

## Review

# Trinity is a numerical model of the holographic universe

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**The universe is in some sense a numerical holographic structure. About 15 billion years ago all of the matter and energy in the universe was concentrated into an area the size of a single atomic nucleus with a trinary organization and order. Then suddenly, the universe began to expand at an incredible rate, this event has been called the big bang. After the big bang the first source of matter is formed. Different form of energy, stem from the same type of occurrence, vibrations within matter. In other word everything started from matter. This includes the holographic trinity, which observes in all creation. This viewpoint shows an “implicit numerical order”, where higher levels of order and organization may be holographically enfolded in the fabric of space and matter/energy. Therefore this paper presents a plausible theory of numerical holography to explain holographic concept of reality in an unexplained non-local trinity model.**

**Key words:** Holographic principles, trinity, matter, light.

## INTRODUCTION

The “hologram” was discovered by the British-Hungarian scientist Dennis Gabor in 1947 (Robbins, 2006). A hologram is a three- dimensional photograph made with the aid of a laser (Bohm, 1973; Talbot, 1991). Unlike normal photographs, every part of a hologram contains all the information possessed by the whole (Robbins, 2006). The theories of a holographically-based universe were originally championed by two of the world’s most eminent thinkers: physicist David Bohm, a protégé of Einstein’s, and Karl Pribram, a highly-respected neurophysiologist from Stanford University. Their holographic model received dramatic experimental support in 1982 when a research team led by physicist Alain Aspect in Paris demonstrated that the web of subatomic particles that compose our physical universe possesses what appears to be an undeniable holographic property. In principle, the information for the entire object is found at any point in the hologram (Bohm, 1973; Benford, 2000, 2001; Robbins, 2006). If we try to take apart something constructed holographically, we will not get the pieces of which it is made, we will only get smaller wholes (Bohm, 1973; Talbot, 1991). In the holographic scenario, the “whole in every part” nature of a hologram provides author with an entirely new way of understanding organization and order. Previous studies

show that everything started from matter (Raychaudhury, 2005; Sharma, 2006; Kragh, 2008). Modern physics has realized the ancient Indian wisdom that matter and energy are the two faces of the same coin. Energy is matter and vice versa (Warber et al., 2004; Hegde, 2009). The Universe is composed of energy of matter and energy of its fields (organized matter-energy) and energy of space (non-organized energy) (Sorli and Sorli, 2004; Sorli, 2004).

The density of space-energy is closed to zero, while density of energy-matter can be measured. The transformation of matter-energy-to-space is in accordance with the transition model of the Universe (Vlachogiannis, 2004). In other word, everything in the world, even the entire universe, is composed, at its basic, sub-atomic level, of energy (Sundström, 2008; Allen, 2008). Some forms of energy include electricity, magnetism, gravity, heat, sound and light. While each of these is a different form of energy, they all stem from the same type of occurrence, vibrations within matter (Warber et al., 2004; Kragh, 2008). The only difference is the frequency of the vibrations and the medium through which the vibrations are conducted (that is, air, water, metal, empty space, etc.). Furthermore Einstein showed with his famous equation,  $E=mc^2$ , that energy is matter

and matter is energy. This equation proves that a small particle of matter is the equivalent of an enormous quantity of energy (Yu-yiu, 1994; Sobczyk and Yarman, 2008). Regarding these basic facts, is it possible for our universe to have a numerical holographic concept? Numerical basis is an important concept in the everyday world (Allot, 1994). An underlying harmony of numbers was acting in music and architecture, the domain respectively of the noble senses of hearing and of sight (Sbacchi, 2001).

Pythagoras belief that the basic principle (or arches) of all thing is number (Robinson and Clark, 2003; Gare, 2005; Beyer, 2005). The Pythagorean view of the universe rested squarely on the belief that the universe was created and is guided by a divine plan consisting of numbers and numerical relations, superior to matter and independent of it (Allot, 1994).

### Trinary origin

It is assumed that the universe started from a general "explosion," and that the general expansion observed today, as well as the 3 degrees K blackbody radiation, are consequences of this explosion (Oort, 1970). Hydrogen, helium and lithium are three atoms which produced shortly after the big bang, then first sources of light and chemical elements was formed (Korn et al., 2006; Bromm et al., 2009). So everything in our universe started from triple-quark particles in the subatomic world. The first atoms to form after the big bang filled the universe with atomic hydrogen and a few light elements. As gravity pulled gas clouds together, the first stars ignited and their radiation turned the surrounding atoms into ions (Barkana, 2006). Stars begin to form relatively quickly in sub-galactic-sized building blocks called haloes which are subsequently assembled into galaxies. The current consensus is that galaxies begin as small density fluctuations in the early Universe and grow by in situ star formation and hierarchical merging (Collins et al., 2009).

