

## A Theoretical Model for Social Physics

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### Abstract

The idea of applying statistical analysis to study social trends and search for law-like patterns in social behavior is not new. But the idea of calling it “social physics” suggests the use of the scientific method, which is what made “regular physics” so successful. But the reason that “regular physics” has been so successful is because it is a process that includes both experimental and theoretical components. The new “social physics” has plenty of “big data” to analyze, but collecting and analyzing data is the experimental part of the process. Once the data is collected, it is important to use the data to design, test and refine theoretical models. Models are required in order to represent the most fundamental units and processes that are implicit to the system being studied. Mathematical models symbolically isolate the behavior of subsystems and relate that behavior to fundamental units. They must then be flipped around by using the proposed fundamental units and relationships to predict the behavior of the macro system, which can be tested by experiments and with actual data to verify that they are accurate.

The purpose of this paper is to provide a theoretical base model for social physics. It is hypothesized that the same fundamental components used in quantum physics, i.e. those of oscillating systems, apply to the systems studied in social physics. The paper is organized into four parts. Part 1 addresses the statistical part of the process, the data collection and analysis that reveal the existence of some underlying theme. Parts 2 and 3 present some important twists in the nomenclature and interpretation of fundamental concepts that make the model complete and flexible enough to express how living subsystems morph into more complex organisms as they mature. And Part 4 describes how application of the model with these interpretations in social physics will provide verifiable evidence that the new interpretations are the key to unlocking the part of reality that regular physics has failed to recognize.

## Part 1: Introduction

Data generated by social interactions and collected for analysis using statistical methods is called “Social Physics”. (Pentland 2015) But some have pointed out that in the social context, interactions are totally different from those evident among the particles of non-living matter, and that this difference suggests that social interactions should be the focus and put physics aside as simply a landmark. “One must be careful in bridging the gap between physics and the social sciences, as these two fields are not theoretically aligned and there is always the danger of using misleading analogies.” (Neuman 2020) It will be shown here that even in the social context, the fundamental underlying process is the same.

Although the insights gained from the statistical methods are useful by themselves for making certain predictions, observation and analysis of data are just the first step in the process that made physics what it is today. The purpose of that step is to isolate the behavior of systems and subsystems to find the most fundamental units and processes that are implicit yet “hidden” by the complexities of the macroscopic system being studied. At this stage, social physics is more appropriately called “statistical sociology” and it will only become physics when these fundamentals are understood well enough to develop theoretical models, using symbolic variables to develop the equations characteristic of physics.

The spatiotemporal dynamics of a complex system is the superposition of the behavior of many less complex subsystems. Fortunately, a complex system, even if it is made up of many living microorganisms, behaves like a “super organism” – a statistical *projection* of the average microorganism behavior. An accurate model of the projection allows one to further project that behavior into the future and predict what the super organism is likely to do (or has the *potential* for doing) at least in the near future. Compared to a complex number used in physics, the micro organisms are the “real” part of the equation and the statistical projection is imaginary until it happens and an investigator make it real in the model by explicitly plotting it as a histogram or a smooth curve.

It doesn't matter what the micro systems actually are, their behavior is the dynamic component that gives shape to the macro system, and that shape is *reflected* by

the shape of a probability distribution. In that sense, their shape is *projected* from a lower level to a higher level, which we can actually see as an explicit curve. Then, in order to predict the future behavior, the shape of the distribution must be reduced to a single measurable variable that relates to the average micro system. In statistics the magnitude of this is normally called the “variance” of the distribution. But it is also called the “moment” (in this case the  $n$ th central moment), which is a word that translates directly to physics lingo. For example, if the function represents mass, then the zeroth moment is the total mass, the first moment divided by the total mass is the center of mass, and the second moment is the rotational inertia.

### The Moment of Convolution

The word “function” is used in math and physics to refer to a process or behavior. And if the behavior of the macro system is the projection of the micro system behavior, it is a function of another function. We can “see” the function ( $f$ ) at the macro level as the distribution, but if we don’t know anything about the micro process we can call it ( $x$ ). That ( $x$ ) is what we are trying to understand. Equation (1) is the integral form of the mean. The moment of this function, without further explanation, usually refers to the equation with  $c = 0$ . And it provides us with a single measure of a collective behavior – part of a *model of behavior*, deduced from the shape of the distribution.

$$\mu_n = \int_{-\infty}^{+\infty} (x - c)^n f(x) dx \quad (1)$$

The variable  $n$  in equation (1) is the number of data points. The first moment ( $n = 1$ ) refers to each individual event that was collected to shape of the distribution. So in effect, the equation just tells us that its behavior is a function of its own behavior. When it is divided by the zeroth moment, it “normalizes” its behavior by using itself as the common denominator. Mathematically, normalization means the denominator is set equal to one. Physically it means that it has its own substance or independent reference; in social physics it establishes what is considered to be the social norm.

If the data used in equation (1) were collected over time, then  $c$  would be replaced by  $t$  and the integral would give the average behavior spread over time, but still collapsed into one mean:

$$\mu_n = \int_{-\infty}^{+\infty} (x - t)^n f(x) dx \quad (2)$$

Philosophically,  $-t$  in the integral makes the expression retrospective: a mathematical expression of the adage that life makes sense in reverse but must be lived in forward. Life experience makes sense out of the macro system and provides a shape that we can reflect on to make sense out of ourselves, since we are the micro that is *induced* into the macro. So if social physicists are able to *deduce* or *back-project* the behavior of the micro system that was induced in the macro and come up with formulas for that behavior, then without even having to collect data, they could make far-reaching predictions.

