

# The Holomorphic Process

## Understanding the Holographic Nature of Reality as a Metamorphic Process

By Theodore J. St. John, Ph. D.

### Abstract

The holographic principle, derived from black hole mathematics in cosmology, is gaining interest as a theory of reality, but it is missing the part that explains how the information gets from the surface of a black hole to every quantum particle in the universe. In this paper this missing link is shown to be understandable in terms that are much simpler than expected. The key to this approach is to treat space and time as two equivalent yet perceptively different aspects of motion, a form of energy. This allows the use of temporal frequency (the inverse of time), and spatial frequency (the inverse of space) to be superimposed on a space-time-motion diagram, which helps to visualize the relationship between the inverse quantum domain and linear relativistic domain. The result is a composite model that portrays the two aspects of motion as two coherent rays of energy projected out into the linear space-time domain from each point and reflected back to the quantum domain, which is phase-shifted due to motion, forming a perceptible surface at the event reference. This approach does not theorize anything new in terms of unfathomable dimensions, undiscovered particles, extra-particulate forces, or the like. It only requires a different perspective of what we already know, one that does not require knowledge of any specialized mathematical language beyond undergraduate-level physics and engineering.

### Introduction

The idea of a holographic universe as proposed in 1993 by Gerard t Hooft, developed in 1995 by Leonard Susskind, and supported by others (t Hooft 2000), (Susskind 1995), (Sutter 2018), (Afshordi, et al. 2017), is gaining ground with recent observational tests of holographic cosmology by Afshordi, *et. al.*, who used attosecond pulses to film electron motion, producing an image that portrays the electron as a spherical standing wave, which they relate to a holographic image. (Afshordi, et al. 2017) If the universe is a hologram, then how could this information be produced and projected from the edge of the universe into our 3-dimensional reality as a pattern of images with solid boundaries? Most authors brush over the hard question and go right to information theory, as Bekenstein said, “our universe, which we perceive to have three spatial dimensions, might instead be written on a two-dimensional surface, like a hologram. Our everyday perceptions of the world as three-dimensional would then be either a profound illusion or merely one of two alternative ways of viewing reality.” (Bekenstein 2007) If, instead of the event horizon, it happens at the “event reference”, introduced in this paper as the apparent surface of the holographic image itself, then it is already here and now.

The word “hologram” is often used to mean the image produced by the holographic process, but the hologram is not the image, it’s the imprint of spatial gratings on a film. It is produced by the interference patterns of two coherent lasers reflected off of an existing object that was previously illuminated from outside of the object. So it seems ridiculous to propose that the universe is a hologram or even a “holographic image” projected from the surface of a black hole somewhere out in space or the surface of the expanding universe. In fact, some authors (namely Jim Baggott in his book “Farewell to Reality, How Modern Physics Has Betrayed the Search for Scientific Truth” (Baggott 2013)) consider it just another “fairy tale” or a new version of the “creation hypothesis” that comes with unanswerable questions. Where did the information come from? Who or what set up the objects, recorded the images and continuously performs the process of projecting the images in real time?

The answer, proposed in this paper, is that the spatial gratings are not on the surface of a black hole but rather they are the spatial gratings that form the core of every holographic quantum particle. And the two coherent “lasers” are not projected by some outside source, but rather motion itself is separated at every quantum point, projected radially and symmetrically outward into the relativistic domain and reflected back inward to the quantum domain, phase-shifted just enough to give it an apparent form.

The problem with today’s “authorized version” of physics, as Baggott put it, stems from the way that the “spacetime continuum” is framed as a 4-dimensional tensor. This framework is a window into what I call “Minkowski’s wonderland”. It’s sort of an intellectual trap that is fascinating to anyone with a taste for the abstract, a lure that is easy to grasp on the surface, but it requires significant mathematical prowess to pass through the window. And those who have passed through are chasing rabbits down “wormholes” and “time-warps” that lead to nowhere except a paradoxical world that lies somewhere over the event horizon. They admit that they have run into dead-ends and that the dead-ends are transparent enough to see through from the quantum side to the relativistic side, so they are convinced that the standard model only needs to be tweaked. But according to Lee Smolin, they have no idea how to break through without going back to the starting point. (Smolin, The Trouble with physics 2006) In this paper, I go back.

