

TOUCH OF THE OBSERVER

Life,



**the
Multiverse,**

**and
Immortality**

by Chongo in collaboration with José

**“All moments
are physically real.
The whole
of the multiverse
is physically real.
Nothing else is.”**

–David Deutsch,
Dean of Physics,
Cambridge, England

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This work is dedicated to the memory of a brilliant, insightful, most of all, truthful scientist, and the man who's work changed the world, as well as provided the very basis for the content of this work, the great physicist who first specified the formal logic for multiple worlds, namely, Hugh Everett III.

"Existence requires observation in order to have purpose, and observation is meaningless without a pattern of preference, whatever that pattern might be. So existence itself *requires* patterns of preference, starting with the most fundamental pattern of preference that there is, namely, the preference for simply being alive (existing), as we must possess at some level, which is itself, a direct consequence of a preference for replication; all this being just another way of saying that it is wholly the patterns of our 'wanting' alone, and of nothing else, that really makes us truly *be* alive, a lack of these patterns being instead, *never actually being.*"

_Opening quote, Chapter Eight, of *No Accident, How Quantum Theory Disproves Randomness*

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March 2018

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I. EXPLAINING NATURE

A thorough, step-by-step explanation of nature begins first with relativity's classical description of physical existence*, represented in the simplest way, by means of utilizing together, nothing more than the basic notions of perpendicular and of tilting. Using these two notions to create a picture of nature's space and time in terms of the Theory of Relativity's *four-dimensional*** geometry, one is led to the conclusion that, according to this purely classical description of nature***, the universe consists of a lattice of corkscrew-shaped streaks, connected in a mosaic of interactions that ultimately leads to the motion, and thus to all of the resulting events constituting an individual and *single* history for the universe.

These streaks cross all the four dimensions of space-time. In classical terms, we see the properties of these streaks (such as energy and spin, for example) as their shape. According to this, relativity's purely classical description of nature, the streaks that form this lattice are infinitely thin, and the constituents (events) of the mosaic, infinitely small. By accurately understanding relativity in this conceptual way, we can readily recognize how what is (effectively) our zero-dimensional time perspective, within a series of consecutive three-dimensional momentary spatial extents, allows us to see this lattice and its mosaic of events as motion within the classical structure of relativity's single, unique history. This is classical reality's (relativity's) rigid and infinitely discrete, four-dimensional model, a very 'simple' one (and a model that, unlike quantum reality which is wholly paradox free, is *riddled with paradox*).

* - Material explaining the Theory of Relativity is available at www.chongonation.org, where both *Clocks on a Train* (the complete work) and those parts of *The Infinite Ocean* necessary for clearly understanding relativity's (space and time's) geometry are available for free, online viewing, download, or hard-copy purchase).

** - To be as clear as can be, the universe includes four dimensions, not merely three. It is a physical fact.

*** - Nature's complexity absolutely CANNOT be represented by ANY classical model whatsoever.

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Using the Theory of Quantum Mechanics, relativity's classical model of nature can be extended into a more complex, yet richer and, what is most significant, a *truer* (which is to say, a more accurate) one. The historically traditional (conventional) version of this description considers these streaks as a collection of possibilities that continuously evolve with respect to time, 'collapsing' into observations, as momentary selections of (meaning as momentary reductions into) a smaller subset of this evolving collection. Experiments demonstrate that this is precisely how nature operates. What we call events are interactions between these streaks of possibilities. We designate those observed, as actual, and those that are never observed directly yet irrefutably inferred, as virtual. Emerging among these events, as a complex set of interactions and relationships existing between the elements in this collection of events, are those of life, our own life, and that of every other living organism that is also alive like we are. In real physical terms, *this is awareness*, that of our very individual and personal awareness of existence itself. In assuming nature in terms of our single universe being its complete and full extent, one recognizes that observation seems to 'create' physical existence with each passing moment, by making (reducing) an infinity of possibilities, into a 'single', actual, and meaningful reality.

So, if one wishes to explain nature in real, physical terms, one must begin with its two most fundamental foundations, as explained in terms of two essential models (notwithstanding deeper theories), which are: the Theory of Relativity and the Theory of Quantum Mechanics.* Together, they are capable of describing *all* of nature, that is to say, that they can describe *everything* existent, and do so absolutely flawlessly. No other model or set of models even comes close.

* - It should be noted that statistical mechanics provides a third pillar to the foundations of physics by encompassing, as a convenience, that for which our knowledge is limited (like temperature, as an example).