Medical physics can contribute greatly here, because that process is the basis of Intensity-Modulated Radiation Therapy (IMRT) and how CT and MRI back-projection and reconstruction algorithms work. In CT, three-dimensional anatomical information is silhouetted by the x-ray beam, since the images at the detector is the shadow of physical structures, onto two-dimensions when a scan is performed. So one dimension, the one perpendicular to the detector, is “collapsed” along with all of the complex information that describes the anatomy. It is transformed (or “convolved”) into intensity-modulated radiation (the 2-D X-ray image) and stored as digital bits – the most basic units of information. The CT algorithm must perform a deconvolution operation in order to reconstruct the 3-D image. The convolution integral is

$$(f * g)(t) = \int_{-\infty}^{\infty} f(\tau)g(t - \tau)d\tau \quad (3)$$

Comparing equation (3) with equation (2) gives meaning to the first moment as being a convolution of the micro system behavior with time.

But society is a mega system and individual humans are macro systems. The first challenge for social physics is to build a bridge to “regular physics” by demonstrating how the micro units (quantum particles) that make up the body convolve with time to

produce a whole person. It may sound like a monumental task, but most of the work has already been done in “regular physics”. So in order to be a real “Social Physicist”, you have to understand the fundamentals of regular physics and then translate them to social science.

### The Convolution of Moments

We start with interpreting the statistical “moment” as an *explicit* value that represents the *implicit* nature of the phenomena being studied. For example, in his 1956 paper, *Investigations On The Theory of the Brownian Movement*, Einstein used a first moment equation to rule out one of two competing theories: the classical thermodynamics theory of heat vs. the proposed molecular-kinetic theory of heat.

He did this by hypothesizing that the movement of dust-particles on the surface of a spherical drop of liquid, referred to as Brownian motion, was the visible macro process caused by random collisions with molecules. Then he developed an equation for the distribution of the number of particles per unit volume as a function of time ( $t$ ) and position ( $x$ ), and calculated the distribution of the particles at a time  $t + \tau$  from the distribution at the time  $t$ . That means that the shape evolves by convolving the function, defined by the implicit nature of the micro system, with time. So  $f(x, t)$  represents the number of the particles which are predicted to be located at the time  $t + \tau$  between two planes perpendicular to the x-axis, with abscissa  $x$  and  $x + dx$ . Equation (4) is how he wrote the distribution (from pg. 14 of his paper).

$$\int_{\Delta-m}^{\Delta+m} f(x + \Delta)\phi(\Delta)d\Delta \quad (4)$$

Notice that it is very similar to equation (1) with ( $n = 1$ ). The comparison is a little confusing because  $x$  is in both but they have different meanings. He used  $\Delta$  in place of  $x$  in equation (1) and he used  $x$  to define the boundary limits under consideration. So  $x$  was in place of  $c$  in equation (1). It also compares with equation (3) if you replace  $f$  with  $g$ ,  $\tau$  with  $\Delta$ ,  $x$  with  $t$  and  $\phi(\Delta)$  with  $f(\tau)$ .

After some mathematical manipulation, Einstein arrived at the diffusion equation,  $\frac{df}{dt} = D \frac{d^2f}{dx^2}$ , where  $D$  is the coefficient of diffusion, which is what was measured to verify his solution and give support to the molecular theory of heat.

It was already *believed* that everything was made up of smaller subsystems called atoms, but it wasn't until later when it was proven how they were subsystems of molecules. And finally, it was determined that there is one more subsystem, which turned out to be, not a quantum particle but a process, i.e. a behavior. The most fundamental essence of a quantum particle is a simple vibration, which is a process rather than a localized particle. A particle is just a “kernel” of the implicit that we call energy and it only becomes explicit (or real) *when it happens*, i.e. it is measured. Compare this to the statement in the introduction: “the micro-organisms are the “real” part of the equation and the statistical projection is imaginary until it happens”.

### **Social Behavior as the Convolved Behavior of Fundamental Sub Units**

So we already have a model for the most fundamental behavior in nature. But we have to understand that it is a process and keep reminding ourselves that the word “particle” is just a model, a *kernel of behavior* that statistically “captures the moment” as a physical invariant of that process. And because it's a process, it may have several different characteristics depending on how you measure it. In quantum physics, it was determined that the energy of a quantum particle could be expressed as a very simple function of frequency ( $E = hf_t$ ), where  $h$  is Planck's constant and  $f_t$  is temporal frequency in cycles per second. But the exact same particle could also be expressed in terms of inverse wavelength  $\lambda$  as ( $E = h \frac{c}{\lambda}$ ). The term  $\frac{c}{\lambda}$  is not usually given a name, but for the purpose of recognizing the underlying pattern, it is important to note that it is spatial frequency  $f_s$ .

So ( $E = hf_t$ ) and ( $E = hf_s$ ) are both just scaled expressions of frequency. They illustrate that “Energy” is an implicit spatiotemporal process that can be “captured” in one of two ways: as motion in space or as motion in time. That was the source of the particle-wave duality paradox, and it took a while for physicists to realize that a unit of energy *is what it is* (implicit) and only becomes real (explicit) when measured as a unit. And the characteristics that it expressed were dependent on how it is measured.

