Revised Concept of Time
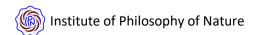
Bishnu Charanarabinda Mohanty

Abstract

Newton asserted that time passes uniformly regardless of what happens in the cosmos. Einstein supported the idea that time runs differently depending on the position in space. This author contends that time is not a fluid (physical substance) that can flow. Due to the interaction of mass and space, simultaneous events happen in the dynamic universe. There are certain events that are more dynamic than others. We utilize the dynamism of the planet as a benchmark for evaluating the relative dynamisms of occurrences. An event's duration decreases as its dynamism increases. Time is simply a mathematical parameter; it is not a physical entity. An earthly day (time) is created by the earth's regular rotational motion. Any event has dynamism by nature; hence time is a derived parameter for its duration. Dynamism therefore takes precedence over time.

Introduction

The universe is always dynamic. Thus the constituents of the universe are in dynamic state hence the constituents are always in motion. The basic constituents of the universe are matter and space. In the new concept, matter contains space and space contains space matter particles in finer domain. When matter moves in space it implies a mass-space integral system moves in a mass-space integral medium. This is perceivable from the motion of a solid in a liquid. The motion of a body in physical space medium takes place by displacing the medium. But in the present concept it is erroneously presumed that the body moves in empty space medium without causing displacement of the medium. The universe is a mass-space continuum therefore motion of any matter in space is essentially the motion of a mass-space system in another mass-space system. We are able to see the dynamism of a moving system. The duration (time) for a particular displacement varies depending on the dynamism of the system. As a result, time is a derived unit and dynamism (velocity) is the fundamental one.. Time is not a physical entity but only a dynamic state property of a physical entity by virtue of motion. Time has no physical significance and is redundant for a static universe or a static object in a stationary universe. Any physical entity, in motion has dynamism as its state property. An object with a given dynamism, executes particular displacement during the particular angular displacement of the earth. Therefore, we only evaluate the dynamism of a system relative to the invariant dynamism of the earth, taken as standard. The rotational dynamism of the earth is invariant hence used to evaluate the relative dynamism of dynamic systems on earth. One complete rotation of the earth **makes a day** of earthly time. This concept has contradiction with the mindset that the earth **takes a day** where time flows independent of event. The time entity is not a physical entity therefore it cannot flow by itself. A moving object has its dynamism/time. It may be made clear that only physical fluids have the ability to flow. The new concept, 'dynamism' as the fundamental entity provides a better significance of space-time which means the moving space. Space being physical there is no difficulty

in perceiving the motion of space and perceiving the dynamics of objects in moving space.

New interpretation of time

Time is a parameter of every event. For an eventless static universe time has no meaning. The dynamism of events differs from one to another. Different objects move at different velocity hence their dynamisms are different. We have no means to know the absolute velocity or the absolute dynamism of any event. We can only characterize the relative velocity or relative dynamism of a system relative to some invariant dynamism as standard. The rotation of the earth is an invariant dynamism therefore it is used as a standard to evaluate the relative dynamism of systems. Watches are artificial machines made to represent the invariant dynamism of the earth. Thus, either the rotating earth or the rotating arms of a watch can be used for evaluation of relative dynamism of systems. The watch runs and events also run (progress) hence the dynamism of any event can be easily compared with the dynamism of the watch. For example, the dynamisms of two boys running to cross a fixed distance can be observed and it is also possible to say, whose dynamism is more. The higher is the dynamism, the lesser is the duration of event (time).

Thus, time is inversely proportional to dynamism. If we know the dynamism of a system, then time of the system can be calculated. Alternatively, if time of a system is known, then dynamism of the system can be determined.

Significance of past, present and future

Earthly time is gauged from the invariant dynamism (rotation or revolution) of the earth as standard. We can trace backward from the uniform periodic motion of the earth through recording the number of revolutions or rotations of the earth in backward directions to date the past (our childhood) and project the same in forward direction from the present state of position to date the future (our old age). If the earth would have variable periodic motion, then knowing the past and the future would not be possible by counting the rotation or revolution of the earth.

Whether the dynamism or the time is primary?

