

How Real is Reality?

Early Buddhism agrees with Einstein's Relativity Theory and Quantum-Mechanics.

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Reality is a Relation

Ever since a young Albert Einstein (Nobel Prize 1921) discovered the special Theory of Relativity in 1905, while working as a simple clerk at the Swiss patent office in Bern, our naïve assumption about physical reality have been seriously challenged. Special Relativity, which is extensively experimentally verified, basically states that our naïve conception of simultaneity: That 2 events can happen at the *same time* is an illusion, since they will appear to happen at *different times* to any observer in motion relative to the location of the events. Einstein's Special Relativity furthermore explains, that such moving observer will measure any stationary object as *shorter* in length, than any stationary observer. And finally that any moving observer will experience a *slower time* compared to any stationary observer. This counter-intuitive and strange length-contraction and time-dilation, that happens to any moving observer, entails that, what classically was assumed to be absolute entities naively expected to be totally independent of the observer, now has been proven to be a conditional relation (*Paṭṭhāna*) to the observer, and his frame of reference, exactly as explained by the Gotama Buddha in the 7th *Abhidhamma* book more than 2500 years ago. This fact that Einstein's space-time is a *relative relation* to the observer therefore enables the very same observer to manipulate this space-time from his end. This physical opportunity made *Mahā Moggallāna Thera* able to roll the surface of the earth like a mat between his fingers, and deliberately shrink a distance of 16 km down to a few meters, so that two feeble elderly devotees could walk on their own feet into the presence of the Gotama Buddha. Another succinct example of Einsteinian time-dilation in the Early Buddhist Canonical Tipitaka texts is the fact that time is described *also* by the Buddha Gotama to go *slower* in the Divine Deva Dimensions, exactly as predicted by Einsteinian time-dilation for two spherical space-time shells rotating around each other, each thus making up their own local time-reference-frame. In the *Visakhuposatha Sutta* the Gotama Buddha thus clearly explained this Einsteinian time-dilation increasing with observer reference distance from planet Earth stunningly accurate like this:

"50 human years, *Visakha*, is 24 hours for the *Cātummahārājika devas* ...",

"400 human years, *Visakha*, is 24 hours for *Tusitā devas* ...",

"1600 human years, is 24 hours for the *Paranimmitavasavattī devas* ..."

[Reference: *Anguttara Nikāya* 8.43 Pali Text Society: A iv 255]

The special and general Theory of Relativity, and thus the equivalence between mass and energy, discovered by Albert Einstein in 1905 and 1915 was thus by no means unknown to the Buddha Gotama already 2.5 millennia earlier. He clearly

explained this subtle physical relation, yet more compressed, and only that required for the overall Noble purpose of the much more relevant emancipation of all beings.

Quantum Buddhism

Early Buddhism squares exceedingly well with Quantum-Mechanics. This, the other major scientific revolution of the 20th century, brought about by several teams of researchers around Max Planck, Albert Einstein, Niels Bohr, Werner Heisenberg, and Erwin Schrödinger, turned two of the most basic common physical assumptions namely: Locality and Reality completely upside down! The locality-assumption states that no object can be influenced by another distant object faster than the speed of light. However entangled twin-photon experiments have since 1976 and decisively in 2015 consistently shown this locality-assumption to be incorrect, and that we thus now have to renounce this naïve concept of local realism. The experiments basically shows, that the experimental choice of Observer-A in location-A *instantaneously*, and thus infinitely *faster than light*, determines the experimental outcomes of Observer-B in a distant location-B. This Observer-Effect is the first rigorously experimentally verified case of a mind-induced intentional conscious choice in one location directly and instantaneously affecting a purely physical system in a distant location, such as the polarity or spin of a photon more than 140 km away. These even by Einstein unexpected Probability Relations between space-like Separated Systems is basically the physical basis of the *Buddhist Law of Karma*, and has in modern Physics been coined as the new concepts of "Non-Locality" and "Quantum-Entanglement", which are the drivers of emerging technologies, such as Quantum-Computers, -Networks, -Cryptography, and Quantum-Teleportation. [Reference: [Alain Aspect: Closing the Door on Einstein and Bohr's Quantum Debate](#). 2015 Physics 8, 123]

The Buddha too, both 'in-body' and 'out-of-body' and several of his Enlightened monks travelled with speeds greater than light eg. by crossing the river Ganges, or going to a divine space-dimension "as swiftly as one can stretch a bended arm" which is in ~1 second compared to the ~8 minutes it takes light to reach the sun. The Buddha also read others mind by telepathy instantaneously at any distance. Both are examples of Buddhist Non-Locality [*Kevaddha Sutta: Digha Nikāya* 11].