This can be applied to social systems that exhibit cyclic behavior, by first considering that the “hidden” information associated with social interactions is implicit to the underlying processes and it becomes explicit by statistical analysis of *accurate* data. Obviously, the data must be accurate in order to reflect the truth, but it’s worth emphasizing here for reasons that will become clear. So the word “information” is a translation of the word “energy” and “data” is equivalent to “particle”.

Frequency, as it relates to social behavior can be determined by identifying phase transitions associated with social behavior (this has already been done in many cases (Capraro Valerio 2018) (Piotr Fronczak 2007)). The most fundamental phases of any spatiotemporal cycle can be identified by their frequency of occurrence in space and in time, which correlates with the two types of frequency in quantum physics. However, unlike quantum physics, which uses frequency as a whole because it is only interested in units of “dumb” energy (i.e. not the information content), social physics needs to apply it to systems that grow and evolve. This can be done by further reducing a cycle into four components to include a beginning, a projection, a reflection and end point, which is the same yet somehow different from the beginning and marks the beginning of the next cycle. Therefore, a geometric model for this kind of cycle must be an upward spiral rather than a circle.

## Conclusion

In the next part, the beginning point and endpoint are named to emphasize a process: separation, projection, reflection and return or reunification. The final step in the process is the end, or “product of the process”, which is a physical being that may physically appear to be the same as in the beginning, but it is somehow shaped by the process. Therefore the word “reunification” is used to represent a metamorphosis experienced by living beings that convolve to a higher *energy state*, which we call “maturity”. The process is called “the holomorphic process”. (StJohn 2018)

Naming the phases like this reflects a more social expression of the cycles regarding human nature. It was described by Joseph Campbell as *separation, initiation, return* to label the “monomyth” common to mythological stories in all cultures. “Initiation” refers to both projection and reflection: a person’s journey toward enlightenment during which he goes out into the world to participate in society and then

is reflected by certain factors that encourage his return to reunify with his family. And the phases of maturity that result from this process are also expressed in other ways; for example as roles in life, as child, young adult, mid-life adult and elder. Similar roles are also identified in the collective by Strauss and Howe as archetypes, which they labeled Artist, Hero, Nomad and Prophet that correspond to four “turnings” in American society. They point out that these archetypes parallel the archetypes in Jungian psychology of the individual members: Shadow, Animus, Persona and Self.

When applied to physics, the holomorphic process is a spatiotemporal expression that superimposes quantum model represented by phasors with relativistic model represented by vectors; that’s quantum space (separation as particles), linear space (projection as linear motion), linear time (reflection) and cyclic time (reunification). And it is offered to the physics community as a testable theory that can be verified to comply with the correspondence principle. If accepted, it may be the key to the Grand Unified Theory of Everything.

## **Part 2. Method**

The subsystems that are being searched for in social physics are as ethereal as the quantum wave function and they are harder to find because they don’t materialize (transform into what we perceive as physical form by producing spots on a photographic plate like electrons), when they are measured. It is the goal of this paper to show that an accurate measurement of any kind may be considered a “kernel of truth” (it’s only accurate if it’s information based on Truth) and every kernel can be modeled as a wave function that produces an “event-particle” (a model of information that is both amplitude- and frequency-modulated as a packet of energy).

However, there are a couple of nuances in the interpretation of fundamental concepts that must be understood before this kernel can be applied to macroscopic systems like living beings. One of these nuances was discussed at the end of Part 1 regarding the need to model a cycle as an upward spiral, where the fourth “return” step in the cycle is elevated. It is somehow different than before yet still represents a whole



“being”. So the word “reunification” is more appropriate than return. The second nuance will be a reinterpretation of time that will allow us to see how the process responsible for making quantum particles what they are is the same process that makes up the fabric of our being.

### The Holomorphic Process

The holomorphic process (see <http://holomorphicprocess.com>) is not a radical idea that can't be understood without specialized language or complex math. It is simply a specific way of modeling motion that uses common sense and common English. The study of motion was the starting point in the development of classical physics models; and a higher level of understanding about motion was the endpoint, i.e. the conclusion made in quantum physics that everything is energy-in-motion. In physics, motion is expressed as a vector with both magnitude and direction. At the macroscopic level of society, motion is called a movement and a movement has an associated direction, called an attitude. The problem we have in society is in understanding the process that is responsible for positive and negative outcomes. By understanding how the attitude and behavior of individual people propagates and amplifies upward to the collective super-organism of society, we can change our attitude about life and that will regulate the direction of society in a way that supports the self-sustaining nature of life.

When the quantum model was introduced, it was important for physicists to keep in mind that reality *is what it is* – implicitly, and that models are just tools for mapping relationships in reality to something more explicit that can be used as a tool for developing a better understanding of reality. A new model was needed (a “paradigm shift”) because the old classic model started to become overextended and no longer worked to represent newly discovered truths. Niels Bohr formulated the “correspondence principle”, which requires that the behavior of systems described in the new model must reduce to the same results in the domain where the old model provided proven results, as a guiding principle for its development. The same is true for the holomorphic process model if it is to be a viable theoretical model for social physics. Significant work has been done to demonstrate how the holomorphic process model satisfies the correspondence principle as it relates to quantum physics. (StJohn, The Holomorphic

Process. Understanding the Holographic Nature of Reality as a Metamorphic Process 2018) It is hoped that this paper will demonstrate correspondence with social physics.

