

Article

## On the Nature of Physical and Non-Physical Reality (Part II)

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### Abstract

Reality is characterized by four aspects of reality: (1) forms of information, (2) the flow of energy, (3) perceiving consciousness, and (4) the Source of information, energy and perceiving consciousness. The scientific framework for this characterization is discussed in terms of the holographic principle, non-commutative geometry, an observer-dependent cosmic horizon arising in de Sitter space with a positive cosmological constant, and the one-world-per-observer paradigm. In this scenario, the observer is present at the central focal point of a cosmic horizon that arises in the observer's frame of reference and that acts as a holographic screen that projects the observer's space-time geometry. A consensual reality shared by many observers is possible if their respective horizons overlap. This scientific framework only explains the nature of physical reality in terms of forms of information and the flow of energy. Even the space-time geometry of the observer's world is derivative of information and energy. This leaves us with the quandary of how to explain perceiving consciousness and its Source, which can only be understood as the non-physical nature of reality. A scientific argument is made that perceiving consciousness can only be understood as a focal point of consciousness that is differentiated from the Source and that arises in relation to a holographic screen, in which case the Source can only be understood in the non-dual sense of an empty space of potentiality or a void of undifferentiated consciousness.

This is Part II of the two-part article with references at the end of the article.

**Keywords:** Reality, physical, non-physical, information, energy, consciousness, Source.

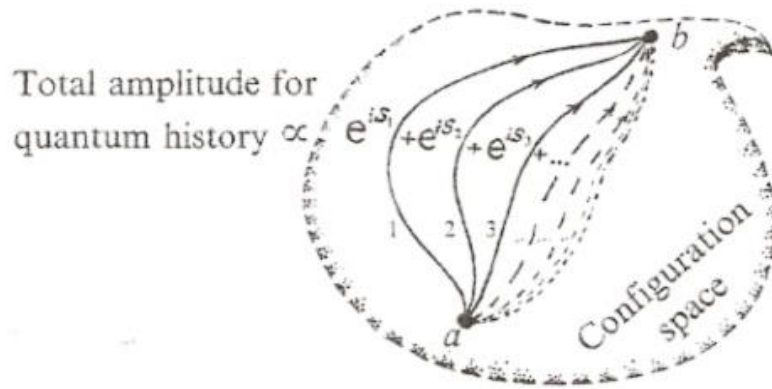
It is instructive to examine how choice operates in quantum theory. The quantum state can always be formalized as a sum over all possible paths<sup>10</sup> that connect two points in some configuration space. For example, a configuration space could be a space-time geometry, and then a path would be a world-line followed by an observer. In this sum over all paths formulation of the quantum state, we are instructed to sum over all possible paths in the configuration space, and then weight each path with a probability factor called the wave-function,  $\psi = \exp(i\theta)$ , where the phase angle  $\theta$  is given in terms of the action  $S$  as  $\theta = S/\hbar$ .

The action is specified in terms of the geometrical length<sup>10</sup> of a path that connects two points. For example, for a world-line the action is specified by the proper-time,  $\tau = \int ds$ , where  $ds^2 = g_{\mu\nu} dx^\mu dx^\nu$ , and where  $g_{\mu\nu}$  is the space-time metric. This is the case if there are 3+1 extended dimensions of space-time, but is also valid in the sense of the Kaluza-Klein mechanism if there are extra compactified dimensions of space, in which case the metric not only represents the force of gravity, but also represents all the gauge forces, including the electromagnetic force and the strong and weak nuclear forces<sup>8</sup>. In a non-commutative geometry<sup>6</sup>, the Kaluza-Klein mechanism not only generates all the gauge fields, but also generates the Higgs fields. When super-symmetry is added to the mix, boson and fermion fields are both generated<sup>8</sup>. With a

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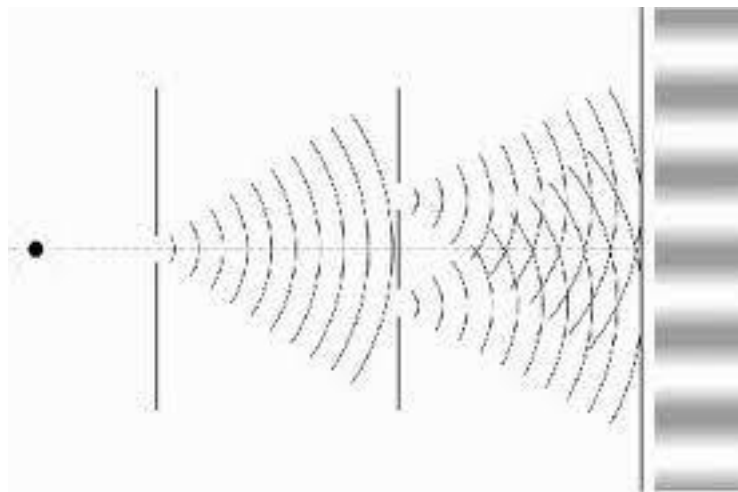
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cosmological constant, the metric also represents the force of dark energy<sup>10</sup>. The metric is the natural way to unify all the fundamental forces and to specify the action principle. In this sense, all the fundamental forces are represented by fields that are components of the space-time metric, which gives a measure of the distance along some path between two points in the geometry.



Sum over all paths image from Penrose

The natural result of specifying the probability of measurement with a wave-function  $\psi = \exp(i\theta)$ , where the phase angle  $\theta$  depends on the length of the path, is an interference pattern, as seen in the double slit experiment<sup>1</sup>. When the probability waves are out of phase with each other, the wave amplitudes cancel out, and the probability of measurement is low. When the probability waves are in phase with each other, the wave amplitudes add together, and the probability of measurement is high. This wave addition and cancellation results in the interference pattern.

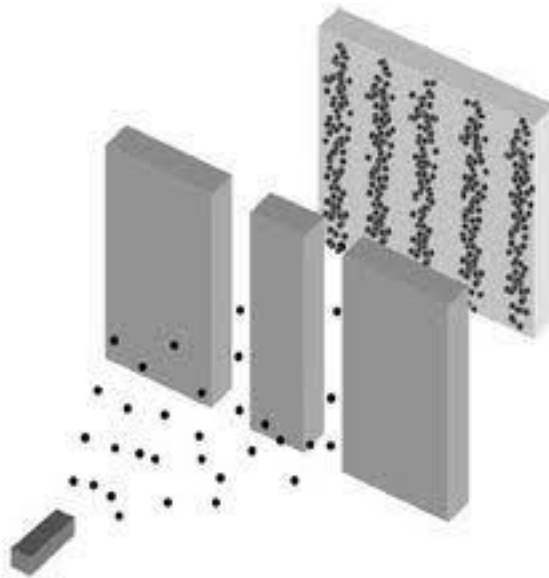


Double slit experiment image from greatmindsofscience.tumblr.com

The net result of wave addition and cancellation in the sum over all paths is the principle of least action. The most likely path in the sense of quantum probability is the path of least action, which is like the shortest distance between two points in the configuration space. The reason the

shortest distance is not always a straight line has to do with the nature of geometrical curvature in the configuration space, like a curved space-time geometry. The shortest distance between two points in a curved geometry may not be a straight line, but like the path of a geodesic or great circle <sup>1</sup> on the surface of a sphere.