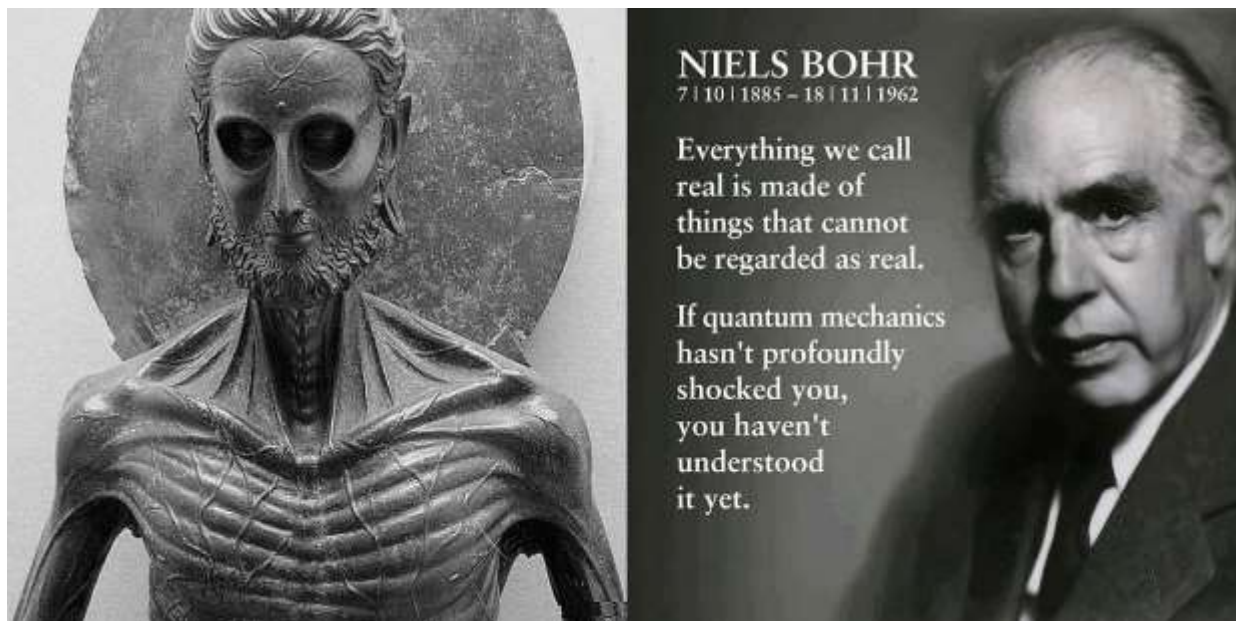
Such macroscopic Quantum-Jumps are the basis of the Teleportation-Technology contemporary science, first now more than 2500 years later, struggles mightily with. The contemplative method was thus at the Buddha's time way far ahead, both theoretically and practically, when compared to present-day fancy technology..

Consciousness as Creator

The Buddha on Emergence: "Mind always comes first; Mind is of all states the primer; By Mind are all things initiated; By Mind are all phenomena formed!" [Dhammapada 1]

An inherent, yet also peculiar experimental finding of Quantum-Physics, became evident already around 1927, when it became increasingly clear, that it was the conscious observation itself – via the measurement – that endowed all elementary particles such as photons, protons, neutrons, and electrons with definite properties such as location, mass, spin, and polarity. *Before* the conscious observation these "particles" were in an indeterminate *superposition* of all possible locations having all

possible properties at the same time... This almost paradoxical, surely shocking, and quite enigmatic experimental fact, baffled many scientists into profound and sweeping exclamations like: "No phenomenon is a phenomenon, until it is an observed phenomenon! - John Archibald Wheeler", "The path of the electron comes into existence, only when we observe it.. - John Stuart Bell" and "Observations not only disturb the measurement, they produce it! We compel the particle to assume a definite position! We - ourselves - produce the results of the measurements... - Pascual Jordan". Nowadays called the Observer Effect this Quantum weirdness became the final nail in the coffin of the assumption of *local reality*: That the observed object was *really there*, already before the measurement.



