion, against global whole-universe expansion is but immeasurable! **So that there doesn't exist movement “rearward-backward” alongside length dimension to be exactly same or similar in the same way like there doesn't exist backward passage of time, time is progressing only in single direction.**

Let us say there exists reversal progression along length dimension either time dimension but purely only on the Planck's scales or even smallest ones. There and only there so called space-time foam is produced or created and wave-agglomerations from length and time dimensions within that process occur in which curvature of time is pointing backwards but only for very tiny interval. Similar it is with the car leaving car-park. If that car would be observed by quasar he would say that car is moving **apart from him** by nearly speed of light and range of “reverse motion” **toward him** (toward quasar) is tiny, immeasurable and unobservable. (After subtraction movement of the car from Prague to Brno from speed of light.)

It is the same matter with time “why” we can't observe reverse intervals of time into three dimensions or just into one of them at “one certain movement through the universe”. Thus let's repeat again: Motion of the Earth (thus a car at car park respectively) through the universe **is only “forwardly”** along with three dimensions and ... and if the car starts moving “forward” difference from the “forward direction” is immensely small.. Quasar will not observe it. (even in the frame of the global space expansion).

Exactly same situation is with that of time: **time “flows “into three directions in identical rates** (according to **expansion** of time since Big-Bang). Time is flowing, streaming, ageing, ticking, running, it means that *e x p a n s i o n* of time has some basic rate set up in advance exactly similarly to *e x p a n s i o n* of 3D space. It is concerning utterly the same *cone* of expansion and reverse passage of time we can't observe (in comparison to that car that stood at the car park and then started up). We can't observe it even because of to be placed for 8 orders far apart from “main axis”of expansion of the universe. We are >deviated< for 8 orders of how we perceive length related to time $\frac{c}{10^8} / 10^0$; Yes, we humans are perceiving entirely differently “one meter” and “one second”. It is very interesting. For 8 orders “our human kind of perception” is more sensitive for the length than for unit of time interval which is one second.

And even more remarkable one is an opinion that if we admit existence of three dimensions of time (let's name it as timeon – three dimensional only global particle of time) in similar meaning of that of the space then as a matter of fact time doesn't flow towards us but contrary we are “flowing” toward time. It means that we- mass objects – mass points are *w a n d e r i n g* along time dimension or better to say along all three time dimensions at the same rate !!!!. Space-time is a net of 3+3 dimensional and mass bodies are slipping along both length dimension by cutting off intervals and time dimension by cutting off intervals also. It is as if time dimension “stood still” and we slipped alongside. The same with length dimension. It “stands still” and we are slipping along length dimension and cutting off intervals.

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