The reason it is a trap is because it locks one dimension of time into the same domain as space when in fact (I submit), space and time are simply reflections of motion, i.e. two equivalent yet different measures of motion. In the “Metaphysical Foundations of Modern Physics,” E. A. Burtt said that separating motion into space and time was considered a philosophical blunder back in the day of Newton. (Burtt 2003) Even if they are different aspects of the same thing, their differences are paramount in classical and relativistic models (vectors in rectangular coordinates and Hilbert space applied to the “forward problem” of 3-D space and 1-D time). On the other hand, the differences are irrelevant to the “inverse problem” (spatial frequency, i.e. inverse space, and temporal frequency, i.e. inverse time, which apply to phasors in polar coordinates) as evident in the time-independent quantum wave function. The solution that I present interprets the “spacetime continuum” as meaning that *space and time are equivalent* not a mixture of 3-D space with 1-D time. It turns out to be so simple that some, especially mathematical physicists, may want

to ignore it or even scoff at it. It may even be embarrassing to realize that the idea was ever sidelined in the first place. Regardless, it is an idea that will provide mathematical and cognitive closure to the question of a holographic reality.

### Practical and theoretical significance

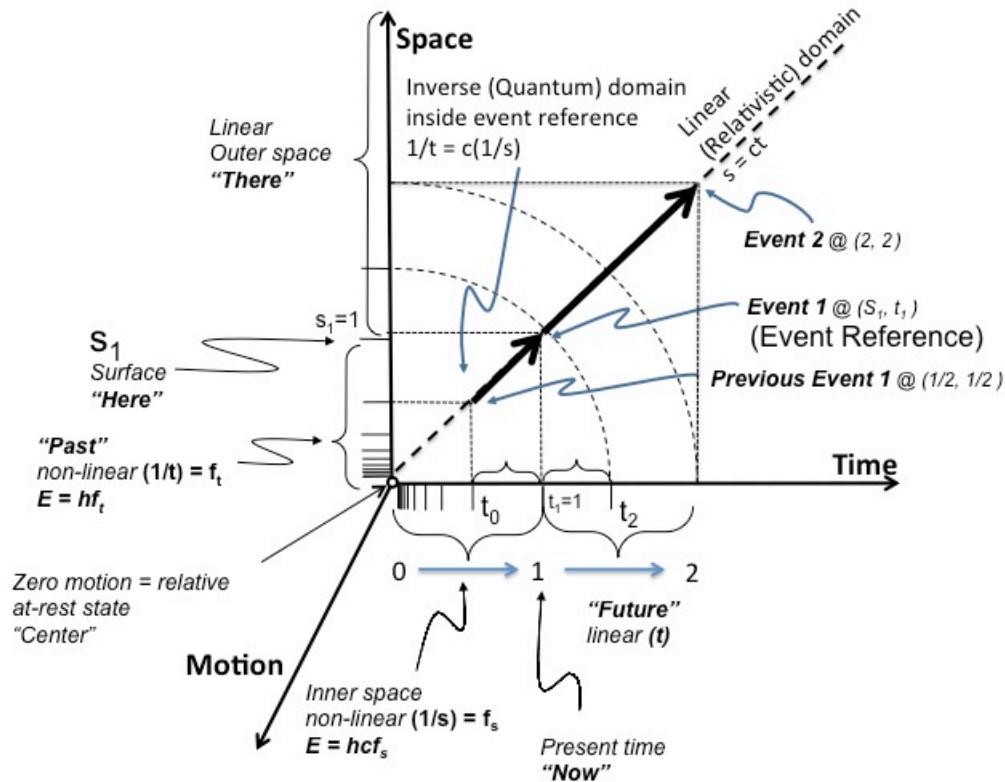
Physicists are being ridiculed for coming up with and actually defending untestable fairy tales; instantaneous creation in a bang, revelations about hidden dimensions, multiple universes, and incredible cosmic coincidences. As a medical physicist, I have to agree. Popular theories seem like nonsense. But the holographic principle makes a lot of sense, especially when you consider how it echoes biology (every DNA molecule contains all of an organism's information) and brain function. (Pribram 1984), (Talbot 1991) And since, by this theory all of the quantum particles that make up physical matter are the actual patterns of the hologram, they are right here and thus should be testable. Furthermore, it is the closest thing to explaining consciousness, the mind-body connection, and spirituality, all of which are important aspects of reality but until recently, have been locked out of physics. Having worked with terminally ill cancer patients who desperately want to know the truth before their imminent death, I desperately want to help the physics community understand the question; how the physical world can be a holographic projection. And I have found that it is much simpler than you might think.

