The Theory of One World

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Summary—This essay argues for the existence of a holistic universe of concentric spheres, from the inside out being: the quantum realm, the event horizon, and the electromagnetic realm.

Quotation—We shall look at the world and try and see it whole.
—EF Schumacher

Einstein often began his thought process with elementary conceptual pictures. With special relativity, he imagined what it would be like to travel at the speed of light alongside a photon. In that the lone photon exists at the universal spacetime boundary, he would be viewing reality from the perspective of reality itself (*sub specie aeternitatis*, Latin for under the aspect of eternity). With general relativity, Einstein compared a cat in a box either on Earth (gravity) or being accelerated through outer space (inertia). Einstein concluded that the cat could not perceive a difference between being in either box, thereby establishing the equivalence of gravity/inertia, much like the equivalence of matter/energy. My fundamental attitude is to look at the universe and try to see it whole. And my elementary conceptual picture of the universe is represented by the Matryoshka dolls from Russia, also known as babushka dolls, stacking dolls or nesting dolls. They are sets of wooden dolls, decreasing in size so that each piece can be placed inside one another. Matryoshka means fertility and motherhood, as in Mother Nature, God, and the laws of nature. From the inside out, the universal domains are: the quantum realm, the event horizon, and the electromagnetic realm.

Relativity Theory encompasses two interrelated theories by Albert Einstein: special and general relativity. Special relativity applies to all physical phenomena in the absence of gravity. General relativity is the geometric theory of gravitation. Special relativity is the generally accepted and experimentally confirmed physical theory regarding the relationship between space and time. It postulates that the laws of physics are invariant in all inertial frames of reference, and the speed of light in a vacuum is the same for all observers regardless of motion. With relativity, observers in all frames of reference perceive the same laws of nature. Special relativity has wide-ranging implications including length contraction, time dilation, relativistic mass, mass-energy equivalence, a universal speed limit, the speed of causality and relativity of simultaneity.

The Pythagorean Theorem lies at the heart of relativity theory, as the Schrodinger equation lies at the heart of quantum theory. The generalization of special relativity involves morphing the right triangle to accommodate warping, described by a quantity known as the metric, measuring the separation of infinitesimally close events. Special relativity is based on an application of the Pythagorean theorem. It says as we accelerate towards light speed, we begin to shrink in the direction of motion, ie. (v/c)^2 + h^2 = 1^2, v = velocity, c = light speed, h = height. If v = 0, h = 1; if v = .87c, h = .50; if v = c, h = 0. If we reach light speed, we literally exit spacetime—meaning light speed is a boundary of the universal concentric sphere.

Quantum Theory. While relativity theory (1905) describes the universe as a whole, quantum theory (1925) describes the universe inside the atom. Relativity theory is based on light speed and quantum theory is based on Planck's constant, which are the two primary universal constants. Quantum theory explains the nature and behavior of matter and energy at the atomic and subatomic levels. With quantum theory, energy, momentum and angular momentum are quantized, objects are both particles and waves, and there are limits of precision with which quantities can be measured known as the uncertainty principle.

The Quantum Landscape. Werner Heisenberg argued that absolute causal determinism is not possible. For a causal chain to exist, exact knowledge of initial conditions is required for both position and momentum. Therefore, the probabilistic formulations in quantum theory results in an indeterministic relationship between the variables, which does not arise from ignorance, but from the mechanics. With quantum mechanics, the particles are quantized, while with quantum field theory, both fields and particles and are quantized. Fields are more primordial than particles. Quantum field theory successfully describes the interactions between particles and particle, particles and fields, and between fields and fields as well. Quantum mechanics works when particles are indestructible, but only quantum field theory can deal with the creation and destruction of particles occurring with high energy collisions. Quantum field theory began its creation with Paul Dirac when he attempted to quantize the electromagnetic field. Major advances in the theory led to quantum electrodynamics, the relativistic quantum field theory of electrodynamics that describes how light and matter interact, and reaches full agreement between quantum mechanics and special relativity.