### Holographic trinity in matter

Much research exists regarding holographs in nature. These studies show that dolphins, bats, fish, flies, birds, and humans all process sensory information holographically. In humans, studies in chemical oscillations and oscillation cellular dynamics strongly indicate that the holographic concept exists not only on the neural level but also on the cellular and molecular levels (Benford, 2000, 2001). It is well known that the fundamental building blocks of molecules are atoms (Brückner, 2008). The most successful theory of understanding the formation of universe, the big bang theory assumes that whole mass of universe was in form of 'primeval atom' and then suddenly exploded

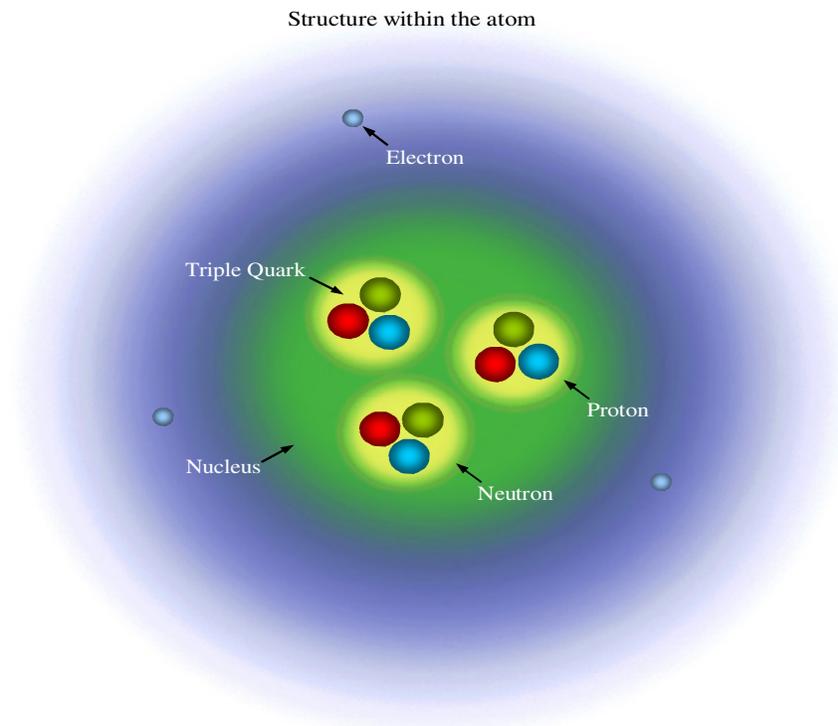
(Raychaudhury, 2005; Sharma, 2006; Kragh, 2008). All mass, and thus the entire universe and all that is in it, is made from atoms (Allen, 2008). This means that atoms are the basic building blocks of matter (Brückner, 2008), and that atoms in turn are made up of much smaller three particles called protons, neutrons, and electrons.

Protons and neutrons make up the center (nucleus) of the atom, and electrons form shells around the nucleus. The matter density would correspond to that of an atomic nucleus (Kragh, 2008). The familiar components of atomic nuclei, protons and neutrons, are composed of smaller fundamental building blocks known as quarks (Welsh, 2006).