This explains the so-called wave-particle duality <sup>1</sup> of quantum theory. When we measure a particle at some position in space at some moment of time, that measurement is a choice in the sense of a quantum state reduction. The interference pattern that results from the probability wave addition and cancellation that occurs when we sum up all the possible paths of the particle as it follows some possible trajectory through space over time only specifies the quantum probability of the particle's measurement.



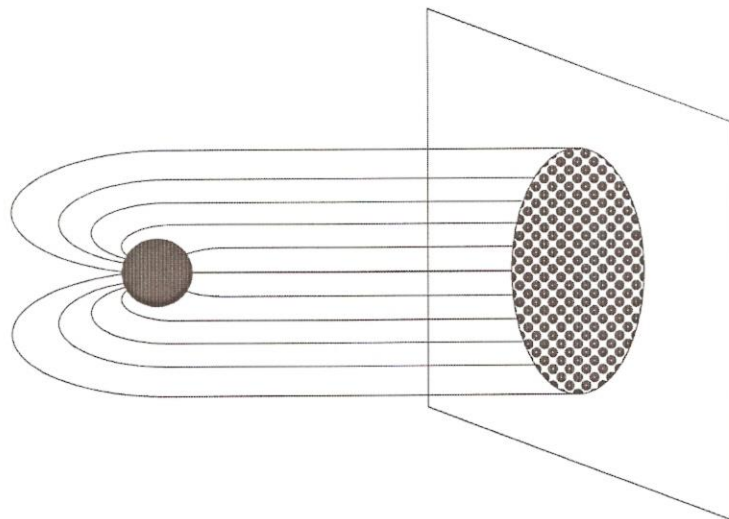
Double slit experiment image from blacklightpower.com

The measurement of a particle is defined at some position in space at some moment in time. The quantization of space-time geometry only restricts these measurements to a finite number of possibilities in any finite region of space. This restriction to a finite number of possibilities is what the covariant entropy bound <sup>4</sup> is all about.

The space-time metric represents fundamental forces in terms of effective field theories that are only thermodynamic equations of state <sup>9</sup>, but give rise to all particle excitations in space as localized excitations of field energy. This is just like the wave equation for sound waves. A photon is really no different than a phonon, except the oscillating medium is not air molecules in space but bits of information on a bounding surface of space. Field variables for particles are not quantum variables with a range of validity down to the Planck scale anymore than field variables for sound waves. The only valid quantum variables at the Planck scale are non-commuting variables defined on a bounding surface of space <sup>2</sup>.

The holographic principle is a duality <sup>11</sup> even more fundamental than the wave-particle duality, as it relates particles in space to non-commuting variables on a bounding surface. When we

measure a particle at some position in space at some moment of time, that measurement is like the projection of an image of the particle from a holographic screen to the point of view of an observer. The particle has an image in the precise sense that its position in space is fuzzy or smeared out due to the pixelated way bits of information are encoded on the holographic screen.



Black hole projection image from Susskind

Laws of physics are always expressed in terms of an action principle. Once we express  $S$ , we express the laws of physics, but the laws of physics only enter into the quantum state in terms of a probability factor  $\psi$  that gives weight to every possible path in the sum over all paths. The most likely path in the sense of quantum probability is the path of least action. Relativity theory tells us the path of least action is like the shortest distance between two points in a curved space-time geometry, which is how we understand all of classical physics. The path of least action gives the maximal quantum probability, but this maximal likelihood is only meaningful if choices are made in an unbiased way.

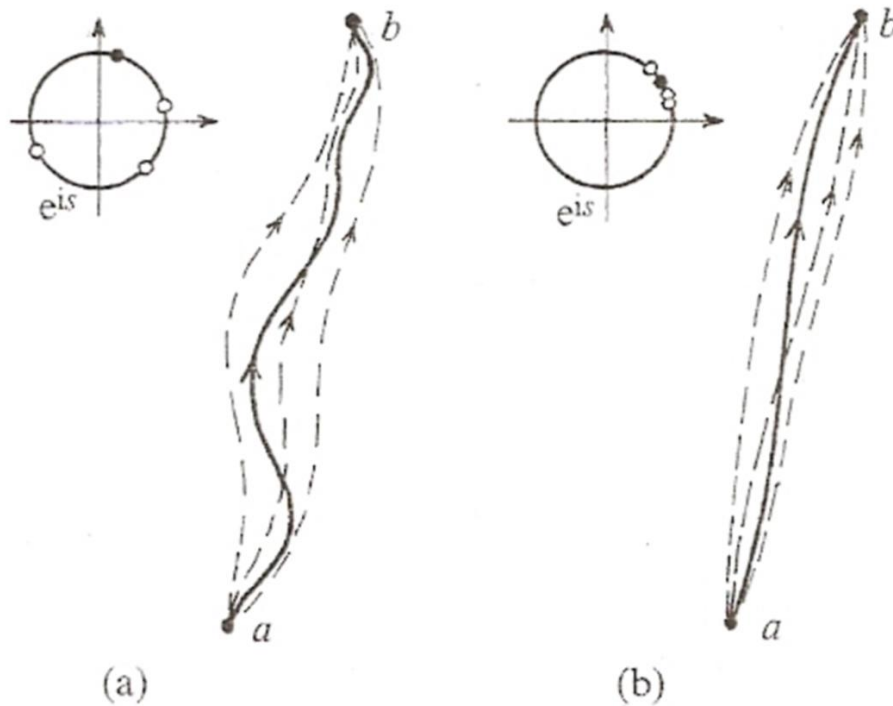
What exactly do the probability factors specify? They give the probability for measurement. The sum over all paths formulation of quantum theory tells us each path is weighted with a probability factor called the wave-function  $\psi$ , and each measurement chooses a specific path through the configuration space. The quantum state is like a probability distribution of possible measurable states, and the wave-function  $\psi$  specifies the quantum probability of measurement of each possible measurable state. The quantum state is like a probability distribution measured through a process of choice or quantum state reduction, but if the choices are made in a biased way, the measurements are also biased.

The problem is this process of measurement is only meaningful if choices are made in an unbiased way. The probability distribution is only accurately measured if the choices are unbiased. If there is bias in the way measurements are made, then all bets are off, and the whole concept of quantum probability loses meaning. If there is bias in the way choices are made, the laws of physics as specified by an action principle lose their predictability.