By now, most people know that everything is energy, and many realize that motion in the form of angular momentum or “spin” gives particles their solid or localized form. The holomorphic process model represents a “kernel of energy” in the form of motion: one complete oscillation, also called a vibration or a cycle, represented in the model as a circle that is divided and labeled as a *projection* and a *reflection* for the sake of reference. Then, in order to fit the reality that living organisms grow both physically and consciously, the circle is separated at a point representing the beginning of the cycle and that point is labeled *separation*. The point after the reflection, where the cycle returns to “the separation point” is labeled the *return*. So one complete oscillation (the mono process) is described as *separation, projection, reflection and return*. Finally, the “return” is renamed “reunification” in order for the model to be useful for modeling living beings that grow. Statistically one complete cycle captures the first moment or fundamental sub unit of a complex system.

The different between regular physics and social physics is that regular physics, which includes classical and quantum physics, does not emphasize the information content of a vibration. They (physicists) are only interested in measuring *energy* for practical purposes. “Energy” was the name given to a *concept*, which is not physical. It is something that is subjective or implicit in the universe, thus it can neither be created nor destroyed; only changed in form. As compared to “energy” as an *implicit* concept, the *forms* are what are objective as *explicit* reality. The fact that they can be *changed* rather than being *created* is a fundamental principle and the first law of thermodynamics. In physics there was never any need to draw a distinction between the implicit nature of energy and the explicit forms because, as a physical science, physics was only interested in objective reality. (Burt 2003, pg. 90) But that is an important distinction that needs to be made for social physics.

We’ll let Energy (upper case “E”) represent the implicit concept and “energy” refer to a *form* or “kernel of energy” as a measurable unit (classical) or a *state* as an observable, like position, momentum or energy level (quantum). The expression of a single vibration between two extremes is an objective “kernel of information” that

expresses implicit information in the objective form as a single explicit frequency. In social physics we need to acknowledge that subjective information is the convolution of multiple frequencies that introduces variations within each cycle. Rather than providing clear distinctions between one complete cycle and the next, these variations produce shades of grey between phases within each cycle, like between separation and projection.

However, if we start with a complete cycle, it can be expressed as a pair of binary units (the two extremes) and work our way inward – toward the principle upon which the process is centered. Binary logic used for building computer languages, is based upon a “Truth Table”. And by treating a “kernel of truth” like a “kernel of energy” we can build a model that allows social physics to parallel with “regular physics”. Notice that lower case “t” was used for “truth” because once it is “explicated” or made explicit in form, it can change; so it is no longer the implicit Truth. (The term “explicate order” was used by physicist David Bohm to describe this in “*Wholeness and the Implicate Order*” (Bohm 1980)) It has become a useful, practical, objective “kernel of truth”. And if the only difference between “truth” and “energy” is information content, the law of conservation of energy and all of the other laws of physics can be applied directly.

However, a kernel of information may also be untrue and this can create artifacts. To help us remain mindful of this, the first law of social physics should be, “Truth is the only thing that is true” and the second should be the Law of Conservation of Truth, which states “Truth can neither be created nor destroyed, but only changed in form”. This also lends itself directly to drawing parallels (not analogies) between a “kernel of truth” and computer programming kernels, which are subsystems or sub-processes that make the programs do what they do.

In his book *The Trouble With Physics*, Lee Smolin described several barriers to finding a grand unified theory of everything. But he didn’t mention what seems to be the most obvious; physics doesn’t include everything. Consciousness is real and the holomorphic process approach is an application of basic physics that includes metamorphoses that result in growing consciousness. As a process-approach to physics, it rises above the barriers. It objectifies the projection, i.e. the physical body, and recognizes the reflection as part of the process. So it recognizes the ability of *the projection*, to *reflect upon* Truth. That is we call consciousness, a concept that has only

recently started being allowed in physics or other “real” scientific discussions, except in psychology. However, psychology also recognizes that people tend to subjectify (or identify with) their reflection rather than with Truth. And that is the *attitude* or outward-facing direction that *moves* them to making bad decisions in life.

The modern physics community may be reluctant to include consciousness in discussions about physics, but in order to be true to *physis*, i.e. the study of the underlying meaning of nature, consciousness must be included. Without consciousness, there is no meaning. And without meaning there is no consciousness. So consciousness can be interpreted as just another name for an object that reflects on self-meaning. And the holomorphic process is the self-reflective process that transforms dark, meaningless energy into enlightened energy, i.e. energy with meaning. That event is called “holomorphosis”.

### Holomorphosis

Holomorphosis was named as a contraction of the words holotropic with metamorphosis. Holotropic is a relatively new word that means “oriented or moving toward wholeness”. It was coined by psychiatrist Stanislav Grof in his book, *The Holotropic Mind: the three levels of human consciousness and how they shape our lives*, (Grof 1993) to introduce a new paradigm in psychology that compares the brain to a holographic film and consciousness to holographic images. The suffix ‘tropic’ means *turning* or *changing yet remaining relatively constant*, which is appropriate to describe quantum particles that have *spin* but also a person or society transitioning through phases in life. The second part of the word holomorphosis comes from metamorphosis, which is defined as “the process of transformation from an immature form to an adult form in two or more distinct stages.”<sup>i</sup>

According to [medical-dictionary.thefreedictionary.com](http://medical-dictionary.thefreedictionary.com), the word *holomorphosis* is a “rarely used term for attainment or reestablishment of physical wholeness.” And at [www.wordnik.com/words/holomorphosis](http://www.wordnik.com/words/holomorphosis) it is defined as follows:

*Noun:* In *biology*, the perfect replacement or regeneration of a lost part, as contrasted with meromorphosis [which is the incomplete replacement of a lost part].

