Relation between Psychological Time and Physical Time

Amrit Sorli
Space Life Institute, Slovenia
sorli@spacelife.si

Abstract

Recent physical research on time suggests that time is not a physical reality in which humans perceive changes. Time measured with clocks is merely a numerical sequence of changes that takes place in quantum vacuum. Humans experience this constant flow of numerical sequence of change in the frame of psychological time, i.e. "past-present-future". In physical reality, the past, present, and future exist only as a mathematical numerical sequence of change taking place in quantum vacuum; time as a numerical sequence of change as measured with clocks is exclusively a mathematical quantity. We humans perceive this mathematical numerical order of change with our senses, then it is processed within the framework of linear psychological time "past-present-future", and finally it is experienced. The physical time that we measure with clocks is exclusively a numerical sequence of physical change, while the linear "past-present-future" time is exclusively a psychological reality contained in the human mind.

Key words: psychological time, physical time, perception of time, experience of time, change, numerical sequence

Introduction

In the Special Theory of Relativity time t which we measure with clocks is a component of the forth coordinate of space-time $X4 = ict$; in this formalism, time t represents the numerical sequence (order) of photon motion in space. Let us take a look at a photon moving from the point A to the point B on the distance d. The distance d is composed of a given number n of Planck distances d_p,

namely $d = \sum_1^n d_p$. The photon moves from Planck distance d_1 to Planck distance d_2 and so on. Each Planck distance d_n corresponds exactly to the Planck time t_p . In this perspective, Planck times $t_1, t_2, ...t_n$ are numerical mathematical sequences of photon motion on distance d. A photon does not move in time, it moves in quantum vacuum only, while time is a numerical sequence (order) of its motion. We use clocks to measure this numerical order.

Clocks do not run in time, they run in quantum vacuum only and time is a numerical sequence of their run. Clocks are reference systems for measuring all other changes in the universe. Changes in the universe do not take place in time, time is merely a numerical sequence of changes.

Space-time, where time is a 4th coordinate of space, exists only as a mathematical model and it is not a fundamental arena of the universe. The fundamental arena of the universe is the three-dimensional quantum vacuum constituted out of fundamental entities of Planck volume l_p^3 where time measured with clocks is a numerical order of change which take place in quantum vacuum [1,2].

In this perspective human experience occurs in time as a fundamental psychological "past-present-future" frame through which we experience the flow of physical time which is numerical sequence (order) of changes in quantum vacuum [3].

Common understanding of time perception and time experiencing

Common understanding in psychology today is that time runs in the universe as a physical reality which humans first perceive in senses and than

experience it [4,5]. Human emotions influence the experience of the flow of physical time. Having positive emotions time runs fast, having negative emotions time runs slower [6]. For this common understanding there is no experimental evidence; time as a physical reality in which we humans are purported to live cannot be perceived and experienced. There is no experimental evidence that time in the universe exists as a physical dimension in which events take place.

New understanding of perception of time and experiencing of time

Recent neurological research has shown that linear "past-present-future" psychological time has its physical basis in the neuronal activity of the brain. The experience of changes taking place "one after another in linear time" is the result of neuronal activity of the brain [7].

Humans perceive changes in the world with their senses, followed by processing within the framework of psychological time, and finally experiencing takes place. Experiencing within the framework of psychological time, human beings experience changes that take place in quantum vacuum as "changes taking place in time".

world – sensual perception – mind processing in psychological time – experience

Distinguishing physical time, i.e. the numerical sequence of change, from linear psychological time brings new insights into the real nature of time and universe itself. The universe does not take place in time, on the contrary, time is the numerical sequence of universal change. Universal past and future exist only in the sense of numerical order. There is no physical past or future. Time travels into

past or future are not possible. One can travel in quantum vacuum only and time is the numerical order of one's motion. One can travel in time only in a psychological sense, because linear time is exclusively a psychological reality.

In 1908, the English philosopher John McTaggart Ellis published an article in Mind wherein he proposed that time was not a physical reality in which things took place. He said: "It will be convenient to begin our enquiry by asking whether anything existent can possess the characteristic of being in time. I shall endeavor to prove that it cannot" [8]. Mc Taggart's view is correct. Nothing can possess the characteristic of being in time because time which we measure with clocks is exclusively a numerical sequence of change.

Conclusions

There is not a single experimental datum in physics that would confirm that changes take place in time as a physical reality; the time which we measure with clocks is exclusively a numerical sequence of changes taking place in quantum vacuum, hence it is a mathematical quantity. We humans experience this flow of numerical sequence within the framework of linear psychological time which has its origin in the neuronal activity of the brain.

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