This is a huge problem in the formulation of quantum theory. Every law of physics is formulated by an action principle, where action is a measure of geometrical length of some path that connects two points in some configuration space. The quantum state is formulated as a sum over all possible paths in that configuration space, and each path is weighted with a probability factor called the wave-function that depends on the action.

Quantum theory tells us the probability factors act like waves. The quantum state is a sum over all probability factors that correspond to all possible paths. In that sum, probability waves tend to cancel out when they are out of phase, but add together when they are in phase. This wave addition and cancellation gives rise to an interference pattern, like we see in the double slit experiment. The path of maximal wave reinforcement gives rise to the path of least action, which is the path that gives the maximum quantum probability.

This is easiest to see in the complex plane, where the probability factors act like vectors defined on the unit circle,  $z = \exp(i\theta) = x + iy$ , where  $x = \cos\theta$  and  $y = \sin\theta$ . Since these unit vectors are oriented relative to the x-axis with a phase angle  $\theta$ , they tend to cancel out when they point in uncorrelated directions, but tend to add together when they align together or point in correlated directions. The principle of least action follows from the fact the maximum correlation occurs at a stationary point, which corresponds to minimizing the action. This gives the maximum likelihood for measurement, but only if choices are made randomly, in an unbiased way.



Principle of least action image from Penrose

The most likely path in the sense of quantum probability is the path of least action, since this path has the maximal amount of wave reinforcement. The path of least action is like the shortest distance between two points in the configuration space, and so this concept of quantum probability makes perfectly good sense.

The problem is this concept of quantum probability only makes sense if measurements are made in an unbiased way. Since each measurement is a choice, this means the whole concept of measurement is only meaningful if choices are made in an unbiased way. If choices are made in a biased way, then all bets are off, and the laws of physics lose their predictability. This is a humongous problem in the formulation of quantum theory, since there is nothing in the laws of physics that rules out a biased process of choice, except for the desire of physicists that the laws of physics have predictability.

What if there is bias in the way choices are made? The all bets are off, and the laws of physics lose their predictability. Physicists don't like that idea, and so they've arbitrarily assumed only random choice is operative, but each of us knows that is not the way the world really works. Each of us is biased to choose what we like and to avoid what we don't like. This ability to choose what we like and avoid what we don't like is the nature of our volition, or free will.

In order to examine this fatal flaw in the formulation of quantum theory, we need to examine how choices are really made. The answer is everyone is inherently biased to choose what they like and not to choose what they don't like. Each of us knows we have a bias to choose what we like and to avoid what we don't like. Even physicists choose what they like when they assume an unbiased process of choice so that their precious laws of physics have predictability. The problem we have is to understand how everyone is inherently biased to choose what they like and not to choose what they don't like.

How are choices really made? The only possible answer is choices are made as the focus of attention of consciousness is focused on something. An observer chooses what it observes in its world with its focus of attention on that thing in its world. This makes perfectly good sense, since an observer is a focal point of consciousness. A focal point of consciousness is always at the central point of view of its own world, and that world is always defined on a holographic screen surrounding the central focal point. The observer expresses its volition or free will as it focuses its attention on something in its world.

There are two mysteries about the nature of consciousness that this explanation helps us understand. The first mystery is about how choices are made, which is the nature of free will. The answer is an observer chooses what it observes in its world with its focus of attention on that world. The observer is always free to shift the focus of its attention into a different direction and observe something different, thereby expressing its free will.

The second mystery is about how meaning is given to observations. The observation of anything occurs in a screen output, but the nature of that thing is only a coherently organized form of information defined on the screen in terms of bits of information encoded on the screen. Forms of information are composed of bits of information encoded in a binary code of 1's and 0's.

How does a presence of consciousness give meaning to the forms of information it observes? The simple answer is all meaning is given in an energetic context, and this energetic context implies the expenditure of energy. The expenditure of energy is how a form of information is animated over a sequence of events, and only that animation of form creates the context within which the observer gives meaning to the form.

In emotional terms, or the animation of a body, the expenditure of energy creates the emotional context within which meaning is given. As is well known from the study of emotions <sup>3</sup>, all meaning is given in an emotional context. The expression of emotion is the expenditure of energy that animates the form of a body. Without this emotional expenditure of energy that animates the form of a body, meaning cannot be given to any form of information. Only the observer can give meaning to the forms of information it perceives, but that meaning can only be given in an emotional context.

This connection between observation, action and meaning can be stated as "to act is to give meaning", but the flip side of this statement is "actions arise with the meaning given to observations". In other words, "to see it is to do it". There is no doing without seeing. In other words, it is impossible to separate observation from action. What connects them is meaning.

It helps to give a simple example. When we observe blue light, we are observing light waves at a particular frequency in the spectrum of light. Quantum theory tells us the energy of light waves at this particular frequency is quantized as  $E=hf$ . The meaning "blue" that we give to our observation of light waves at this frequency occurs in this particular energetic context. The emotional meaning that an observer gives to the energetic actions of its body is far more complex, due to the complexity with which the flow of energy is organized as emotional energy flows through a body to animate the behaviors of that body and to allow for self-replication of its form, but the general principle is the same.

The solution to these two mysteries leads to an odd kind of emotional feedback loop. An observer chooses what it observes in its world with its focus of attention on that world, but the meaning it gives to those observations always occurs in an emotional context as energy is expended to animate a form of information in that world. In a peculiar way, this emotional feedback loop directs the focus of attention of an observer on its world.

When we speak of an animated form of information in the observer's world, we are speaking about a coherently organized form of information displayed on the observer's holographic screen and self-replicated in form over a sequence of events. Each event is like a screen output.

Some of these observations are external sensory perceptions of the observer's world, which includes perceptions of the animated form of the observer's body, and some of these observations are internal perceptions that arise in mental imagination, like the perception of memories, emotions, thoughts, and other mentally constructed forms of information. The holographic principle tells us that there is really no difference in the nature of these external and internal perceptions, since all of these animated forms of information are displayed on the observer's holographic screen. The observer is only a focal point of consciousness at the central point of view of its holographic screen.

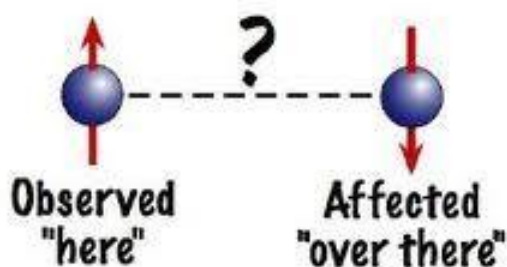
Whether the observed form of information is an external or internal perception, the observer can only give meaning to its perception in an emotional context. This gives rise to an emotional feedback loop that directs the observer's focus of attention.

