

## **Interactions between Space-Time, Gravity and Consciousness**

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### **Abstract**

Einstein considered space-time as a structural quality of gravitational field. Idea here is that space-time is an observer effect formed into the process of measurement of duration, speed and numerical order of material change that run into a gravitational field.

### **Introduction**

In the book "Relativity: The Special and General Theory" (1920) Einstein said that it makes no sense to think about space-time as an independent physical quantity. The basic medium into which material change runs is the gravitational field. Space-time is only a structural quality of a gravitational field: "Space-time does not claim existence on its own but only as a structural quality of the [gravitational] field" (1).

The idea here is that space-time as a structural quality of gravitational field is an observer effect formed into the process of measurement. In quantum physics the term observer effect refers to changes that the act of observing will make on the phenomenon being observed; the observer is no longer external and neutral, but through the act of measurement he becomes himself a part of observed reality. Into scientific experiment of "space-time" that is the observer's mathematical model also becomes structural quality of the gravitational field.

When there is no measurement, space-time exists only as a mathematical model and do not exist as a structural quality of the gravitational field. Gravitational field into which exist material objects is atemporal. Time does not run into the universe on its own. Einstein and Gödel were right saying that there is no time in the universe, that universe is a timeless (atemporal) phenomenon (2).

### **Time is what one measures with clocks**

Time is what one measures with clocks. With clocks one measures duration, speed and the numerical order of material change that run into the atemporal gravitational field. Time enters into existence when one measures it. Special Theory of Relativity shows that the speed of material change is

slower in a faster inertial system than in a slower inertial system. Clocks run slower in a fast plane than on the surface of the planet. The twin on the spaceship is getting older slower than his brother on the planet Earth, but both are growing older in the atemporal gravitational field. General Theory of Relativity shows that the speed of material change is slower in a stronger atemporal gravitational field. Clocks are running slower at seaside than on the top of mountains above the sea. (3,4).

Time and space do not exist on their own. For their existence, a measurement of material change that runs into the gravitational field is needed. In the Theory of Relativity it is not that time is relative, relative is a speed of material change.

### **Atemporal Universe**

We live in an atemporal, one can also say eternal universe. Eternity is not infinitely back into past and infinitely forward into future. Eternity is this present moment. Einstein considered that there is no true division between past and future; there is rather a single existence. His most descriptive testimony to this faith came when his lifelong friend Besso died. Einstein wrote a letter to Besso's family, saying that although Besso had preceded him in death it was of no consequence, "...for us physicists believe the separation between past, present, and future is only an illusion, although a convincing one." <http://everythingforever.com/einstein.htm>

Albert Einstein about time: Space and time are modes by which we think, not conditions under which we live. Time--the time that we know through clocks and calendars--was invented.  
<http://www.britannica.com/clockworks/article.html>

Ernst Mach about time: It is utterly beyond our power to measure the changes of things by time. Quite the contrary, time is an abstraction at which we arrive by means of the changes of things.  
[http://www-gap.dcs.st-and.ac.uk/~history/HistTopics/Time\\_2.html](http://www-gap.dcs.st-and.ac.uk/~history/HistTopics/Time_2.html)

Out of Einstein's and Mach's statements follows that in the universe nothing is "before" or "later" irreversible stream of material change runs into gravitational field that is timeless (atemporal). Human's experience this irreversible stream in the concept of "space and time", scientist's into concept of "space-time". Time enters into existence when one measures it. We are living in an eternal, atemporal, timeless universe, being aware of that or not. Material change has no duration on its own. We give it a sense of duration by measuring it.

Roger Penrose about time: The temporal ordering that we 'appear' to perceive is, I am claiming, something that we impose upon our perceptions in order to make sense of them in relation to the uniform forward time-

progression of an external physical reality. [http://www-groups.dcs.st-and.ac.uk/...ics/Time\\_2.html](http://www-groups.dcs.st-and.ac.uk/...ics/Time_2.html)

Roger Penrose's understanding of time is close to Einstein and Mach's understanding. My interpretation is that by time-progression he means a constant stream of material change as in the universe one can perceive only a stream of material change and not time nor space. One can perceive only distances between material objects that exists in gravitational field and not space. Space exists as a mind-model only. Time and space are man's invention in order to measure duration, speed and numerical order of material change that runs into the atemporal gravitational field.

## **Discussion**

Atemporal gravity field is a medium of gravitational force. Gravity force is non-propagating. It does not travel between two material objects (as electromagnetic force). Gravity force acts in the gravity field itself. The gravity field has a density that is defined by the density of matter in it. Higher is density of matter, the lower is the density of the gravity field and the stronger is the gravity force. Gravity force is a "shrinking force" of the gravity field itself. It "pulls together" the field and material objects that are existing in it. Matter does not "produce" gravity force directly, but it produces indirectly changing density of the gravity field itself. Gravity field is atemporal information medium between two elementary particles. No information signal travels between particle A and particle B, gravity field simply "knows" about their spinning.

According to Rovelli, the gravitational field has a quantum structure; it is composed of "gravitational quanta" of the size of Planck (5).

Penrose and Hameroff's research suggests that the gravitational force is a basis for human consciousness: the force of quantum gravity acting on the mass of neurons within the brain may be responsible for the emergence of consciousness. The process is fundamentally related to the influence of quantum gravity on microtubule networks within the neurons (6,7).

Author and Fisceletti suggest that consciousness is a basic frequency of "gravitational quanta" (8). Consciousness is a structural quality of gravitational field and plays decisive role into evolution of life and human being itself. Beside that consciousness is an atemporal information medium in the EPR experiment. In the process of scientific measurement of duration, speed and numerical order of material change, consciousness itself takes the form of space-time. Mathematical model of space-time is "projected" into consciousness itself and becomes a structural quality of the gravitational field.

## Conclusions

The universe is a “happening” of interactions between matter, consciousness and the human mind. Into the process of measurement, the mathematical model of space-time becomes a structural quality of consciousness which is the basic frequency of the gravitational field itself.

## References:

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