If dynamism of a system is assumed primary (more fundamental to time), then time becomes a derived unit. Conversely, if time is assumed primary, then dynamism of system becomes a derived unit. One can observe the dynamism of an event but cannot observe the flow of time by looking at any event. Hence dynamism may be considered as the primary entity, and time (duration) as the derived entity. We are accustomed with objects having different dynamism (velocities) but not accustomed with different times of different moving objects.

Merits of making dynamism primary unit

According to Newton, absolute time exists independently of any perceiver and progresses at a consistent pace throughout the universe. Therefore, time is only a

parameter of a dynamic system. **It is easy to observe and perceive the dynamism of a system (an object in the state of motion) but difficult to realize the time parameter of a dynamic system.**

One complete rotation of the earth **makes a day** (time unit of the earthly standard). This can be described in a different manner that time flows uniformly where the earth **takes one day** to complete one rotation. **The uniform flow of time is a misconception,** since time of the earth is only a parameter of uniform rotation of the earth. One complete rotation of the earth makes one day, earthly unit of time. This may be better realized from the following example.

Two boys started running together and reached the destination together. One said, 'I completed my running in one hour time'. The other said, 'I completed my running when the earth made a rotation of 15 degrees. The time parameter is convenient to express an event on the other hand the dynamism of an event relative to the dynamism of the earth helps to perceive the reality. If the earth changes its rotational dynamism, then earthly time would change, and the dynamism of watches would also require appropriate change to read the earthly time. How can we say that time flows uniformly irrespective of events in the universe when each event has its own time.

Highlight on new extra-nuclear space structure

In the new concept proposed by this author, space itself is physical and space is compressible. And matter at any stage is a mass-space integral system. Further any space pocket contains space matter particles in finer domain therefore it is also space-mass integral system.

The new mass-space interaction is the cause of Newtonian gravity, and it explains how space-time curvature is formed surrounding any dense mass. Hence, it is also the cause of space-time gravity. Most importantly the mass-space interaction explains how the extra-nuclear space structure is formed surrounding every dense mass including atomic nucleus. And further, the new extra-nuclear space structure of atom reveals the true mechanism of atomic spectral emission. The associated extra-nuclear space structure surrounding any dense mass is an integral part of the dense matter system in any domain. The extra-nuclear space structure contains space matter particles in finer domain. The space structure organizes shell-subshell features. The shell, sub-shells provide accommodation to orbital bodies and orbital electrons in respective systems. The extra-nuclear shell structure emits discrete energy-level particles from the peaks of the shells when the system (nucleus with extra-nuclear structure with shell features) is excited. The orbital bodies in solar system or the orbital electrons in atomic system do not jump from one shell to another to result the spectral emission. These are discussed in separate talks.

New mass-space structure and dynamism of space

Due to mass-space attraction any dense mass in any domain attracts space from its surrounding and forms a space density graded structure around the nucleus. Again, due to same mass-space attraction the space structure associates space matter

particles in finer domain. **The nucleus and extra-nuclear space structure forms one integral system where the nucleus and extra-nuclear space structure move together and rotate together.** Thus, the earth and its extra-nuclear space structure (atmosphere) extending beyond the moon move together and rotate together. Hence there is no relative velocity between the surface of the earth and the atmosphere in contact with the earth. Different space pockets in the associated extra-nuclear space structure of the earth have different velocity (dynamism) due to rotation and revolution of the earth. Likewise different space pockets in the associated extra-nuclear space structure of the sun have different velocity (dynamism) due to rotation and revolution of the sun. In the language of time, different space pockets have different times by virtue of their dynamism. The time of a space pocket influences the dynamics of matter in the said space pocket. A moving space medium has its time which is a function of velocity of the space medium. The dynamics of matter in 3D space having spatial variation of space density and velocity can be resolved if the space density profile and the velocity profile of the space medium in 3D geometry is known.

No need to fuse space with time

Both 3D geometry of space medium and the spatial velocity of the space medium (or spatial time) are perceivable in the new physical concept of space but when the space and time are clubbed in a 4-D space-time geometry we fail to visualize the new 4D geometry and the curvature of space-time. When velocity and time parameters are introduced into 3D geometry, the shape, size and volume are distorted. There is no need to construct an unperceivable 4D geometry of space-time for the purpose of mathematical solution of dynamics when the solution of dynamics is otherwise feasible using perceivable 3D geometry with spatial variation of space density and velocity of space medium (or spatial time) as a non-geometrical parameter of dynamics.