That definition is a good start for the holomorphic process theory, but “lost part” implies physical part, and in this case the “lost part” includes *non-physical* information as well. The holomorphic process theory is a model that associates theoretical physics with social physics through the *information-function* that gets convolved with energy operators and thus shaped into event-particles stored inside an individual as a living mind. It is never actually lost, but it gets entangled in a bunch of other chaotic thoughts and complex webs of false associations that have no substance. Eventually it reaches a point where false associations dissolve and it naturally transforms into a transparent experience of knowing.

So a more complete definition of holomorphosis would be,

**“Holomorphosis: The whole transformation, both physical and mental, of a living being, from an immature form to a more mature form, after completion of two or more distinct stages.”**

The “two distinct stages” refer to projection and reflection. The words “an adult form” from metamorphosis were changed to “*a more mature form*” because it happens at every level of a *maturity continuum*. That is an important feature of the holomorphic process theory; it holds that everything in the universe is shaped by *information-modulated* energy that exists as a physical projection and mental reflection of itself. One is the inverse of the other, like a mirror image. And since it reflects upon itself, as a quantum particle it is *realized* (made real) by the process; but the more *mature* it is, the more it realizes and shapes itself. Eventually, and this is a function of both time and maturity level, it realizes itself to be a living being and part of something greater than itself, i.e. a society. If its members live in harmony, it will remain stable like a harmonic oscillator and convolve into a form that realizes itself to be one with a collective consciousness.

On the other hand, if a particular subculture is run by operators who are focused only on progress (projection) it can project (without reflecting to remain centered on Truth) and create *spin* that does not reflect Truth and does not experience holomorphosis. That kind of spin is not always a bad thing because it can create a protective shell around

itself for self-defense. But too much is unproductive and detrimental to its life because in time, it begins to see itself purely as an operator in its own space and fails to recognize that the function or purpose of life is to convolve into awareness.

## Conclusion

Theoretical quantum physics uses operators that represent complex differential and integral equations because when these complex equations are used to evaluate certain processes (functions), they reduce to simple, self-consistent, well-defined observable expressions of energy projected onto a scalable form. At that stage, *it is what it is*. Then it uses these observables as operators to operate on “state functions”, which describe what states the observable may express. And finally it brings together all of the possible states into one expression as a spherical harmonic oscillator that can be associated with a simple set of quantum numbers. At that point, it has more meaning because it is the convolution of several different characteristics into one unit. Still, *it is what it is*, but now it is more mature because now *it is what it does*.

The holomorphic process model expresses a harmonic cycle in terms of four phases that correlate with phases in life and allow the idea of quantum operators to be associated with observable, living beings that operate as individuals in society in ways that combine as functions of social behavior. One of the key factors that drives societal outcomes and the factor that has brought theoretical physics to an impasse, is that time is treated strictly as an observable without realizing that it is also an operator. As an operator, it is responsible for the convolution of every other function, i.e. every vibration, event, thought and action in history, into the whole and shapes the “being” (individual and collective) as well as the being’s projection.

In Part 3, an understanding of time will be deconvolved from spacetime by first reflecting on the meaning of implicit Truth as opposed to explicit truths and using a geometric illustration that captures the spatiotemporal nature of quantum particles. Then, after reflecting on the discussion about the meaning of statistical moments, and without using any complicated math, a projection of the geometric model will reveal how time is simply a factor in the spatiotemporal process that gets inverted and convolved into the “past” in every moment of time.

## Part 3. Discussion: The Deconvolution of Time

### Introduction

Physics as we know it is built upon the fundamental interpretation of time as an independent, inflexible variable. Even after it was determined to be an integral part of “spacetime” as a whole, physicists remain locked-in on its fundamental separateness and believe that spacetime means space somehow mixed or twisted up with time. The holomorphic process theory was developed with a different basic philosophy of time, expressed by E. A. Burtt in *The Metaphysical Foundations of Modern Science*. According to Burtt, before the days of Newton, the treatment of time as an independent entity was considered by many to be a philosophical blunder. (Burtt 2003, pg. 158)

*“Clearly, just as we measure space, first by some magnitude, and learn how much it is, later judging other congruent magnitudes by space; so we first reckon time from some motion and afterwards judge other motions by it; which is plainly nothing else than to compare some motions with others by the mediation of time; just as by the mediation of space we investigate the relations of magnitudes with each other.”*

In other words, a unit of time is just a unit of motion that is captured or “clocked” by a cyclical motion device as a unit measured in the past, to be used as a common denominator. Spacetime then is simply a spatiotemporal *process* that implicitly flows and we experience it as motion. But it can only be *expressed* explicitly as a pair of explicit measurable quantities. And they appear to “dance with each other” and move independently with an inverse relationship. This inverse relationship will be explained and illustrated below.

Treating reality as a spatiotemporal *projection*, like a three-dimensional holographically projected sphere, allows us to imagine it as a unit with a surface that reflects “kernels of truth”. The spheres are associated with “event-particles” in Alfred North Whitehead’s Process Philosophy. (Whitehead 1929) They are conceptually the same as atoms made up of quantum particles of physics, except that they acknowledge

information content, from which everything, including living beings, is formed.