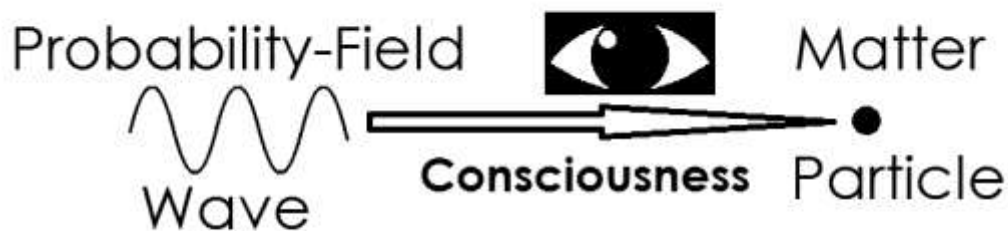
The Lord Buddha: "The world is bound up by, and shrouded by a veil of delusion. It appears as real, and is regarded as if it were fine! The fool bound to his illusive acquisitions, blinded by darkness, assumes it as eternal, but for one who sees, and really understands, there is nothing real, stable, or ever same, neither here, nor there at all ..." [Udāna VII 10]

The Buddha was first on Pragmatic Radical Empiricism:

"Attention is the proximate cause of all phenomena!" [Samyutta Nikāya V 184]
 That the phenomenological world first appears as a mental representation at the very moment of observation, and that it requires conscious contact (*phassa*) to manifest definite properties, is definitely something the Buddha would agree in, since he explained to *Rohitassa*, who in vain had tried to find the end of the universe in outer space: That "This universe both begins and ends within this fathom-long physical frame endowed with mental perceptions..." [Samyutta Nikāya: 2:26 PTS: i.61f.; Anguttara Nikāya: 4.45 PTS: AN ii 47.] He furthermore emphasized, that all philosophers and scientists eventually would have to come back to the concept of contact (*phassa*) to explain the emergence of the phenomenological world: "Dependent on the eye and forms visual consciousness arises. The meeting of these 3 is contact." [MN 148 iii 280]
 Insisting on this sensed experience as the *only* ultimate reality was first 2500 years later redefined as the pragmatic philosophy of "Radical Empiricism" by William

James (1912), who though knew nothing about the profundity of early Buddhism. Elevating Consciousness to a fundamental condition also for the physical realm is more than an abstract philosophy, since the orthodox Copenhagen Interpretation of Quantum Physics by the Danish Physicist Niels Bohr (1885-1962, Nobel Prize in Physics in 1922) explains that the local "particle", all matter is made of, is in a non-local wave-field-form of probability before it is being observed. This field of probability, called the quantum-mechanical wave-function, contains quantitative statistical information about where, and with which properties the elementary particle *can* be observed if measured by a conscious observer. The distribution of probable locations and properties of the observed 'particle' can be computed exceedingly accurately by Erwin Schrödinger's (Nobel Prize in Physics 1933) wave-equation before any, and later confirmed by innumerable experiments. So before observation the yet virtual 'particle' is everywhere-present with no definite location, or property. Then at the very moment of observation by a conscious observer, the wave-function of probability collapses into an actual physical particle with definite location and properties such as mass, charge, spin, etc. This concept of wave-particle-duality of the quantized energy, which requires conscious observation in order to manifest itself into a physical reality, was defined as the Consciousness-Causes-Collapse interpretation of Quantum-Mechanics by John Von Neumann and Eugene Wigner (Nobel Prize in Physics 1963). Both were Hungarian-American theoretical physicists and mathematicians.

Consciousness Causes Collapse!



Eugene Wigner (1902-1995) Nobel Prize 1963

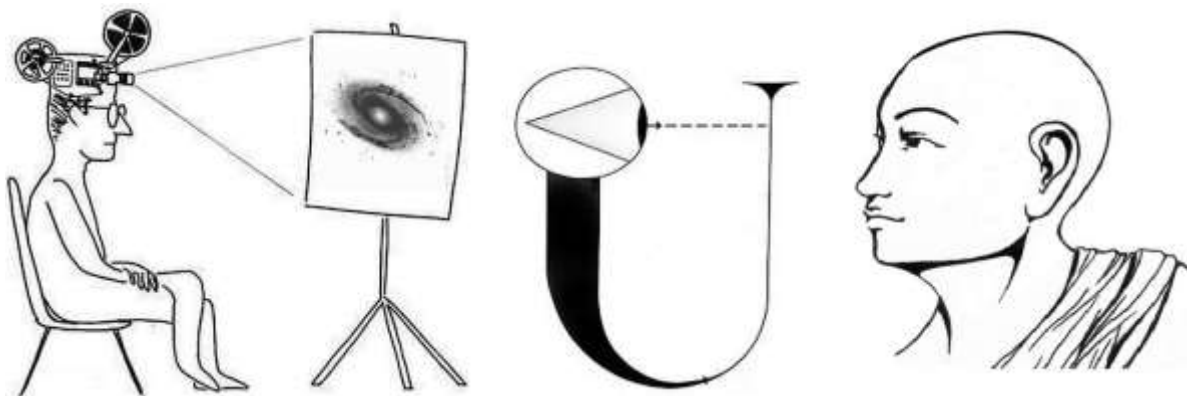


John Von Neumann (1903-1957)