Relational 3D geometry is applicable to all physical things having shape (material objects and space pockets). 3D geometry is enough to specify the shape, size, relative distance of solid objects or space pockets. There is perfect harmony between the mental picture of objects by visual observation and that of the 3D geometrical construct. Thus, there is no difficulty for mental perception of the geometrical construct. The length units are geometrical parameter. The other physical parameters such as mass, temperature, velocity, charge potential, time etc. are parameters of different state properties of matter or space therefore they are non-geometrical parameters. Both geometrical and non-geometrical parameters are required for the dynamics of matter in space. If the state properties are properly understood, then there should not be any problem for working out the dynamics in 3D space. Some non-geometrical parameters may have spatial variation of property having relation with geometrical coordinates even then it is not advisable to represent them through additional coordinates in 3D geometry thereby making it 4D geometry. The constructs of 4D space-time geometry distorts the shape and size of 3D construct thus making the 4D geometry beyond mental perception.

Mathematically, if the solution of the dynamics of matter in space is feasible by fusing space with time, then there is no reason why the solution of dynamics would not

be feasible mathematically by treating space and time separately. Why should then one fuse space & time and loose his mental perception of dynamics in 4-D geometry?

Unwarranted space-time geometry

In the new concept, space itself is a physical entity and it is compressible. Space does not become physical due to presence of space matter particles. Thus, different space pockets in the space structure of a celestial body have different space densities (space content per unit volume) due to mass-space attraction. In the new mass-space attraction every dense mass has a space density graded extra-nuclear space structure. Hence, different space pockets in extra-nuclear space structure of a celestial body have different space density, different number density of space matter particles and different velocities. These spatial properties of space pockets influence the dynamics of matter in space including the running of an atomic watch, however insignificant may it be. An object moving in a denser space medium when enters to a less dense space medium its velocity increases. The dynamism of an atomic watch also speeds up when it moves from a denser space medium background to a less dense space medium background. It is difficult to perceive how the atomic watch runs faster in a low space density background in the present atomic model. However, one will find it easier to understand when he realizes the influence of background space potential in the new atomic structure. While following the existing atomic model we have no scope to understand how the atomic watch can speed up. In such situation it appeared, as if, **time flows faster the farther away from the earth's surface compared to the time on the surface of the earth**.

The 3D geometry is enough to locate a spot in space through three coordinates of geometry. The change of location of a spot means change of coordinates. If values of parameters (space density, number density of space matter particles, velocity or time) of a physical space pocket have definite correlation with the coordinates of 3D geometry then all state parameters can be clubbed to geometry only for mathematical solution of dynamics of matter in space. When the space density and dynamism (velocity) of space changes, the dynamics of an atomic watch changes, thereby the time it shows also changes. The state properties of space such as space density, number density of space matter particles decreases with increase of distance from the nucleus celestial body. The curve showing the spatial variation of any one state property in 3-D space would also read the other physical properties in different scales. The space density and presence of space matter particles in finer domain space pockets are not known to modern science. Sometimes virtual photons, mathematical objects and events are conceptualized in space structure to justify the physical nature of space. The reality is that space itself is physical and it does not require the presence of space matter particles or virtual objects or events to make space physical. In the new concept any space pocket in any domain associates space matter particles in finer domain and they too have a role in the dynamics of matter in space.

Relevant relative motion for the dynamics

Any moving body essentially moves through a medium. The medium may be liquid, gas or the space fluid. The relative velocity between the moving object and the medium through which the object moves is of direct relevance to the dynamics. Because the medium interacts with the moving body causing opposing thrust and shear forces on the body thus has a role in the dynamics of matter. The relative motion of a body relative to an observer from a moving frame of reference is least concerned with the dynamics of the body because there is no interaction between the body and the observer. If we fail to perceive the physical nature of space and the presence of space matter particles in finer domain, we will then fail to perceive the interaction of the space medium with the moving body. When the interactions with the less known structure of space medium is not considered in the dynamics, the equation of dynamics will not hold good. Some correction factor in the equation of dynamics has the scope of making the equation of motion functional. The hypotheses in support of justifications of the correction factor gains momentum and the supporting theory become the supreme theory in science despite their unrealistic nature. On the other hand, a clear understanding of the structure of space medium and its interaction with dynamic bodies moving through it gives scope to incorporate their effect in the dynamics thereby enabling Newton's equation of motion to remain valid in all situations.