According to Whitehead in *The Concept of Nature* Chapter 5: Space and Motion:

*We note that event-particles have 'position' in respect to each other. In the last lecture I explained that 'position' was quality gained by a spatial element in virtue of the intersecting moments which covered it. Thus each event-particle has position in this sense. The simplest mode of expressing the position in nature of an event-particle is by first fixing on any definite time-system. Call it lower case alpha. There will be one moment of the temporal series of  $\alpha$  which covers the given event-particle. Thus the position of the event-particle in the temporal series  $\alpha$  is defined by this moment, which we will call M. The position of the particle in the space of M is then fixed in the ordinary way by three levels which intersect in it and in it only. This procedure of fixing the position of an event-particle shows that the aggregate of event-particles forms a four-dimensional manifold.*  
([https://brocku.ca/MeadProject/Whitehead/Whitehead\\_1920/White1\\_05.html](https://brocku.ca/MeadProject/Whitehead/Whitehead_1920/White1_05.html) )

As a cyclic process: for every projection, there is a reflection. All living beings can “see” or somehow sense themselves – the projections and reflections – but as far as we know, humans are the only living beings that *judge the reflection*, which is the implicit Truth, i.e. what actually happened, and choose whether or not to value it or even acknowledge it. Perhaps because it appears as a soft subjective image, they value the hard objective surface instead.

One of the goals of social physics, as stated by Matjaž Perc, Chief Editor of *Frontiers of Social Physics*<sup>1</sup>, is to synergize physics with the social sciences, but it should also include the more profound goal: to prove, using scientific data analysis, that choosing to acknowledge and follow Truth will produce stable, self-sustaining results that harmonize with the life process. If proven, social physics should also be able to demonstrate that living in harmony with the life process maximizes the health of individual humans and collective human groups. It may be hypothesized that Truth is the

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<sup>1</sup> <https://www.frontiersin.org/journals/physics/sections/social-physics#about>



life process and that particles spun out of energy that is not based on Truth serves a purpose, to build structures for shelter and self-defense, but can also create thick barriers that prevent completion of the process. This will provide a model for developing highly effective and efficient policies for a sustainable and bright, enlightened future.

### The Physics of Holomorphosis

We already know that every quantum particle that forms into atoms, which form into molecules, is *explicitly* true (they are real; they actually exist in spacetime). But they are not implicit Truth itself; they are *extensions* of Truth. Quantum particles are known to vibrate within a region of space according to the Heisenberg uncertainty principle. (Goswami 1992) (Liboff 1993) Because they move at random, they are just as likely to move in any direction. To illustrate this, consider “Brownian motion” in three dimensions. (See [https://en.wikipedia.org/wiki/Brownian\\_motion](https://en.wikipedia.org/wiki/Brownian_motion) for a good illustration of Brownian motion.) “Any direction” means that a particle can move up, down, left, right, forward, backward, or anywhere in between. So how does that link them to implicit Truth? It *implies* a spherical shape, and the shape of a sphere is the shape of a sphere. And it doesn’t matter what it is made of. It is what it is: that’s the implicit Truth! The shape is the important aspect that links the implicit with the explicit. Random motion implies a sphere and a sphere is the explicit form that means something. In this context it means “in any direction”. However, it also implies a spatiotemporal, holomorphic process.

When quantum particles move, their motion is not implicit Truth because they are moving, which means they change. So as particles in motion, they can only be mathematically modeled as functions that include both static and dynamic perspectives. That is the nature of symbolic expression; you need something explicit to refer to as a reference both before and after the change. Keep in mind that even if you could see the “observable” quantum particle with your eyes and it did not appear to be moving relative to you, it is still moving relative to everything else in the universe that is moving relative to it, to you, and to your reference frame. So whether or not you can see it or measure it, it exists as an operator that separates spacetime; it divides space by time. As a unit of energy-in-motion we express it as space *divided by* time. Separation like this is the first

step or phase in the holomorphic process. In classical physics, space divided by time is the definition of “speed”: a scalar quantity that ignores direction.

The separation phase makes an object appear as a duality in our perception, as an *explicit* unit of energy changing with respect to an explicit unit of time. In basic physics we are taught to plot a linear graph of a spatial measurement as the dependent variable, with respect to time. And the negative direction on the time axis is defined as “the past”. That seemed obvious for classical physics. But it didn’t work for Quantum Mechanics or more advanced subjects in physics, like Quantum Field Theory because we know that the laws of physics are invariant under certain transformations, including time reversal. (Kaku 1993, pg. 115) That’s because there is no such thing as negative time. The “secret” or trick to understanding the nature of time is to recognize that space divided by time also implies space multiplied by *inverse time*. That implies time *inversion*, not time reversal. The hypothesis that will associate the holomorphic process theory with the convolution process is that “inverse time” is what we call “the past”, not negative time. The past will be associated with that, which has already happened and has solidified as objective reality and the future will be associated with the projection phase of the holomorphic process. It is much easier to visualize this with a geometric model.

### **A Geometric Model of the Holomorphic Process**

The following geometric model, which hopes to capture the spatiotemporal nature of quantum particles, was inspired by a model commonly used in medical physics for intensity modulated, stereotactic radiosurgery treatment planning called “sphere packing”. Developed in 1968 by Lars Leksell, it is a technique that models a set of radiation “pencil beams” arranged in a helmet so that they all point at a single isocenter to form a nearly-spherical dose distribution in the brain, targeted at a tumor. The technique is applied to modern radiosurgery using a high-energy X-ray source mounted in a gantry that rotates around a patient (StJohn 2005) (Bova, et al. 2003). After each spherical dose is deposited, the patient is moved in order to move the isocenter, and the treatment is repeated multiple times to build a dose distribution that very closely matches the shape and size of complex tumors, as shown in Figure 1.