How can this emotional feedback loop direct the focus of attention of a presence of consciousness? There are two important ways this direction can occur. The first has to do with the alignment of the flow of energy. When the flow of energy comes into alignment, feelings of connection are perceived, but when the flow of energy goes out of alignment, feelings of disconnection are perceived. Since feelings of connection feel "good" while feelings of disconnection feel "bad", the observer is naturally biased to choose feelings of connection.

This bias to feel "good" naturally directs the focus of attention of the observer on its world in such a way as to keep the flow of energy through its world in alignment, thereby resulting in feelings of connection, which is the normal way in which the emotional feedback loop operates. This state of affairs is normal since the natural way for energy to flow through the world when choices are made in an unbiased way is for the flow of energy to come into alignment.

This natural alignment of the flow of energy is a consequence of the principle of least action. Quantum theory tells us that as long as choices are made in a unbiased way, the motion of all things tends to follow the path of least action, and in the process, the flow of energy through all things tends to come into alignment.

The other way to understand the alignment of the flow of energy is in terms of the alignment of information. Bits of information encoded on a holographic screen are like spin variables that can only point up or down, but since these spin variables are entangled with each other like the eigenvalues of a matrix, they tend to align together over the course of time, which is only a sequence of screen outputs. The flow of energy tends to come into alignment as the bits of information align together.



Entanglement image from science.nasa.gov

The normal flow of energy can be understood in terms of the alignment of the flow of energy and the principle of least action, or in terms of the alignment of information and the entanglement of information. Entanglement is operative over all of space. Events that apparently occur on opposite sides of the universe are related if the information for those events is entangled. Not as well appreciated is that entanglement is also operative over all of time. Events that apparently



occur at the beginning of the universe are related to events now if the information for those events is entangled. In some sense, this means that everything occurs “here and now”.

As long as an observer makes its choices in its world by choosing feelings of connection, the flow of energy through its world tends to remain in alignment, which is the normal way for energy to flow through its world. This alignment naturally arises when the observer no longer interferes with the normal flow of energy through its world. This kind of unbiased choice naturally leads to the “best of all possible worlds”.

Problems can only arise in the observer's world when the observer becomes biased to choose feelings of disconnection, and the flow of energy goes out of alignment. Since these feelings of disconnection feel “bad”, why would the observer ever become biased to choose feelings of disconnection?

The answer to this question is called self-identification. Whenever an observer identifies itself with an animated form of information it perceives in its world, it naturally becomes biased to defend the survival of that form as though its existence depends on it. The survival of a form of information is only the self-replication of that animated form over a sequence of screen outputs, while the observer is nothing more than the consciousness present at the central point of view of its holographic screen, to which those animated images are projected with each screen output.

Self-defensive emotional expressions naturally arise out of self-identification with form and result in self-limiting feelings of disconnection. The self-defensive expressions that arise out of self-identification with a form of information always interfere with the normal flow of things, and thereby lead to self-limited feelings of disconnection. A presence of consciousness only focuses its attention on these self-defensive expressions due to its mistaken assumption that its existence depends on the survival of that form, which is the meaning it gives to its observations.

As a presence of consciousness identifies itself with the form of its body, it naturally feels compelled to defend the survival of its body as though its existence depends on it, and so that is where its attention is focused. This kind of emotional feedback loop is established because the observer really feels self-limited to the form of its body as it perceives the self-defensive emotions expressed by its body that defend the survival of its body.

This creates a vicious cycle that hinges on the meaning an observer gives to its observations. As more self-defensive emotions are expressed, the more an observer feels self-limited to the form of its body. The more an observer identifies itself with the form of its body, the more it feels compelled to defend the survival of its body as though its existence depends on it.

This self-defensive way of expending energy creates the emotional context within which a presence of consciousness identifies itself with the form of its body. This self-identified way of giving meaning in an emotional context directs the focus of attention of a presence of consciousness on its world, which is a self-limited way of perceiving that world, as the observer identifies itself with the animated form of its body in that world.

In the Allegory of the Cave, Plato refers to such a self-identified observer as a prisoner, since that observer really feels self-limited to the form of its body. Plato also discusses the nature of liberation that occurs when a presence of consciousness no longer identifies itself with the form of its body. Plato describes this freedom in the sense of the ascension of consciousness to a higher level, which thanks to the holographic principle, we're able to understand as a higher dimension, like an observer out in the audience watching a movie that plays on a screen.



Image of Plato's Cave from faculty.washington.edu

An observer expresses its free will with its focus of attention. The observer is always free to redirect its focus of attention and make different choices. To the extent that bias arises in the way choices are made, that bias is the nature of individual volition. This bias is always emotional in nature, such as the self-defensive bias to defend the survival of one's body. The expression of an emotional bias is always an interference with the normal flow of energy that animates the behavior of all things in the observer's world.

It's worth pointing out something about the expression of emotionally biased individual volition: its futility. Every biased expression of individual volition is an act of futility that interferes with the normal flow of things by creating a localized disturbance in the normal flow of things. This disturbance is always localized in space and time. The normal flow of things arises with the universal expression of dark energy, which is operative over all of space and time. The normal flow of energy through the universe is like the flow of a great river, and the biased expression of individual volition is always an act of futility, like trying to alter the course of the river by throwing a rock at it. The course of the river will not change with such a puny act, only some minor ripples or vortices are created in its flow. The best one can ever "do" is to bring oneself into alignment with the normal flow of things, stop creating one's own disturbances, and avoid the disturbances created by others.

The principle of least action tells us that when choices are made in an unbiased way, the motion of all things tends to follow the path of least action and the flow of energy tends to come into alignment. This alignment is the natural way for energy to flow through the observer's world. As long as there is no emotional bias in the way choices are made, the flow of energy tends to come into alignment, which is the natural way for energy to flow through the observer's world and to animate the behavior of all things, including the behavior of the observer's body.

Everything one can "do" in the sense of individual volition is biased and an interference with the normal flow of things. Biased behavior always expresses an emotional bias. When one no longer interferes with the normal flow of things, one "does nothing" in the sense of individual volition, and one no longer expresses any emotional bias. When one is "non-doing" and "non-interfering", one allows actions to play out in the normal way and the flow of energy through all things to come into alignment, which is the normal way for energy to flow through all things in the observer's world, including the observer's body.

When one is "doing" and "interfering", the flow of energy through the observer's body is out of alignment with the normal flow of things, which is the nature of individual volition. With the expression of individual volition, the observer feels self-limited to the form of its body. In the emotional context of these self-limited feelings, the observer identifies itself with the form of its body, and out of that self-identification, the observer expresses its self-defensive emotional bias with its biased focus of attention.