New mass-space structure and dynamism of space

If the 3D space has spatial variation of velocity, then there would be spatial variation of time of the space. If the space density, number density of space matter particles and the velocity are varying spatially in 3D geometry then the dynamics of matter in said space can be worked out without moving to 4-D space-time geometry. For a rotating nucleus celestial body, the extra-nuclear space structure is also spinning about the same rotational axis. The extra-nuclear space structures of all rotating celestial bodies spins about their respective rotational axes and orbit the nucleus body along with the orbital body.

If we can not perceive the structure and velocity of a space pocket, then we cannot understand the role played by the dynamic space. When we miss the reality, we do make mistake by making different unrealistic hypotheses to somehow justify the dynamics.

Spatial velocity (or spatial time) within the extra-nuclear space structure of a spinning nucleus

The nucleus with extra-nuclear space structure is an integral system and not a rigid body; therefore different space pockets can have different angular velocity depending on nature of gravitational bonding with the nucleus. Any space pocket in extra-nuclear space structure of a celestial body has definite space density and contains space matter particles proportionate to space density. The space structure remains stable due to the mass-space attraction. The space content of the space-pocket experiences mass-space attraction from the mass of the nucleus (new gravity) and the space matter particles in the space pocket experiences centrifugal force due to rotation of the space medium along with the nucleus. Thus, the space pocket experiences both

gravity and centrifugal force. Consider the dynamics of space medium in the equatorial plane of the nucleus body. If gravity is more than the centrifugal force, then the space pocket remains associated with the nucleus and rotates at same angular velocity as the angular velocity of the nucleus. With the increase of distance of space pocket from the nucleus the gravitational attraction decreases, and the centrifugal force increases. At some critical distance (r=r) gravity and centrifugal force becomes equal and the gravitational bonding of the outward space structure with the nucleus breaks off. Thereafter, the angular velocity of the outward space structure drops down due to resistance from stationary background space medium. At decreased angular velocity gravity becomes dominant over centrifugal force. Then the contact bonding re-establishes again, and the angular velocity increases. Space pockets in equatorial plane beyond re maintains their tangential velocity (v) given by $V = \sqrt{(GM/r)}$ for r greater than r. This relation remains valid for quite a long distance. But, beyond that, the tangential velocity of associated space structure gradually decreases and reaches zero at the boundary of the extra-nuclear space structure in contact with the stationary background space medium.

Geometrical and non-geometrical parameters of dynamics

Only physical things have shape, size and dimensions. Both matter and space are physical entities. Matter is a mass-space integral system and space contains space matter particles hence it is also a space-mass integral system. The shape, size, dimension and location of a material body or a space pocket can be fully described with the help of 3D geometry. The state properties of matter or space such as temperature, pressure, charge potential and dynamism (velocity) are not geometrical property. The shape and size of physical things represented by 3-D geometry does not foul with mental perception. The quantitative aspect of mass & space, the state properties of matter & space and the energy level & energy aspects of matter & space are non-geometrical parameters of dynamics of matter. Both matter and space are physical entities; therefore we can have two types of dynamics. 1) dynamics of matter relative to space medium where the space medium may be stationary or moving and 2) dynamics of space relative to matter where the reference matter may be stationary or moving. Since concept of physical space is not very clear in modern science therefore the dynamic state of space is also not clear.

We might consider some non-geometrical parameters of dynamics as additional dimensions of 3D geometry and find new method of solution of dynamics, but such a dynamics would foul with our normal perception. Therefore, it may be advisable not to club time with 3-D geometry.

Conclusion

Geometry is equally applicable to matter as well as space, both being physical. The universe is a continuum of mass-space structure. In the new concept, matter contains both mass and space and space contains space matter particles. Thus mass and space are actually fused in all forms of matter and space. Matter and space in

motion inherits the time parameter. The dynamism/time is a quality that exists only in moving objects and moving space. One may argue that a moving space pocket is a fused space-time. For the purpose of solving any dynamical issue, the new idea of time is helpful.

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