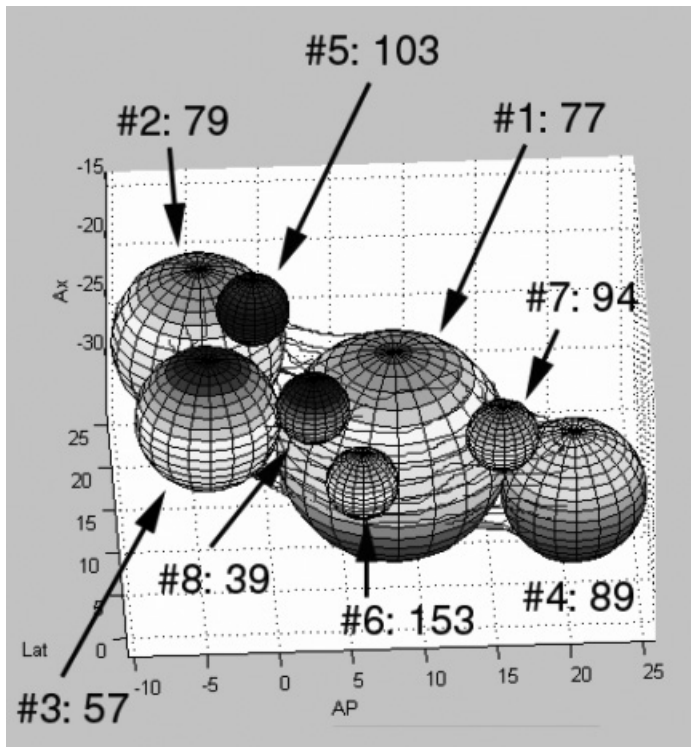


Figure 1

The spheres don't actually exist until the beams "create" or "explicate" them via the irradiation process. And the same is true about quantum particles except that the "irradiation process" is continuously happening due to the nature of perpetual relative motion. So imagine a single quantum sphere sitting on a flat surface with a single light source above it. Assume first that it is a single frequency source. The "shadow" that would form on the flat surface would be in the form of a circle and that circle has an implied "normal"—a direction that is perpendicular to the plane. Motion around the circumference of the circle, where there is actually light around the silhouette, is also implied, induced by the frequency of the light source. And that implies a "moment". This corresponds to the "moment" in statistical physics that can be measured from the probability distribution produced by plotting repeated measurements of, for example distance travelled by a dust particle.

In terms of a holomorphic process, the shadow is not a projection or a reflection, but a silhouette formed by light projected onto the opposite side of the sphere. There would be another circle on the light side of the sphere with motion in the same direction as the shadow circle. That would be an actual *reflection* of the light. That's the *real*

energy so its “partner circle” – the shadow – is effectively imaginary, *induced* on the dark side of the sphere. Both “partner circles” have moment arrows collinear with each other and passing through the center of the sphere. If the *real* moment arrow points inward toward the center, then the “shadow” moment arrow points outward. And since there are multiple sources completely surrounding the sphere, then the sum total of all of them is the total moment of the sphere.

In the case of Brownian motion, the moment contained information that revealed particular implicit characteristics of an invisible particle. Before it was verified, it was imaginary, but once the theoretical model produced *real* true data, the model was correlated with the name “molecule” and molecules became real as “kernels of truth”. The “shadow” is still imaginary; it doesn’t have any substance. It is the inverse of the particle. You could call it a “not-molecule”. But it is still part of the whole as induced information and could be represented by a wave, a function  $f$  of space and time such as  $f(kr - \omega t)$ . Here, the negative refers to reverse direction of the angular frequency ( $\omega$ ) not negative time. The geometric model (the circle) representation will be presented below, but first the model that explains inverse time.

Inverse time is easy to display on a coordinate system as shown in Figure 2, because  $t$  and  $\left(\frac{1}{t}\right)$  are equal to 1 at the same point, i.e.  $\left(t = \frac{1}{t} = 1\right)$ . The difference between this and how we normally represent time (i.e.  $t = 0$ ) is that here, the “present” is at  $t = 1$ , to represent a real event regardless of what scale you choose. The circumference represents the implicit unchanging “now”. So if the moment arrow pointing inward described above, between the values 1 and 0, is a unit of *inverse time*,  $\left(\frac{1}{t}\right)$  and represents the “past”, the one pointing outward from the surface is the next *moment in time*,  $(t)$ , i.e. the future.