What is the consequence of "doing", "interfering", and expressing emotionally biased individual volition? Wherever we look in the world of frenetic human behavior and activity, we see the fear of non-existence and the insanity of self-identification and self-defense express itself in destructive ways. This insanity is Maya, the illusion of self-identification arising from the emotional intelligence of fear, run amok.

On the other hand, the alignment of the flow of energy arising in a state of "non-doing" and "non-interfering" expresses itself in constructive ways. This is the difference between love and hate; the difference between creation and destruction.

At the root of all hatred and destructive behavior is the irrational fear of non-existence, based on the mistaken self-identification of an observer with an observable form of information it perceives in its world, as though consciousness itself could stop existing.

Ironically, if the nature of a self-concept arising with the irrational fear of non-existence is seen, this same energy can energize a self-destructive process that deconstructs the self-concept. In the sense of spirituality, this self-destructive process leads to awakening from the dream of self-identification, a process that goes forward as one no longer identifies oneself with a self-concept. This awakening process can only begin if one looks within and examines one's own mentally constructed self-concept, and if one becomes aware of one's own sense of "being present" as a presence of consciousness that perceives but mistakenly identifies itself with that self-concept. The self-concept is finally deconstructed when self-defensive energy is no longer expended. This happens naturally when a presence of consciousness finally realizes that the true nature of its existence cannot stop existing, and therefore needs no self-defense.

Can consciousness stop existing? To answer this question, it is necessary to examine the nature of both perceiving consciousness and the Source of perceiving consciousness. The holographic principle tells us an observer is only a focal point of consciousness present at the central point of view of a holographic screen. In this sense, an observer is a presence of consciousness. The observer's world is defined on its holographic screen. Everything the observer can possibly

observe in its world is like an image displayed on the screen and projected to the observer's central point of view.

What can this state of affairs tell us about the nature of the observer's underlying reality? Can the observer's underlying reality or the Source of perceiving consciousness really stop existing? If not, then how can we describe this ultimate underlying reality?

The best way to investigate the nature of this underlying reality is to examine the reality of the observer's world. The holographic principle tells us that the consensual reality shared by many observers is like an interactive computer network generated virtual reality world displayed on multiple computer screens and observed by many observers. Each observer observes its own world on its own holographic screen, but those screens overlap and share information. The interactive nature of the consensual reality arises from information sharing. The complexity of this kind of interactive virtual reality world in no way makes it any more real than the perception of animated images projected from a digital computer screen to the point of view of an observer.

Each observer's world also shares in the normal flow of energy that energizes the entire network of screens. The consensual reality shared by many observers can share information to the degree their screens overlap, but each observer's holographic screen is ultimately defined by a cosmic horizon arising from the expenditure of dark energy that all the observers share together.

Again, the inherent complexity of this kind of interactive virtual reality world in no way makes it any more real than the perception of animated images projected from a digital computer screen to the central point of view of an observer.

What is ultimately real? Is the observer real? If the observer isn't real, does the observer have an underlying reality? What is left when the observer's world disappears?

How can the observer's world disappear? The thing to be clear about is the observer's world can only appear from the central point of view of the observer. The observer's world can only appear when the observer expends energy and enters into an accelerated frame of reference, since that is the only way an event horizon can arise that surrounds the observer at the central point of view and acts as a holographic screen.

If the observer does not enter into an accelerated frame of reference and expend energy, then no event horizon arises and the observer has no holographic screen surrounding itself that defines everything in its world. If no energy is expended, then no information is encoded and the observer's world must disappear.

What is left when the observer's world disappears? The observer's world is no more real than images of a virtual reality world displayed on a computer screen. What is the nature of the underlying reality that is left when energy is no longer expended, information is no longer encoded, the screen is no longer constructed, and the observer's world disappears?

What is the nature of this underlying reality? There are many names for it, but one of its names is the "nameless", since it cannot be conceptualized. Even when given a name, the name implies

negation, since it cannot really be named. It is sometimes called the void, empty space, nothingness, no-self, non-dual awareness, or Brahmanic consciousness. Probably the best name for it is undifferentiated consciousness. In physical terms there is nothing in it, which is why it is called the void or empty space. Since it is the source of consciousness and the source of information and energy, it is also called the Source.

The hardest thing to understand about this underlying reality is that the Source of consciousness is undifferentiated consciousness. The kind of consciousness that is characteristic of an observer and its world is a differentiated kind of consciousness, which can be called Atmanic consciousness. This critical distinction between the differentiated Atmanic consciousness of an observer and its world and the undifferentiated Brahmanic consciousness of the Source is the essence of the Advaita tradition of Shankara <sup>12</sup>.

This differentiation of a focal point of consciousness from the “void of undifferentiated consciousness” occurs at a focal point, which is the central point of view of a holographic world defined on a bounding surface of space. The differentiation process is the energetic construction of that boundary. The relation of a differentiated focal point of consciousness to the totality of undifferentiated consciousness is the relation of a point to the totality of an infinite empty space.

To be clear about things, this infinite empty space is an “empty space of potentiality”. The nature of this “space” is not defined by the boundary or by the bounded space that arises inside the boundary. The bounding surface of space is a holographic screen that projects an observable space-time geometry to the central point of view of the observer.

This observable space-time geometry is defined by properties like dimensionality and curvature, but these properties arise from the nature of the boundary, which is an event horizon that arises in an accelerated frame of reference. This frame of reference arises with the expenditure of dark energy and the exponential expansion of space, which generates all the symmetries of space arising in the space bounded by a cosmic horizon. Positive dark energy is always exactly balanced out by negative gravitational energy. The expenditure of any other forms of energy besides dark energy and gravitational energy, like electromagnetic energy, can only arise through a process of symmetry breaking.

The accelerated reference frame arising as energy is expended characterizes the nature of the event horizon and the observer’s world, but does not in any way characterize the empty space of potentiality within which the boundary arises. This empty space of potentiality cannot be characterized in terms of a dimensionality, curvature, or any other physical properties. It is the source of all dimensions and physical laws.

What about a “theory of everything”. The simple answer is there is no such thing, nor is there something of all encompassing “sacred geometry”. A theory of everything is just another thing that a theory of everything must explain, which can only lead us down the road to absurdity. There is “No theory of Nothing”, which is to say there is no theory of consciousness or its Source. Even the holographic principle and non-commutative geometry are not really theories, but only mechanisms; a means to an end. Maybe there are other mechanisms that explain the facts of existence better than these mechanisms, but at the present time, these are the best

mechanisms we've got. These mechanisms construct the framework within which all possible theories must be constructed. Even this framework only arises as the symmetries of space that characterize any possible world arise with the expansion of space as dark energy is expended.