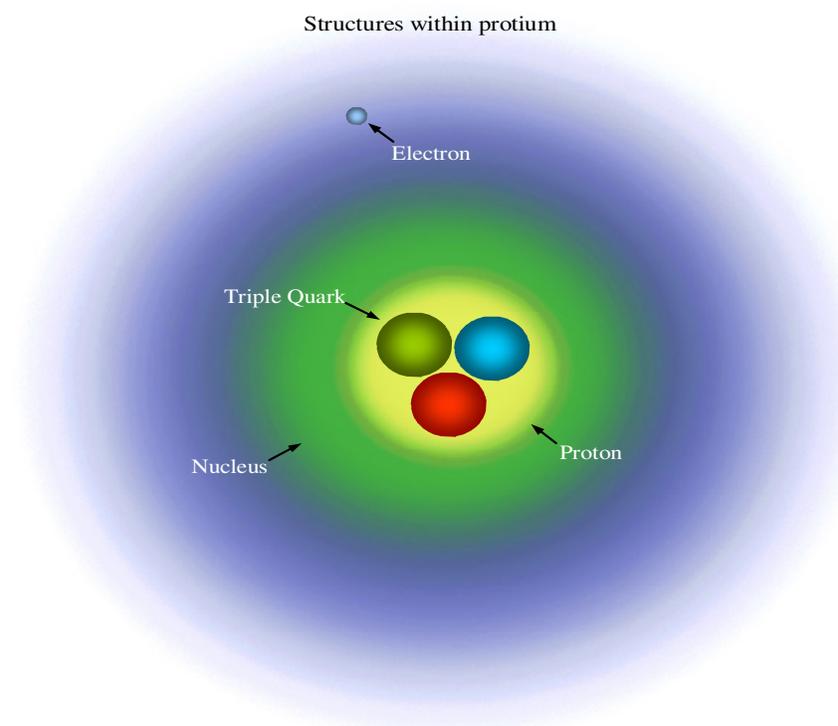
In other word, baryons which are the heavy constituents of matter consist of three quarks (Nikonov et al., 2008). The quarks have three "colours" (red, green, and blue) and a white baryon made of quarks with three colours located near to each other (Allanach et al., 1997; Akimura et al., 2005). The different flavors of quarks can be arranged into three families (or "generations"): up and down, charmed and strange, and bottom and top. Each proton and neutron is composed of three quarks (Figure 1). The proton made up of two up quarks and one down quark while the neutron is composed of two down quarks and one up quark (Welsh, 2006). There are three kinds of matters: ud (matter containing the same number of u and d quarks, it corresponds to symmetric nuclear matter), udd (d-quarks twice the number of u-quarks; neutron matter) and uds (the same number of u, d and s quarks;  $\Lambda$  matter) (Akimura et al., 2005). Everything started from a single atomic nucleus, hydrogen, which has three naturally occurring isotopes and protium is first isotopes (Figure 2). The nucleus of this isotope consists of only a single proton which is a triple-quark particle (Raychaudhury, 2005; Sharma, 2006; Kragh, 2008). One should not pay attention to his reference to "atomic nucleus" rather than "atom". So the beginning of the universe is in the form of a unique quantum with a trinary organization, the atomic weight of which is the total mass of the universe.

### Holographic trinity in light

With regard to the early universe, big bang nucleosynthesis is a theory which described the primordial origin of the light elements (Olive, 1991). Previous observations have shown that, within one billion years after the big bang, the Universe was already lit up by bright quasars fuelled by the infall of gas onto supermassive black holes at the centres of galaxies (Wyithe and Loeb, 2002; Barkana and Loeb, 2003). Stark and et al, find a well-ordered compact source in which molecular gas is being converted efficiently into stars (Stark et al., 2008). The earliest stars to form in the universe were the first sources of light, and transformed the universe from darkness to light after the big bang



**Figure 1.** Structure within the atom: Triple-quark particles were shown.



**Figure 2.** Trinary organization of the first atom (Hydrogen), protium is first isotope of hydrogen. The nucleus of this isotope consists of only a single proton which is a triple-quark particle.

(Schneider et al., 2003; Barkana, 2006). There are three coloured reference lights, namely, red, green, and blue light (Ito and Okano, 2004). Projection of three primary colour lights on a screen shows three secondary colours. Additive colour mixing occurs when three beams of differently coloured light combine. The combination of the three red, green, and blue in appropriate intensities makes white. It has been found that mixing just three additive primary colours can produce the majority of colours (Silva et al., 2001; Sugano et al., 2009). It was proposed that three-dimensional colour electroholography use three optical setups for three primary-colour images. Three coloured reference lights illuminate the hologram simultaneously at all times (Sugano et al., 2009). Ito et al. (2002) reconstructed a colour holograph by use of a simple system with a set of red, green, and blue as the reference light. Physiological studies have confirmed the existence of three classes of cone photoreceptors on human retina, red sensitive cells, blue and green sensitive cells (Xiaofang and Zhou, 1997; Solomon and Lennie, 2007). Three different classes of cones in the human retina are the basis for trichromacy and maximally sensitive to blue, green, or red light (Lerea et al., 1989; Conway, 2009). Previous studies indicate that so long as these three light sensitive cells have the same stimulus, the subjective colour sensations are the same, even if the spectra for lights are different (Xiaofang and Zhou, 1997). The choice of primary colours is related to the physiology of the human eye; good primaries are stimuli that maximize the difference between the responses of the cone cells of the human retina to light of different wavelengths, and that thereby make a large colour triangle as shown in Figure 3 (Xiaofang and Zhou, 1997; Sugano et al., 2009).