II. *REAL REALITY* AND QUANTUM THEORY

In recognizing the power of the two models that, together, describe nature so flawlessly, namely, the Theory of Relativity and the Theory of Quantum Mechanics, we recognize two things: first, that the Theory of Relativity accounts for the inevitabilities arising from a universe structured in the geometry of four big dimensions, allowing any massive particle to be at rest while in motion (together), relative to anything else, or, better stated, to be both stationary and moving at the same time (that is, moving concurrently) – all this, because there exists a physically insurmountable limit, the speed of light, keeping the extent of actual reality and the scope of our ability to observe always finite*. Likewise, this absolute physical limit means that, correspondingly (and symmetrically), the speed of light is also the very “rate” at which time passes.

Relativity describes space and time as purely structural properties of energy (and explicitly states further that neither space nor time exist on their own and indeed that they do not and cannot exist independently of energy, thereby rendering what is *truly* empty space, yet with time nonetheless passing even though, space being empty, nothing exists capable of changing, and hence thereby capable of ‘marking’ time, a flat impossibility, which is what endless empty space physically is). Although its aggregations can be described accurately by means of relativity, it is the Theory of Quantum Mechanics, not relativity, that most precisely describes nat-

* - See *AN ETERNITY OF TOMORROWS, Everlasting Life and Quantum Theory* (available, along with this and many other works, at the www.chongonation.org web site) for a deeper explanation into why the extent of our scope of observation is always limited (that is, finite, as opposed to absolute, *infinite*).

ure's energy, not relativity. (Still, it should be noted that relativity is nonetheless the model absolutely closest in accuracy to quantum theory, simplifying quantum energy in classical terms, by means of a single value, that of mass).

Quantum mechanics accounts for the inevitabilities arising from a universe that lends itself to constant and ongoing observation. Constant and ongoing observation forces finite precision*, and hence a finite, actual universe, with a finite number of events of finite energy, thereby providing what are, exclusively, always finite distances, counts, measures, and extents.

By means of the two-slot experiment (see Appendix A, on page 49) and the quantum mechanical model that explains it, one discovers that between and beyond our observations lies a decoherent reality that is a seeming contradiction to our purely coherent one; yet is what wholly yields it. Exploring more deeply, quantum theory reveals further how and why limited precision is essential for keeping our observations meaningful, and in so doing, seems to explain awareness in terms of light, with light 'being' the very *constituent* of both time and space (which thereby renders them inseparable, by virtue of their being the very same, physical thing), according to life's perspective. This identifies, in strictly physical terms, just what the passage of time means with respect to the living experience, and why time, photons, and our very awareness of life itself, along with the spatial stage upon which all living adventure plays itself out, are all one and the very same physical entity, according to that (according to life's) perspective (awareness *being* light, exclusively).*

* - See *AN ETERNITY OF TOMORROWS, Everlasting Life and Quantum Theory* (available, along with this and many other works, at the www.chongonation.org web site) for a deeper explanation into why constant and ongoing observation forces finite precision (as opposed to absolute, *infinite* precision)

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Again, by means of presuming a single world (as the Copenhagen interpretation of quantum theory implicitly presumes, explained in Appendix B, on page 61), one is led to the conclusion that everything in nature seems to be 'shaped' by our presence here in it, with everything being 'decided' by the very real decisions that seem to be being made by a blind, unbiased, most innovative and *creative* (incapably, the *most* innovative and *creative* that can exist – by virtue of being all-encompassing), and most importantly, the absolutely fairest 'designer' (being *absolutely* the fairest achievable – again, by being all-inclusive) that there could ever be, named *randomness*, using a seemingly creative magic called chaos (which, although being a purely classical notion, is a magic that cannot help be inherent to the infinities of quantum motion, and hence, intrinsic to a quantum (all) reality. The creative magic of chaos created us, because it could "choose" from between an infinity of possibilities, among which lay patterns of preference that give a living existence purpose. This is how we can explain nature the using conventional (historic) explanations and interpretations of quantum theory, that is, how we can do so by explaining nature in terms of our seemingly single world as being the whole of all that nature includes, that is, in terms of a solitary single world, with no direct, overt mention of any others existing, except, albeit unstated yet still implicitly – or explicitly – implied nonetheless, that no others exist, nor any that even can, except the one that we find ourselves confined within, to the clear and unambiguous exclusion of any others at all, confining all existence to 'here'.

* - In the deeper context of the multiverse, time exists as a cause and effect relationship between physical actualities (which are only really expressible mathematically). That is to say, for relativity, time is a continuous dimension, while for quantum theory, time is a structure of 'cause and effect' relationships between energy components and their arrangements.