The laws of physics that govern a world arise from the symmetries of space and the way those symmetries are broken. These symmetries are inherent in the way space expands as dark energy is expended. The "empty space of potentiality" that we call the void is the source of all these symmetries, but in and of itself cannot be characterized by these symmetries. It is the potentiality to express all possible symmetries that can characterize any possible world. Maybe our world is characterized by a sacred geometry, but other possible dimensionalities may not be. It all depends on how the symmetries of space are expressed with the expansion of space as dark energy is expended.

The empty space of potentiality is the source of all dimensions, the source of all physical laws, the source of all space-time geometries, the source of all reference frames, the source of all energy, and the source of all information. The holographic principle explains how all these things arise in an accelerated frame of reference as energy is expended and the boundary of an event horizon arises. This boundary characterizes every aspect of the world bounded by that boundary, including its projected space-time geometry, but tells us nothing about the nature of the empty space of potentiality within which the boundary arises.

Another way to understand the nature of this empty space of potentiality is as a "void of undifferentiated consciousness". As energy is expended in an accelerated reference frame and the boundary of an event horizon arises, a focal point of consciousness at the central point of view is differentiated from undifferentiated consciousness. The differentiation process is the construction of this boundary within empty space, which requires the expenditure of energy. Empty space itself is the source of this energy, which we call dark energy and understand as the exponential expansion of space. In this sense, the expansion of space is the expansion of consciousness, which is always expanding as long as the observer at the central point of view of the boundary has a world to observe.

The expenditure of energy causes a boundary to arise that surrounds the central focal point, which is the nature of the differentiation process. The construction of the boundary and the encoding of information on that boundary for an observer's world can only occur when energy is expended, which we understand as the accelerated expansion of space.

In place of the laws of physics, some theoretical physicists<sup>2</sup> would like the holographic principle to be the most fundamental thing, but it is not. The most fundamental thing is the No-thing, which is the primordial empty space of potentiality. It is the One-thing, since its nature is undifferentiated consciousness. It is the Infinite-thing, since it is the Source of all possible things. It Is, since it is the primordial, timeless nature of existence. All possible things can only appear to temporarily come into existence when energy is expended, space appears to expand, and bits of information are encoded on a holographic screen surrounding an observer's central focal point.

The nature of an observer and its world is a constructed reality, which is to say it is a bounded reality. The boundary only arises and bits of information are only encoded on the boundary when

energy is expended. Forms of information are only organized, animated and projected to the observer's central point of view when energy is expended.

The observer's world can only appear when energy is expended and a boundary arises. When energy is no longer expended, there is no longer a boundary, information is no longer encoded, and the observer's world must disappear. Disappearance of the observer's world always occurs relative to the central point of view of the observer.

What happens to the observer when the observer's world disappears? What happens to this differentiated focal point of consciousness? The answer is the observer's consciousness is no longer differentiated from undifferentiated consciousness. The differentiated consciousness of the observer rejoins undifferentiated consciousness. This is often described as a dissolution, like a drop of water that dissolves back into the ocean. In the Tao this is referred to as "returning", and in many religions as a "reunion". This dissolution into undifferentiated consciousness is called truth-realization, and is the nature of the experience of Nirvana <sup>12</sup>.

Truth-realization is only about the direct experience of the ultimate nature of existence; that which cannot stop existing. Ultimate reality is only describable in negative terms: as void, nothingness, or undifferentiated consciousness. Unlike everything in the manifested world that is animated by the flow of energy, this unmanifested underlying reality is not animated, and so it can also be called pure timeless or absolute being. It is timeless being since it is not animated and cannot stop existing. Since it is not-a-thing, we can say that ultimately "nothing exists", which is the same as to say ultimately only "undifferentiated consciousness exists". The ultimate nature of existence is this "nothingness" <sup>12</sup>.

This unmanifested underlying reality is what remains when the untruth of an observer and its world disappears from existence. It is not that the differentiated consciousness of an observer stops existing, but timelessly exists as undifferentiated consciousness.

We might be tempted to say that with truth-realization, the observer has the direct experience of this "nothingness", but that is not correct. With truth-realization, the differentiated consciousness of the observer "dissolves" back into undifferentiated consciousness, and so the "nothingness" has the direct experience of its true nature <sup>12</sup>.

Something remarkable happens after truth-realization, which Plato calls ascension. After truth-realization, an observer observes its world again, but always from a higher level of consciousness, which is like a higher dimension. Ascension is often described in terms of an observer that observes the animated images of its world on a two dimensional screen from a higher dimension outside the screen. It is as though the observer has come out of its world, but it never really was in its world in the first place. There was only an illusion that the observer was a part of that world. That illusion is the nature of self-identification.

The observer is always present at a focal point of consciousness at the center of its world, while the animated images of that world are projected from a surrounding holographic screen to the observer. If the observer identifies itself with the form of an image that appears in its world, it seems as though the observer is a part of that world. This illusion comes to an end when the

observer ascends to a higher level of consciousness and sees that these images are only projected to the observer as they are displayed on a screen, and that this projection process can only occur as the observer expends its own energy.

There is another aspect of truth-realization called enlightenment. The "light of consciousness" is what "illuminates" the holographic screen and allows the images of things in the observer's world to become projected from the screen to the central point of view of the observer. The observer's world is only a hologram<sup>11</sup>, and the light of consciousness illuminates the hologram. Just like the illumination of the images of a movie on a screen, the projection of the images of things is like the reflection of the light of consciousness off the screen to the observer's point of view. In a very real sense, it is the observer's own light of consciousness that is reflected off the screen<sup>12</sup>.

A truth-realized observer can turn its world on and off like a child flicking a light switch, but a better analogy is turning off the power to a computer screen. The observer can turn off the expenditure of energy that constructs a boundary on which its world is displayed. When that expenditure of energy is turned off, the observer's world disappears and the observer's differentiated consciousness rejoins undifferentiated consciousness.

When energy is no longer expended, the observer is no longer in an accelerated frame of reference, the observer's holographic screen is no longer constructed, the observer's world disappears, and the observer is no longer present for that world. In relativity theory, we call such a non-accelerated frame of reference a freely falling frame of reference, which expends no energy. In this sense, a truth-realized observer can enter into an "ultimate freely falling frame of reference" at will, and turn its world off. Remarkably, a description common to all experiences of truth-realization is "falling into the void"<sup>12</sup>.

In some sense, the fear of non-being is the emotional barrier separating the self-identified state of being from the ultimate state of being, like a potential barrier separating a false vacuum state from the true vacuum state. This potential or emotional barrier is the only thing that stops one from "freely falling into the void". In the same sense, the expression of the emotional energy of this fear of non-being is the energy that animates one's self-concept.