### **The (meta) physical levels of holographic trinity in light**

Light is a unifying concept of all physical phenomena in accordance with the words of the Bible. The religious metaphors connected to the Divine Triad (The Holy Trinity). A religious approach knows the light as a "Triple hypostasis". In this hypostasis that comes from the beginning, the uncreated light unfolds and manifests itself as a triadic unity: Father – Son – Spirit. The structural identity of the Father and the Son comes out of Jesus' statement registered by the biblical text: "I have come as a Light into the world" (John, 12:46); or: "He who has seen Me, has seen the Father" (John, 14: 9) (Stănciulescu, 2007; Kragh, 2008).

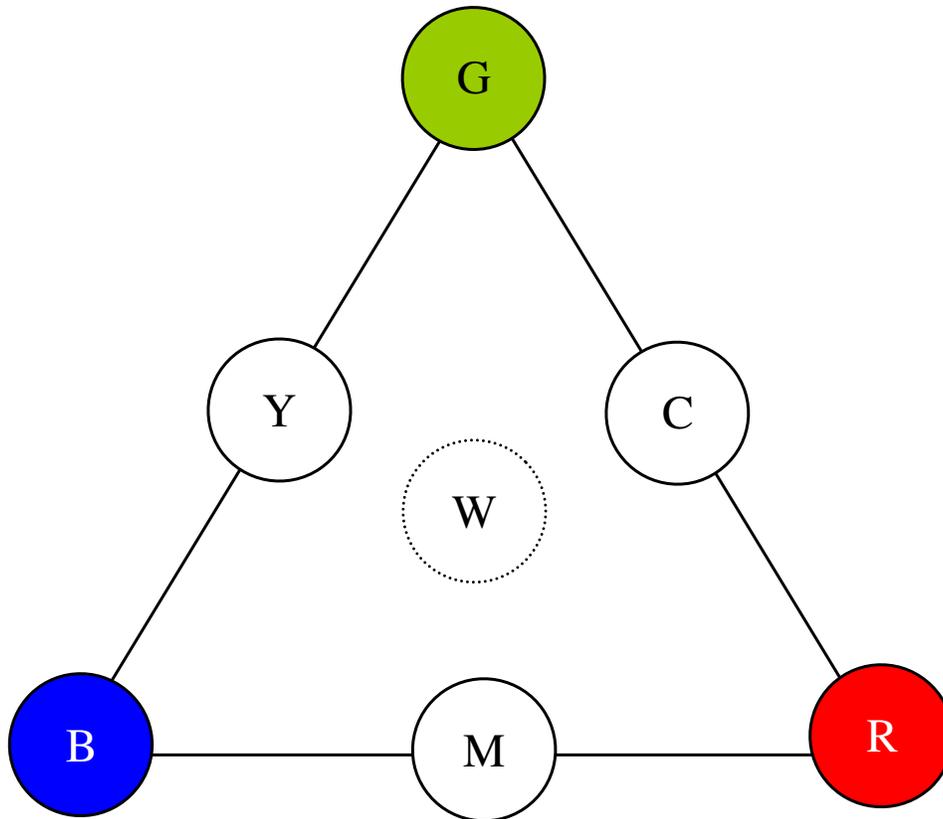
### **Holographic trinity in space**

Holographic trinity concept is unlimited, because all of space contains immense energy potential. There is a