The beauty of my approach (St. John 2018) is that it does not theorize anything new in terms of unfathomable dimensions, undiscovered particles, extra-particulate forces, or the like. It only requires a different perspective of what we already know. And it does not require knowledge of any specialized mathematical language (such as geometric or abstract algebra) beyond undergraduate-level physics and engineering; vectors, phasors, algebra and calculus used in basic field equations. And rather than falling back on instantaneous creation or any other "beginning of the universe" as a reference, it essentially discounts the special role of time and focuses on the process of unfolding "event references", in the spirit of Whitehead's "process philosophy". (Whitehead 1929) (Eastman and Keeton 2004)

Figuring out how it works is similar to the way we figure out how to deliver a specific radiation dose to a tumor, a sort of reverse engineering using inverse treatment planning. We know the desired answer, so we virtually back-project rays to determine what the source has to be. We know that motion is a form of energy and that quantum particles are energy, seemingly morphed into holographic projections, which I call *holomorphic* quanta.

I present motion as fundamental to reality, a form of energy that we analyze by quantizing it – analytically reducing it to measurable scalar quantities – units of spatial displacement (length) and temporal displacement (clock time). Figure 1 is a graph, I call the Space-Time-Motion (STM) diagram that is similar to Minkowski's space-time diagram to explain how the very act of reducing motion to these forms, whether by our human senses or by scientific measuring devices, is a process of conformal projection. But rather than separating time into positive and negative axes, I treat time exactly as I treat space and then demonstrate, mathematically and graphically, how our analysis of motion separates formless energy into a pair of

apparent opposites, projects them onto the scalar plane, and gives them the appearance of separateness in the relativistic domain (in rectangular coordinates). Each of these has a “reflection” at the origin in the frequency domain (temporal frequency ( $f_t$ ) and spatial frequency ( $f_s$ ) in the quantum domain, i.e. the circle of convergence in polar coordinates) that corresponds to the well-known energy relation of a quantum particle ( $E = hf_t$  and  $E = hc f_s$ ). Treating space and time as equivalent projections of motion maintains the symmetry, which allows me to superimpose the quantum domain on the relativistic domain. A measurement event breaks the symmetry because a measurement artificially defines a singularity in space (locality) and time (zero motion). This is part of the trap. Zero space and zero time mean zero motion, which only exists in the relativistic domain. But zero motion means that space and time are not separated, so the space-time model, with  $t = 0$  does not even apply. Instead, the STM model defines the “event reference” as  $\Phi = 1$ , where  $\Phi$  is a dummy variable that represents either  $s$  or  $t$ , a boundary condition where the scales of both domains are equal to one quantum unit regardless of the scale,  $s^2 = s = \frac{1}{s} = f = 1$  and  $t^2 = t = \frac{1}{t} = f = 1$ .



**Figure 1 Space-Time-Motion (STM) diagram.**

There is no such thing as a particle at rest in the universe; it only appears to be at rest relative to its own center or to some other particle. It is still in motion relative to some other moving reference frame. As quantum particles ourselves, we

perceive the conformal projection of that motion as the linear, relativistic domain “out there” where we can move in the future. But the reflection of that projection is the circular or polar quantum domain. We perceive the surface of that domain as “here” and “now”. Our “past” along with the information that modulated the energy, is wrapped up on the apparent polar surface of the quantum domain, which collapses, relative to the new event reference, into “inner space” with each event.

