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eTime

J. P. Singh

Indian Institute of Management, Ahmedabad
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Abstract

The paper examines various measures of time and argues that none of the measures meet the needs of commerce and law for transactions carried out in the cyberspace. It therefore suggests that a new measure of the time and epoch, called eTime be introduced. The paper further suggests that the assumed zero of eTime should be the epoch of signing 'A Declaration of Independence of Cyberspace', i.e. Fri, Feb 9, 1996 17:16:35 +0100 at Davos, Switzerland.

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The Events

There are times when I receive an instantaneous response to my email and I know that both my respondent and me are there at our respective computers though separated in space. But then there are occasions when I scratch my head to figure out as to when might a particular email have been sent, marked as it is with the server time. My simple mind understands that there need not be any relationship between the user and the server locations. Thus the task of identifying time of origin of an email becomes a bit difficult for an ordinary mortal. I know that it does not bother most people and it certainly does not bother the computer savvy. Yet I think even ordinary mortal's queries need to be respected. So I wonder if there is space for additional time.

The Time

In the human consciousness, time consists of a uniform unidirectional, irreversible passage that appears to be an inevitable, inexorable flow that only moves forward and is marked by a certain death in future.

In Philosophy, time has been variously seen and understood as an illusion (Parmenides and Zeno), a flow that encompasses illusoriness of the world (Indian Philosophy) or a flow that envelops illusory life (Buddha, Plato and Platinus) or even a flow which is the essence of reality (Heracleitus). These diverse interpretations of the human observation of time have led to sharp differences in perception of ultimate reality. Yet, regardless of the differences in philosophical understanding of time, one thing is clear that all philosophy assumes time to be an entity with independent existence.

The scientific concept of time. The credit for linking a singular entity of time with space and converting two entities in to one unitary space-time entity goes to Hermann Minkowski, a Lithuanian-German mathematician. Minkowski, in his classic interpretation of Einstein's special theory of relativity made it clear that physics has to do only with a unitary space-time entity in which timelike and spacelike directions can be distinguished. By inference, 'Time' exists since space exists and either they exist together or they don't exist at all. This development was the logical culmination of Isaac Newton's distinction between 'absolute' time and "relative, apparent and common time". His 'absolute time' was an ideal scale of time that made the laws of mechanics simpler. The integration of space and time in the theory of relativity makes it harder to conceive of immaterial minds that exist in time but are not even localizable in space. Apparently the need for a

composite Time-space entity arose because all awareness of time was based on movement and change in the space surrounding the observer.

The Biological view of time. That organisms have some sort of internal clock that regulates their behaviour is quite well established. This fact refutes the contention that time is perceived only as a relation between successive sensations as propounded by Locke. Norbert Wiener has speculated that the human time sense depends on the alpha rhythm of electrical oscillation in the brain. This understanding once again de-links time from its space connectivity. The parapsychological phenomenon of precognition also implies that time is an independent entity.

The e-view of time. Prima facie, there is no e-view of time. Yet, introduction of connectivity offers a unique opportunity to once again challenge the space-time linkage established by Newton-Einstein-Minkowski logic. This is so as the cyber-connectivity exists independent of space as conceived in Physics. This has been established and further asserted with ‘A Declaration of the Independence of Cyberspace’.

The Measurement

Although defining time presents difficulties, measuring it does not. The accuracy in specifying time is needed for civil, commercial and scientific purposes. As a result, time is the most accurately measured entity.

A time measurement assigns a unique number to an epoch, which specifies the moment when an instantaneous event occurs. The civil measurement of time is based on the consciousness of regular change rooted in “the repetitions of any recurring phenomenon and possibly subdividing the interval between repetitions”. Such phenomena make up much of the subject matter of astronomy, physics, chemistry, biology and geology. Thus time has been measured based on manifestations of gravitation, electromagnetism, rotational inertia and radioactivity.

But historically, three civilizations, the Chinese, Hindus and Greeks saw cosmic time as moving in an alternating rhythm; as Yin and Yang among the Chinese, love and strife among Greeks and recurrent Kalpas (eons) among Hindus. The Hindu measurement of kalpas, though intuitively arrived at, matches in magnitude to those reached by modern astronomers through meticulous observations and calculations. Similarly, Aztecs of Meso-America rivaled modern westerners and the Hindus in the scale on which they envisaged the flow of time and an astonishingly accurate time count by inventing a set of interlocking cycles of different lengths.

Mankind rooted the measurement of time in the visible regularity of movement of Sun and Moon giving birth to the Solar and Lunar calendars. Over time, the alignment of this measurement got refined to the planetary movement to the tenth decimal point. Additional measuring scales were designed to meet different needs. Thus we have Sidereal Time, Solar time, Universal Time, Dynamical Time, Civil and Standard Times, Atomic Time, Pulsar Time and Radiometric Time.

The contention of the present commentary is that none of these time measurements meet the needs of e-community as is obvious from the opening remarks of this paper.

The Change

A key change as result of the cyber-connectivity is that today events are taking place in the simultaneous and connected consciousness of several persons located in different places, something that did not require much thought earlier. This is so as interacting persons are located in different places (time zones), they record different (local) time, though in actuality they are existing, transacting, relating and thinking at the same time together in the cyber-world.

It is interesting to note that as a result of this change in the cyberspace, one can experience the absurd, like seeing tomorrow's newspaper today or reading Today's paper yesterday. Like when sitting in the US on any given day one can read the morning paper published from New Delhi or Mumbai that is date marked for Tomorrow. Similarly, one can enter an e-business deal that is signed together but described in different times.

Such events demand to be recorded in a time frame (epoch) that is not rooted in geo concept of space and is an independent entity. Thus there is a need to describe such cyber-world events in a cyber concept of time. This is the only way the cyber-community will have a precise description of events in cyberspace, a need that is so central to human existence. Whether Physics needs to re-examine the issue is a matter of judgement of physicists. The cyber community must take its own decision and take the independence of cyberspace a small step forward.

The Irony

The irony of the situation becomes apparent when we peruse 'A Declaration of the Independence of Cyberspace' by John Perry Barlow, the Co-founder of Electronic Frontier Foundation. The document dated 'Fri, Feb 9, 1996 17:16:35 +0100' reads: "Yesterday that great invertebrate in the White House signed into the law….". The document ends with recording the date at the bottom as Feb 8, 1996 Davos, Switzerland.

The Solution

Thus it is important that the cyber community start the eTime beginning with an assumed zero. Although cyberspace got established somewhat earlier and would have a legitimate claim to origin of eTime, perhaps a more auspicious moment (epoch) than the moment of signing of this declaration. Thus a clock measuring eTime must then be installed, preferably in Davos to record eTime that will give an appropriate description of events in the cyberspace, "a world that is both everywhere and nowhere, but it is not where bodies live". Henceforth all e-records, e-relations and e-transactions must be recorded in eTime. This will be not only appropriate for commerce and law but will also be easier on the human mind.

While GMT may continue its existence despite having lost some more of it relevance, the future clearly lies with cybertime. For all thoughts, relationships and transactions in cyber domain, there will be only an eTime.

References

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Dr. J. P. Singh is a Professor at the Indian Institute of Management, Ahmedabad.