fundamental relationship between the holographic principle and the vacuum energy (Mongan, 2007). In the subatomic particle world, the atom is made up mostly of empty space (Cokelez and Dumon, 2005). In addition scientists have concluded that the subatomic level of energy consists mostly of empty space (Allen, 2008). It is assumed the universe began by a quantum fluctuation from nothing, underwent inflation and became so large that it is locally almost flat. It is also assumed that, after inflation, the vacuum energy density of the universe is constant in space and time (Mongan, 2007). The existence of the electromagnetic zero-point field has been experimentally demonstrated by Steve Lamoreaux (Lamoreaux, 1997). The zero-point field is also referred to as the quantum vacuum, implying that a plenum, or abundance of matter and energy, exists in interstellar space, which was previously believed to be an empty void (Beck et al., 2003). Atoms consist of a nucleus, orbiting electrons, and mostly empty space (Allen, 2008). All of space, including the voids between atoms within "solid" matter, contains enormous energy potential. Matter and energy are continuously created and annihilated, emerging spontaneously out of, and disappearing back into, the zeropoint field. It is now widely accepted by physicists that the quantum vacuum is the underlying source of all matter and energy in the universe (Beck et al., 2003). According to Albert Einstein's special theory of relativity, matter and energy are equivalent and interconvertible (Yu-yiu, 1994). Bose-Einstein condensation can occur with both light particles, or photons, and three matter particles, such as protons, neutrons, and electrons (Beck et al., 2003). In other hand, light is everything and vice versa (Pope, 2004; Stănciulescu, 2007; Kragh, 2008). So holographic trinity is seen in every place include all empty spaces.

### **Holographic trinity in DNA**

An important structure relevant to holographic trinity is a triplet codon system, DNA (deoxyribonucleic acid), the genetic material in the nuclei of all cells. It also related to quantum holographic communication and memory networks. DNA is considered to be a universal medium, or template, for the recording of holographic information. The nearly three billion DNA base pairs contained in every human cell (Beck et al., 2003). Finally from matter spread throughout the cosmos evolved life generating eventually the DNA molecules which control the construction of brains complex enough to construct our three dimensional Body Representation from which is extrapolated what we perceive as a 3-D universe (Woodbury and Woodbury, 1998). Human body started from an "explosion" in a triplet codon system, the DNA molecules, of a single cell embryo and that the general trinary holographic expansion observed after birth, are consequences of this explosion.



**Figure 3.** A colour triangle. A point on the plane of the triangular system represents the hue and saturation of a colour spaces.

### Non-local trinity in the holographic universe

Holographs have a property called “distributed ness”, which means that any fractional portion of the recorded hologram contains sufficient information to reconstruct the complete original 3-D information pattern (Benford, 2000-2001). It now seems inescapable that quantum mechanics is fundamentally non-local. Quantum state changes caused by local interactions between mass quanta have nonlocal consequences throughout the universe. This paper suggests that the holographic principle indicates a holographic trinity model for non-locality of information in our universe. In this way, the holographic principle indicates a mechanism for non-locality in quantum processes throughout the universe (Mongan, 2007). Quantum non-locality can be easily explained in the context of Bohm’s version of quantum mechanics which clearly demonstrated non-locality and non-separability in Euclidean three-dimensional space (Fiscaletti and Šorli, 2008). Edgar Mitchell (1999), who has applied quantum theory to consciousness, stated that the “discovery of the non-local quantum hologram, provides the first quantum physical mechanism compatible with the macro-scale three-dimensional world as we experience it” (Beck et al., 2003). This is similar to

example in mind, based on the idea of the holographic universe and the principle of “non-locality” with approval by a leading neurophysiologist, Karl Pribram (Robbins, 2006). Thomas et al presented a non-localized memory theory evolved from Karl Pribram’s view that the memory engram may be an interference pattern similar to that made by a laser in a hologram. Microtubules at the cellular level and DNA (deoxyribonucleic acid) at molecular level are also considered for the recording of non-local holographic information (Beck et al., 2003). So it is easy to imagine that our world at subatomic level of energy and matter might store information in a holographic trinity model.

Consequently, it can be posited that reality as numerical hologram in an unexplained non-local trinity model, due to this holographic property of distributedness. The principle of trinity synchronicity, the instantaneous connection of trinities beyond the senses, has been equated with the quantum-physical principle of non-locality (Germine, 1991).

### CONCLUSIONS

Recently, considerable interest has been stimulated in

explaining the reality by the holographic principles. A central belief of Pythagoras and his followers was that "everything is number". Holographic trinity theory is constructed in the light of the holographic principles and the Pythagoreans number theory. The special importance of the trinity leads to the idea that universe organization be based on holographic trinity. Also all of formulations such as the big bang theory, matter-energy theory, the zero-point field theory and so on, explicitly address the phenomenon of the holographic trinity in general. Therefore the whole has a trinity organization which is seen in its every part.

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