Graphically, the projection is treated as a ray, a composite of two base vectors (where  $s = ct$  and  $c = 1$ ) that extends out into the linear space-time domain, beyond the boundary of the polar quantum domain. The quantum domain is treated as a phasor ( $f_s s$ ) and its reflection, ( $f_t t$ ), hyperlinked to the relativistic domain by  $s = ct$  and  $c = 1$ . If we don’t analyze the problem, there is no clock and so there is no split in space and time coordinates. The vector and phasor are identical, simply  $s = 1$ . The reflection is also treated as a ray, with its base at the point of the projection vector, and its point at the origin. But the instant we introduce time in our analysis, which would correspond to a measurement say at  $t = 1$ , the two coordinate-system models instantly separate because the vector in the linear system pops over to 45 degrees, whereas the phasors just rotate by one cycle. Therefore, the two domains are shifted in phase and the projection is magnified by a fraction that is the Lorentz factor. Therefore it is projected or “Lorentz-transmitted” beyond the edge of the quantum domain.

It’s important to note that *nothing happened to the energy that we perceive as a quantum particle* by introducing the clock. What changes is our perception. The instant a clock is introduced, the coordinate systems, which exist only in the mind, split so the vector points 45 degrees out of phase from the phasor. This phase difference creates the apparent *ethereal* boundary between domains. This boundary physically separates the apparent inside of the particle from the outside, locking the Lorentz transmission outside.

But that is only our perception. We can look at a particle and perceive it as being at rest with respect to our own body, or we can perceive it as being in motion with respect to any other moving object. At rest, the vector and phasor are identical, but in motion, they are separate and different in phase and size. One way to relate the two domains is first to realize that in polar coordinates, one event is represented by the circumference of the circle ( $C = \pi \times \text{diameter}$ ), not the length of the phasor. So we can imagine wrapping the vector around the circle of diameter,  $\Phi$  so the vector that fits around it has a length of  $\pi\Phi$ . Oberg and Johnson show that the number  $\Phi$  is the Golden Ratio. (Oberg and Johnson 2000) Another way to see this is to recognize that representing a space  $\Phi^2$  as the vector sum of two base vectors,  $\Phi$  and its inverse  $\frac{1}{\Phi}$  then defining  $\Phi$  as one unit, i.e.  $\Phi = 1$ , gives  $\Phi^2 = \frac{1}{\Phi} + 1$ , which is another form of equation for the Golden Ratio.

This means that relative motion creates the morphed perception, making a point in space appear to be separate from its surroundings. Since we quantify this perception by comparison with actual measurements, this perception is our reality – the apparent materialization of particles with spin. The quantum domain,  $\frac{1}{\Phi}$  does not go away at this golden ratio condition. Instead, it reveals the resonant frequency, in terms of temporal and spatial scales. The spatial frequency forms the grating

necessary to produce the holographic image at the event reference, where the reflections of projected energy interact to define the “location” of the holographic information as “Here” and “Now”. That’s every individual point in the universe, not something out in space on the surface of some black hole at the indefinable boundary of the universe.

The golden resonance is where the projection and reflection produce a peak, forming the apparent solid surface of a spherical particle, analogous to a spherical standing wave proposed by Wolff’s “Wave Structure of Matter, or WSM theory and supported by Shanahan. (Wolff 2006) (Shanahan 2014) I suggest the term “holomorphic quanta” because it refers to the metamorphic process that transforms formless energy into apparently solid, physical form. This term emphasizes the process rather than the particle as fundamental to the transformation of energy into physical reality. It is significant to note that the same process (separation-projection-reflection-reunification) is echoed in the life process (from DNA replication all the way up to the underlying theme of mythological and spiritual traditions throughout the world (Campbell 1973)) and how the golden ratio manifests itself in nature.

## Conclusion

Mankind is at a critical point in our evolution where we are about to prove the most profound understanding of reality, one that can bridge physics with biology and science with spirituality. If we can’t explain it to regular people, we are doomed, especially after spending so much of *their* money on high-energy particle research. This is a reality that everyone is part of, not just a few mathematically-brilliant physicists who can do the math “with their eyes closed”. The world has been in crisis for a very long time; it is the responsibility of scientists to accept Jim Baggott’s challenge, to continue the search for truth, and to never do the math with their eyes closed.