The expenditure of energy creates the emotional context within which the observer gives meaning to all the forms of information it perceives in its world. All worldly knowledge is a form of information, but meaning can only be given to knowledge in an emotional context. In the process of expressing self-limiting emotions and identifying itself with a form of information in its world, the observer gives meaning to self-limiting emotional expressions that create the emotional context. The observer expresses emotions as it expends energy, and then gives meaning to its emotional expressions as they create the emotional context. Without that emotional context, all forms of self-knowledge become meaningless, and the observer becomes "knowledgeless". A truth-realized observer "knows nothing" about itself, except for the timeless nature of its existence.

Without the expression of self-limiting emotions, no meaning can be given to the forms of information inherent in the observer's self-concept. Without the expenditure of energy that constructs a boundary on which these forms of information are displayed, there is nothing to



know. A truth-realized observer has shifted its attention right to the edge of the precipice separating the existence of its world from the void and the non-existence of its world.

A truth-realized observer “sees everything” in its world, since its consciousness is ascended, but ultimately “knows nothing”, since its consciousness is ultimately unbounded. The only true thing that a truth-realized observer can ever know about itself is “I Am”.

The only true thing a truth-realized observer can ever know about itself is "I Am", but in an ultimate state of dissolution with its Source of undifferentiated consciousness, even this is not true. In a state of dissolution, "I am not", which is the ultimate negation<sup>12</sup>.

In an ultimate state of dissolution, only "The Source Is". The paradoxical nature of this ultimate state of being, of "being nothing", is often expressed as "I Am the Source"<sup>12</sup>.

All perceivable states of the world are states of consciousness. The ultimate state of being is not a state of the world or a state of consciousness. In the ultimate state of being, there is no world and there is no presence of consciousness present to perceive that world. This ultimate state of being can only be described as the "experience of nothingness"<sup>12</sup>.

The journey of awakening is about the expenditure of energy. One's expression of emotion is one's expenditure of energy, which is one's life-force. The difference between the self-identified and non-identified states is the difference between conditional and unconditional love; the difference between expressing self-defensive energy and creative energy. If one expresses conditional love, one is attached and self-identified. If one expresses unconditional love, one is unattached and non-identified. In the first case, one feels self-limited and disconnected. In the second case, one feels connected. In the first case, one creates a disturbance in the normal flow of energy and identifies oneself with that disturbance. In the second case, one brings oneself into alignment with the normal flow of energy and doesn't identify oneself. In the first case, one suffers from the illusion of self-identification as one identifies oneself with one's character in the animation. In the second case, one is lucid since one knows one is only watching the animation.

Whatever one loves conditionally; whatever one attaches oneself to; whatever one tries to defend, control, hold onto, or identify oneself with, that thing is one's obstruction, which prevents one from moving forward in the journey of awakening. The emotional energy one expends as one loves something conditionally is one's life-defining purpose; one's life-force.

One's awakening from the dream of one's self-identification with one's character in one's world can only go forward through a process of negation, surrender, detachment, and a shift in the focus of one's attention away from one's world and onto one's own sense of being present<sup>12</sup>. Negation is a deconstructive or dismantling process. One negates who one thinks one is. One negates all self-referential thoughts of the form "I am an embodied person who is emotionally related to other perceivable things I perceive in the world".

The purpose of negation is to turn off self-referential thoughts, which are only turned off through surrender, as self-defensive energy is no longer expended. When one clearly sees the falseness of self-referential thoughts, one will naturally negate them, turn the focus of one's attention away

from them, and withdraw one's investment of self-defensive energy that energizes them. Only one's expenditure of self-defensive energy can animate one's self-referential thoughts that mentally construct one's self-concept of being an embodied person emotionally related to other things in one's world. If one turns off the expenditure of this self-defensive energy, if one stops interfering with the normal flow of things, then one's self-referential thoughts are also turned off.

One negates self-referential thoughts because they are seen to be false. Self-referential thoughts are only like the self-referential narration of an animation displayed on a screen by the central character of the animation. The perceiver of the animation cannot be a perceivable person animated on the screen. The true nature of the perceiver is only a presence of consciousness, or a focal point of perception, that arises in relation to the mental screen on which all self-referential thoughts are constructed. The perceiver only feels self-limited to its character in the animation due to emotional expressions that relate the character to other things in a self-limiting way. The perceiver feels self-limited as it perceives self-limiting expressions. When these self-limiting expressions are no longer expressed, the perceiver no longer feels self-limited to the character.

Thoughts are still possible after self-referential thoughts are turned off, but they become a natural expression of creativity, such as problem solving. Constructive communications with others are still possible after self-referential thoughts are tuned off, but thoughts become purely abstract, and even when referring to one's character no longer refer to a personal sense of self.

As one shifts one's focus of attention away from one's world and brings oneself into focus, one withdraws the focus of one's attention away from one's world and withdraws the expenditure of self-defensive energy that animates the behaviors and self-referential thoughts of one's character's. One focuses on one's own sense of being present as a presence of consciousness, which is what one is, as long as one perceives one's world.

The detachment process leading to the awakening of consciousness occurs as one shifts the focus of one's attention away from one's world and focuses on one's own sense of being present as the presence of consciousness perceiving that world. As one withdraws the focus of one's attention away from one's world, one withdraws one's investment of self-defensive emotional energy that animates the self-defensive behaviors and thoughts of one's character in that world.

As one surrenders, one turns one's focus of attention away from one's world, away from concerns about the welfare of one's character, and one stops trying to defend the survival of one's character. As one brings oneself into focus as a presence of consciousness, one detaches oneself from one's world and de-identifies oneself from one's character. One knows oneself only as a presence of consciousness outside one's world, perceiving that world like an observer out in the audience only watching a movie animated on a screen.

The goal of negation, surrender, and the shift in the focus of one's attention is to detach oneself from one's character in one's world. The problem of one's self-identification with one's character only becomes a real problem if one becomes attached to things, and if one tries to hold onto things, control things, and defend things. One can only free oneself from things in one's world with one's willingness to surrender, give up the desire to defend or control things, let go, and detach oneself from things. In this detached state, one lets things play out in the normal way as

one observes things with the sense of being outside of things, like a detached observer watching a movie. In the sense of surrender, one brings oneself into alignment with the normal flow of things as one puts one's trust in the normal flow of things to sort out what is for the best.

To reach the ultimate state of being requires one to go further than surrender. One not only has to stop expending self-defensive energy; one has to stop expending all energy, including creative energy. As long as one has a life-defining purpose and expends the energy of one's life-force, one cannot reach the ultimate state of being. The ultimate state of being is what remains when energy is no longer expended, the observer's world disappears, the observer is no longer present for that world, and the observer's differentiated focal point of consciousness dissolves back into its Source of undifferentiated consciousness.

This non-dual wisdom is expressed in many of the world's greatest spiritual writings:

That which permeates all, which nothing transcends and which, like the universal space around us, fills everything completely from within and without, that Supreme non-dual Brahman –  
That thou art.