HOW TO ORDER

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GLOSSARY

actual – constituting observed reality;

axiom – a fundamental assumption based upon no other assumption or assumptions more fundamental than it;

Bell's Theorem – a mathematical theorem that specifies that there will be a difference between statistically formulated (i.e. classical) outcomes and those outcomes that quantum solutions would yield, creating a means to validate one outcome over the other;

collapse [of the wave function] – also called wave [function] collapse; the rendering of information as a constraint upon the many potential possibilities into a single actual reality;

continuity – a smooth, unbroken, and uninterrupted series of points adjacent in every linearly independent direction; space and time, together, each being inseparable from the other, constitute the space-time continuum;

continuum – the continuity of all space and time locations together, in smooth, continuous proximity, in every spatial and temporal direction, or in any combination thereof;

consciousness – a circuit that learned how to improve (evolve), and by improving, next learned how to think (recursion);

energy – everything lying within space and time that is not space and time; this includes all light (all radiation) and all matter; nature consists solely of energy and gravity (shaping space and time); in terms of energy, space and time are effectively made of light; this light and everything else in the universe, are shaped by space and time, which shapes the distribution of all energy within it (as a consequence of gravity);

ephemeral – of finite duration (all complex living patterns are ephemeral);

evolution [of the wave function] – the development of potential possibilities from an initial set of actualities;

explanation – the formalization of meaning (noting that meaning and scope of precision for it are based upon structural context);

massive – having the property of mass (manifest as weight and inertia); matter has mass, light (radiation) and gravity do not have mass;

mathematics – a precise, formalized, universal *language*, based upon logic; math is the language of *genuine* science;

matter – energy that has *temporal* extent (mass); light and gravity are momentary and thus have no temporal extent (having only spatial extent);

nature – everything existent;

phase space – a finite dimensional geometry that accommodates an infinite number of trajectories, analogous to infinite-dimensional Hilbert space, which accommodates an infinity of trajectories into a single one;

pattern – repeating series of symmetrical transformations, with transformations being either translations (e.g. projections), rotations, reflections, scalings, or any combination thereof;

photon – a particle of radiation (light)

quantum mechanics/quantum theory – the theory of energy (as opposed to relativity, the theory of space and time: gravity); short for the Theory of Quantum Mechanics;

[quantum] state – in classical terms, an ‘events’ associated with motion;

radiation – any and all forms of light; (the term is also applied to high speed, massive particles of extraterrestrial origin, which, by virtue of being massive are not light);

science – the genuine pursuit of the identification of accurate truth in nature; effectively a synonym to epistemological pursuit;

sentient being – an active physical system capable of sustaining configurations corresponding to pleasure, pain, fear, or sorrow.

space-time – the four-dimensional, inseparable combination of spatial distance and temporal extent in our universe;

temporal – having to do with time; temporal displacements and locations are locations and distances in time, respectively;

theoretical physics – (also called physical theory or the theoretical model) a body of ideas that describes nature more accurately than any body of ideas ever conceived, and which underlies ANY and ALL *genuine* and accurate science; theoretical physics is based upon two foundational scientific theories, relativity, for space and time, and quantum mechanics, for energy (with anything else lying within the realm of statistical mechanics);

[scientific] theory – a body of ideas with demonstrable predictive power, that has never been demonstrated to have ever failed to accurately model reality, and which underlies ALL *genuine* science;;

three-dimensional – having length, width, and height; a spatial volume is an example of a three-dimensional object;

two-dimensional – having length and width; a surface is an example of a two-dimensional object;

uncertainty principle – the inescapability of an absolute limit upon precision;

understanding – a demonstrable isomorphic correspondence between that which happens and that which is imagined to;

virtual – constituting observed reality;

visible universe – the scope (i.e. physical extent) of our unique and individual light cone;

wave function – collection of potential quantum states corresponding to a system;

zero-dimensional – lacking length, width, and height, or any physical extent whatsoever; a point is an example of a zero-dimensional object;

~ The End ~

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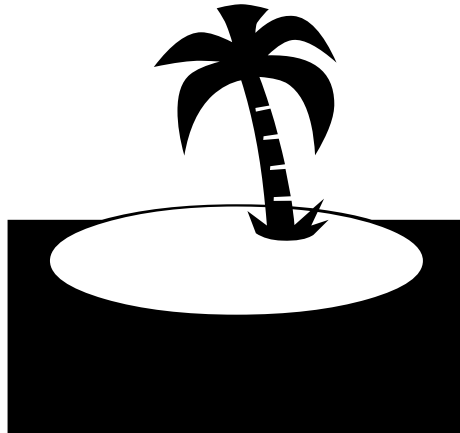
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