If a person is truly a holomorphic projection, an ethereal Being of light, intimately connected to all of their surrounding energy, then the implications are that they are entirely composed of truth. By that I mean the information-energy that modulates the incoming wave (i.e. what really happened in ones surroundings) is collapsed via the holomorphic process into the particles of our being. It forms the “golden crystals” of our DNA and contains the memory of all events of our lives and that of our ancestors. Not only does that information make life possible, it makes the life process work correctly. If you know that, then you will know where to look for insight. You will know that there is an ethereal reflection of yourself within yourself that is made of truth. It can be masked and distorted when projected into the world, but it cannot be deleted or un-done. And since truth is what creates healthy beings, distortions of truth would logically make us unhealthy. And if self awareness – the ability to reflect upon the information that is one’s self – is the definition of consciousness, and that information is stored in every DNA molecule, then it is not unreasonable to expect that consciousness to separate from the body and continue the process.

If science will refocus on truth and teach society that truth is the only thing that is real, and the only thing of value, there is no doubt in my mind that we will solve many other important problems.

## Bibliography

- Afshordi, Niayesh, Claudio Corianò, Luigi Delle Rose, Elizabeth Gould, and Kostas Skenderis. "From Planck Data to Planck Era: Observational Tests of Holographic Cosmology." *Physical Review Letters* (American Physical Society), Jan 2017: 041301: 1-6 .
- Baggott, Jim. *Farewell to Reality. How Modern Physics Has Betrayed the Search for Scientific Truth*. Kindle. Pegasus Books, 2013.
- Bekenstein, Jacob D. "Information in the Holographic Universe." *Scientific American*, April 2007.
- Burtt, E. A. *The Metaphysical Foundations of Modern Science*. Mineola, NY: Dover Publications, 2003.
- Campbell, Joseph. *The Hero With a Thousand Faces*. 3rd. New Jersey: Princeton University Press, 1973.
- Eastman, Timothy E., and Hank Keeton. *Physics and Whitehead, Quantum, Process, and Experience*. New York: State University of New York Press, 2004.
- Oberg, Ed, and Jay A. Johnson. "Pi Phi Product." *The Golden Number*. 2000.  
<https://www.goldennumber.net/wp-content/uploads/2012/06/PiPhiProduct.doc> (accessed July 11, 2018).
- Pribram, Karl. "The Holographic Hypothesis of Brain Function: A meeting of minds." *Karl Pribram*. 1984. <http://www.karlpribram.com/data-papers/> (accessed 2018).
- Shanahan, Daniel. "A Case for Lorentzian Relativity." *Foundations of Physics*, Sep 2014: 21.
- Smolin, Lee. *The Trouble with physics*. Boston: Houghton Mifflin Company, 2006.
- St. John, Theodore J. "The Holomorphic Quantum Theory, Parts 1 - 4." *viXra.org*. June 2018. [http://vixra.org/author/theodore\\_j\\_st\\_john](http://vixra.org/author/theodore_j_st_john).
- Susskind, Leonard. "The World as a Hologram." *Journal of Mathematical Physics* 36 (1995): 6377.
- Sutter, Paul. "Are We Living in a Hologram?" *Space.com*. Jan 29, 2018.  
<https://www.space.com/39510-are-we-living-in-a-hologram.html> (accessed 2018).
- t Hooft, Gerald. "The Holographic Principle." *Research Gate*. 2000.  
[https://www.researchgate.net/publication/2046405\\_The\\_Holographic\\_Principle](https://www.researchgate.net/publication/2046405_The_Holographic_Principle) (accessed July 11, 2018).
- Talbot, Michael. *The Holographic Universe*. New York: HarperCollins, 1991.
- Tong, David. "Quantum Fields." *The Royal Institution*. Cambridge, Feb 15, 2017.
- Various. *Physics and Whithead. Quantum, Process, and Experience*. Edited by Timothy E. Eastman and Hank Keeton. New York: State University of New York Press, 2004.
- Wangness, Ronald K. *Electromagnetic Fields*. 2nd. New York: John Wiley and Sons, 1986.
- Whitehead, Alfred North. *Process and Reality*. Edinburgh: Simon and Schuster, 1929.

Willard, B. C. "The Golden Ratio in Optics." *Optics and Photonics News* 4, no. 8 (1993): 22-25.

Wolff, Milo. "The Wave Structure of Matter." 2006. <http://wsminfo.org/index.htm> (accessed 2018).