Brahman is the only truth, the world is illusion, and there is ultimately no difference between  
Brahman and Atman.  
-Shankara

And you shall know the truth and the truth shall set you free.  
-Gospel of John

They see only their own shadows, or the shadows of one another, which the fire throws on the  
opposite wall of the cave.

To them, the truth would be literally nothing but shadows of imagination.

See what will naturally follow if the prisoners are released and disabused of their error.

See the reality of which in his former state he had seen the shadows; and then conceive someone  
saying to him, that what he saw before was an illusion.

His eye is turned towards more real existence, he has a clearer vision.  
-Plato

Be still and know that I Am God  
-Psalms

In the knowledge of the Atman  
Which is a dark night to the ignorant  
The recollected mind is fully awake and aware  
The ignorant are awake in their sense life  
Which is darkness to the sage

The subtle Soul sits everywhere  
The Soul's light shines pure in every place  
In its bodily prison-Spirit pure

Never the spirit was born  
The spirit shall cease to be never  
Never was time it was not  
End and beginning are dreams

Now I Am become Death, the destroyer of worlds

The unreal has no being  
The real never ceases to be  
-Bhagavad-Gita

I have seen all the works that are done under the sun  
And behold, all is vanity and a chasing after wind  
-Ecclesiastes

The man of Tao remains unknown  
Perfect virtue produces nothing  
No-self is true-self  
And the greatest man is Nobody  
-Chuang Tzu

Burning, burning, burning, burning  
Oh Lord, Thou pluckest me out  
-The Fire Sermon

Truly, I have attained nothing from total enlightenment  
-Buddha

In the beginning God created the heaven and the earth  
And the earth was without form and void  
And darkness was upon the face of the deep  
And the Spirit of God moved upon the face of the waters  
And God said 'Let there be light'; and there was light  
And God saw the light, that it was good  
And God divided the light from the darkness  
-Genesis

In the silence and the void  
Standing alone and unchanging  
Ever present and in motion

I do not know its name  
Call it Tao

The farther you go, the less you know

In the pursuit of learning, everyday something is acquired  
In the pursuit of Tao, everyday something is dropped  
Less and less is done  
Until non-action is achieved  
When nothing is done, nothing is left undone  
The world is ruled by letting things take their course  
It cannot be ruled by interfering

Tao in the world is like a river flowing home to the sea

He who follows the Tao is at one with the Tao

Stand before it and there is no beginning  
Follow it and there is no end

Returning is the motion of the Tao

It returns to nothingness

It leads all things back toward the great oneness

Being is born of not being

Being at one with the Tao is eternal  
And though the body dies, the Tao will never pass away

Because there is no place for death to enter

To die but not to perish is to be eternally present  
Brings freedom from the fear of death

Empty yourself of everything

The form of the formless  
The image of the imageless  
It is called indefinable and beyond imagination

Without form there is no desire  
Without desire there is tranquility

Ever desireless one can see the mystery  
Ever desiring one can see the manifestations

These two spring from the same source but differ in name  
This appears as darkness  
Darkness within darkness  
The gate to all mystery  
-Tao-Te-Ching

The great path has no gates,  
Thousands of roads enter it.  
When one passes through this gateless gate,  
One walks the universe alone.  
-Mu-mon

To reach the ultimate state of being is to awaken from the dream of self-identification. The only things that stand in the way of one's awakening are all the things in one's world that one has attached oneself to; the things that one loves. To awaken, one has to detach oneself from these things and let go of whatever one loves. Whatever one loves, whether that thing is a person, a place, a work of art, a song, or a concept, that thing is only a coherently organized form of information animated in the flow of energy. Even to love work is only to love the creative process that creates forms of information.

The love of work is always a creative process that expends creative energy as forms are created, just as the expression of self-defensive energy is a misguided attempt to defend oneself because one loves a form of information with which one identifies oneself. This is the narcissistic story of being in love with one's own image as one focuses one's attention and energy on the creative process that creates one's self-image. Whatever one loves, one is expending one's energy on either that self-defensive or self-creative process.

The awakening process is not a creative process. It is a self-destructive process. It is a tearing down or deconstructive process; a process of negation that ultimately culminates in one no longer expending any self-defensive or self-creative energy. It is the antithesis of love. As long as one focuses one's attention and energy on what one loves, one cannot awaken.

To be alive in a world requires the expenditure of energy because life-forms are animated. The ultimate state of being does not require energy because it is not animated. It is timeless being. The ultimate state of being is only describable in negative terms: as nothingness, void, or undifferentiated consciousness. The differentiated perceiving consciousness of the observer, like the flow of energy through the observer's world, is only required for the animation and observation of the observer's world.

The problem of one's self-identification with one's character in one's animated world can become temporarily solved if one's focus of attention becomes distracted by some form of amusement in one's world, or if one transcends one's self as one focuses one's attention and energy on some creative process in one's world, or even if one's character falls asleep and loses consciousness.

The problem with these temporary solutions is the reentry problem. When one's consciousness reenters the embodied form of one's character, one becomes a prisoner again, self-identified with one's character, and the vicious cycle of expressing self-defensive emotional energy, of feeling self-limited to the form of one's character, and identifying oneself with one's character resumes. As long as one has a world to observe, the only abiding solution is if one shifts the focus of one's attention away from one's world and focuses on one's own sense of being present for that world.

Although it seems the observer's cosmic horizon is the edge of its world, in a strange way the observer's own focal point of consciousness is the real edge of its world, which can be called the singularity of that world. As an observer shifts the focus of its attention onto its own sense of being present and no longer expends energy in its world, it brings itself right to the edge of the precipice separating the existence of its world from the void and the non-existence of its world. This precipice is the nature of the singularity.

The purpose of a shift in the focus of the observer's attention, as the observer withdraws its attention away from its world and withdraws its investment of energy in its world, is not to get lost in the void, like falling asleep or becoming catatonic. A truth-realized observer has shifted the focus of its attention onto its own sense of being present; right at the edge of the precipice that separates the existence of its world from the void and the non-existence of its world; and so is able to turn off its world at will; freely falling into and dissolving into the void; fluctuating its attention between its world and the void; and varying its state of being between differentiated and undifferentiated consciousness.

This penultimate state of being is beautifully expressed in this saying of Layman P'ang:

When the mind is at peace the world too is at peace  
Nothing real, nothing absent  
Not holding onto reality, not getting stuck in the void  
You are neither holy nor wise  
Just an ordinary fellow who has completed his work

In summation, there are two mutually congruous perspectives one can have about the nature of life and reality:

Life's a Sim, and then you're deleted

Or

Row, row, row your boat  
Gently down the stream  
Merrily, merrily, merrily, merrily  
Life is but a dream

It all depends on whether One identifies oneself with one's dream character in one's dream, or if One identifies oneself with the Dreamer of one's dream.

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