The Ends Meet: Information - It from Bit -

Since it has been experimentally proven that information is an equivalent of energy just like mass (Einstein's famous formula $E=mc^2$) the late American Physicist John

Archibald Wheeler suggested this century's prime scientific task was to reformulate the entire physics within the concept of information. Any gain in information (which is a measure of order) induces a decrease in entropy (which is a thermodynamic measure of disorder)! The creation, and transfer of information happening at any measurement via observation, thus changes the energetic state, and thus future evolution of the observed system.. Observation itself - thus by definition, per se - influence, transform, and change the observed object, including this entire world and universe... This creation, by creating binary information can be epitomized in the dogma: - It from Bit – coined by John Archibald Wheeler: It = the physical universe emerges from bits of information. This conceptual breakthrough at the bleeding avant-garde edge of modern physics: That the mind of the conscious observer is crucially fundamental in condensing the information required for the quantum-mechanical wave-function's probability-cloud to collapse into a manifest, actual, and first then really real physical matter particle, would definitely make the Buddha happy, since as he noted much simpler, clearer, and more than 2500 years earlier: "Mind always comes first; Mind is of all states the primer; Mind initiates all things; By Mind are all phenomena formed!" [*Dhammapada* 1]



The Participant Observer principle: The universal U as a self-excited circuit system: Starting from small (thin right line) it gradually grows denser (thick left line) by infinitely many observers collective participating in creation, by merely intentionally (mental causation!) observing what is gradually emerging! This observer-induced emergence by creating binary information by asking yes-no questions to the universe can be epitomized in the new dogma: - **It from Bit** - ! "We are participators in bringing into being, not only the near, but also the far away both in time and space! Symbolic representation of the Universe is a self-excited system brought into being by self-reference, or auto-creation by consciously selecting observers over an immensely long period of time... Such a recursive-reflecting creative concept is similar to the endless series of receding reflections one sees in a pair of mirrors facing each other..." John Archibald Wheeler - Quantum Physicist, Princeton.

"Time and space are not conditions in which we live, but modes by which we think..."

Albert Einstein – Father of Relativity Theory (Noble Prize in Physics 1921)

"Time and space are not objective things, but mentally imposed orders of things... "

Gottfried Wilhelm Leibniz - German polymath and rationalist philosopher

About the Author:



Samāhita Thero has lived alone for the last 16 years remotely on Knuckles Mountain in a *Bhāvanā-Kuti*: The Cypress Hermitage 56 km from Kandy from where he runs the website: <http://What-Buddha-Said.net> and numerous Buddhist internet, YouTube, and Facebook groups w. >100.000 international members. His email is: bhante.samahita@gmail.com

Ven. Samahita Thero (born 1960) was educated as a Medical Doctor at the Copenhagen University in Denmark, and became Associate Professor in Bioinformatics at the Technical University in Denmark, working within theoretical biology, and artificial intelligence. Co-working there with grandchildren of the Danish Physicist Niels Bohr (Noble Prize 1922) stimulated a long cherished interest in Quantum Physics, and Einsteinian Relativity. He arrived in Sri Lanka 2001, was ordained as novice at Maharagama Bhikkhu Training Center in 2002 by the late Ven. *Madihe Paññasiha Mahanayaka Thera* and fully ordained as Bhikkhu the same place in 2003 by Ven. *Ñāna Ratana Mahanayaka Thera*. As a monk of the Theravada *Araññāvasin* Forest Tradition, then he meditates mostly alone in a remote mountain forest hermitage in Bambarella, near Hulu Ganga, Panwila ~ 56km from Kandy. His main philosophical interest is the convergence and congruence of ideas within Early Buddhism, Orthodox Quantum Physics, Einsteinian Relativity, Information Theory, and Thermodynamics.

An early work on protein prediction with artificial neural networks is freely available online: <https://what-buddha-said.net/various/biochemj.Oglyc.neural-net.pdf>

3 of his [Public Videos](https://www.youtube.com/watch?v=KwrrtwkWENk) explains this Convergence of Early Buddhism & Quantum Mechanics:
<https://www.youtube.com/watch?v=KwrrtwkWENk>
https://www.youtube.com/watch?v=NG9JKDES_Ag
<https://www.youtube.com/watch?v=ZcoKk4HdLyA>