The Schrödinger Equation lies at the heart of quantum theory, as the Pythagorean theorem lies at the heart of relativity theory. Classically, Newton's second law (F = ma) is employed to predict the path of an object. Schrödinger's equation in quantum theory is analogous to Newton's second law in classical theory. The Schrödinger equation is a linear partial differential equation that describes the wave function or state function of a quantum system. It is a key result in quantum theory. The Schrodinger equation is used to find energy levels of quantum mechanical systems like atoms and transistors.

The Wave Function. In 1923, Louis de Broglie made the bold assertion that if light waves could be particles, then particles like electrons could also be waves, thereby establishing a direct relationship between an electron's wave-like property (frequency) and its particle-like property (momentum). The wave function generates essential, probabilistic information about the electron state, such as energy, angular momentum and orbital orientation. It is a complex-valued probability amplitude where the real-valued probability distribution can be derived from the wave function by complex-squaring, also known as the Pythagorean theorem, ie. (a+bi) x (a-bi) = a^2 + b^2 = c^2.

Nonlocality describes the apparent ability of objects to instantaneously know of each other's state, even when separated by extremely large distances. Nonlocality is linked to the phenomenon of entanglement, whereby interacting particles become permanently correlated to each other's states and properties. Entangled particles share wave functions, effectively lose their individuality, and behave as a single entity in many ways. Action at a distance is the physical concept that an object can be moved, changed, or otherwise affected without being touched.

The Measurement Problem considers how or whether the wave function collapses. The inability to observe the collapse directly gives rise to different interpretations of quantum mechanics. It poses key questions that each interpretation must answer. A measurement is the testing or manipulation of a physical system yielding a numerical result. John von Neumann argued the collapse of the wave function occurs at any position in the causal chain from the measurement device to the subjective human observer.

String Theory was created to answer questions like how to unite gravity with quantum theory and what happened before the big bang. String theory proposes the fundamental constituents of the universe are one-dimensional strings rather than point-like particles. What we perceive as particles are actually vibrating loops of string, each with its own characteristic frequency. The holographic principle is a tenet of string theories and a supposed property of quantum gravity, which states that the description of a volume of space is thought to be encoded on a lower-dimensional boundary.

The Theory of One is my evolving theory, which describes the universe as a sphere-shaped phenomenon that houses Being (matter, life, consciousness and self-awareness) as its primary function. The sphere's radius is the speed of light, and is bounded from within at Planck's constant. If the universe were a basketball, the quantum realm would be the air in the middle, the event horizon would be the rubber bladder, and the electromagnetic realm would be the leather bound. Another analogy might be that of a theatre, where monads are the movie goers who sense the backlit, two-dimensional holographic surface of the event horizon. The event horizon is painted from without by the universe of stars in the gravitational colours. The spacetime continuum is formed holographically at the event horizon, sandwiched in between the uncertainty of the underworld (quantum realm) and the harmony of the heavens (electromagnetic realm). Planck's constants (energy quanta) travel up from the quantum realm, and photons (light quanta) rain down from the electromagnetic realm—arriving on the holographic screen that is the event horizon. The holographic screen is encoded on the lower-dimensional screen, with contributions from both realms, and presents a 3-D movie to consciousness, where reality is shaped by the senses of man.

The Laws of Nature. The theory of one tracks all the way back to before the big bang where God pulled the oldest trick in the book by using reverse psychology and commanded Adam not to eat an apple from the tree of knowledge. Adam and Eve were beings of light or photons living in Eden who disobeyed God by eating the apple, and the big bang was an orgasm where Adam exploded inside Eve. As Edgar Allan Poe wrote, "The universe begins when God creates a primordial particle out of nothing. From it matter irradiates spherically in all directions in an inexpressibly great yet limited number of unimaginably yet not infinitely minute atoms." This contained explosion proceeded naturally like sex and the gestation that follows from it. It is, in fact, natural to conceive of the universe and view it whole, and to try and see it for the metaphysical machine that it is.