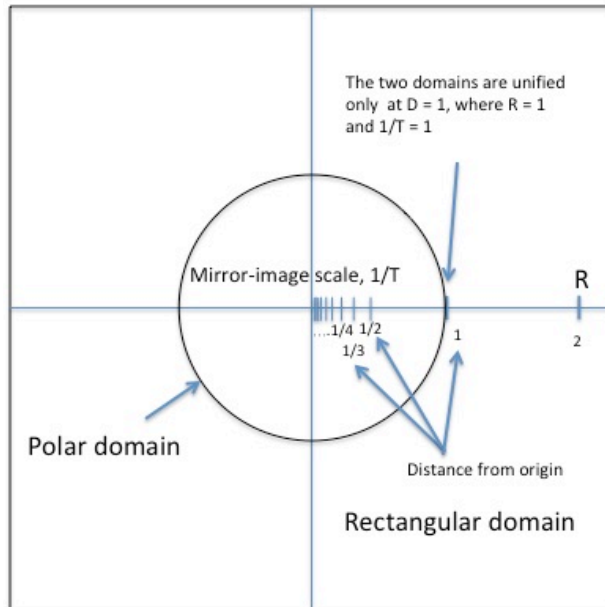


Figure 2

The scales that mark the distance of each tick mark from the origin, where  $t = 0$  and  $\frac{1}{t} = \infty$ , have to be spaced differently on either side of 1. “R” is just the temporal radius out from the center. Together, the two scales define two domains superimposed as one model: the outside is the relativistic domain in rectangular coordinates where the scale is linear, corresponding to the way we “clock” time, and the inside is the quantum domain, where the “mirror image” scale squeezes together as the “distance” from 1 inward toward the origin approaches  $\frac{1}{0} = \infty$ .

If you wanted to use linear algebra in both domains, you would have to *imagine* a linear “distance” axis bending into the page on the inside of the sphere. This corresponds to the way you must imagine spacetime being “warped” by a unit of mass to describe the behavior of gravity as expressed in relativistic math using hyperbolic functions. However, it will be shown that a polar coordinate system, or “phasor diagram” commonly used in electrical engineering, is more appropriate in this domain and much easier to associate with the cycles of life than a warped reference frame. This can be applied to psychology in that too much linear thinking warps one’s sense of reality.

In physics, inverse time is simply called frequency and *its* inverse, i.e. the inverse of frequency, is called a “period”, which is a unit of time referenced to the specific wave

of interest. This reveals a common flaw in naming things we don't yet understand. It's a *logical twist* or a contrapositive that makes it seem different than "standard" clock time. There's nothing special about standard clock time. It was a measure of motion that was recorded and is now clocked at the National Institute of Standards and Technology (NIST). So it was effectively anointed as being sacred. And holding onto it as fundamental reality can make science seem like a religion.

The logical twist and strict definition of time as an unchanging unit hides the *meaning* of time, because it is not allowed to convolve. But if a unit of inverse-time is interpreted as a "moment of the past", then the outward-pointing arrow points to a "moment of the future" and corresponds to the classical "arrow of time". As each moment of time passes, the *quantum bits of information* on the surface that were present – *in the present*, collapse inward and become infused into the particle (like anatomical information gets infused in an X-ray film). They become bitwise recordings, collectively called "the past". This is a continuous process so it implies that there is no such thing as a beginning of time, and suggests that *The Big Bang Theory* should be interpreted statistically as "the first moment or fundamental sub unit of a complex system" as mentioned in Part 2. One of the important fundamental concepts of this theory is that implicit Truth is always true, so a unit of truth must be true at every moment in time. In other words, it is centered on Truth, so it has *substance*.

Logic might tell you that something is wrong with this approach because, if each circle is actually energy, then it seems that energy from the outside of a particle would be continuously absorbed by a particle. But that is accounted for by the outward-pointing arrows of time that were induced as the shadow. The exact same amount of energy is being projected outward as is being absorbed. Their vector sum projects as a superposition of waves pointing out from the center of the particle. All that is really happening is that information is being induced and thus recorded. And information is also being reflected and projected outward. But that is the reflection of truth; that is what other particles (or people) see as being a physical body with its various characteristics like color.

The classical model of physics holds that light is reflected off of the gross surface, and that is what we see. That works well for certain applications, but the holomorphic

process model is more like Huygens' principle, a powerful model that has been used for studying other optical phenomena since it was proposed in 1690. (Halliday, Resnick and Walker 1993) It states that all points of a wave front may be treated as individual sources of wavelets that expand in every direction. And Fourier transforms allow each wavelet to be broken down into individual frequencies. In quantum physics, a single frequency modeled as a particle is expressed as an amount of energy in terms of de Broglie waves:  $E = hf$ . In Part 4, this expression of quantum energy will be associated with the polar domain in Figure 2 as one of two components of total energy of a quantum particle.

## Conclusion

The advantage of holomorphic process model for social physics is that it provides a better understanding of the shadow phenomenon expressed in philosophy, such as Plato's "Allegory of the Cave", which describes our perception of reality as a "shadow", and psychology, such as Carl Jung's model of archetypes, the least mature of which is called the "Shadow". According to this model, the "shadow circles" don't have any real substance and they remain outside of the sphere as separate artifacts or remnants of the past. In fact, everything that we can see with our eyes is a reflection of the Truth, a remnant of the past since light reflected off of an object must travel in space and time to get to us. As individual minds centered on Truth, we see our own reality from the inside out. But we see objects from the outside in and they appear as being backwards in relation to the true events that induced them. So in terms of Truth, everything we see is an artifact of the process, and it is backwards. From the outside, nobody can see the "real you", only the part that is reflected as light directly back at them or hear sounds that we project. It has been said that life makes sense in reverse, but it must be lived in forward.

## Part 4. Results

### How the Complete Model Corresponds With Theoretical Physics

This section may seem to be beyond the scope of social physics, but it is important to demonstrate the correspondence principle. It also provides the complete model that can be verified to correspond to forms found in nature.

The polar domain and the rectangular domain in Figure 2 (in Part 3) correspond to the quantum domain and the relativistic domain if the horizontal axis represents a scale of moments in time and the vertical axis represents a scale of moments in space (a one dimensional representation of space). But since there is no such thing as negative time or negative space, only the first quadrant needs to be shown (see Figure 3).

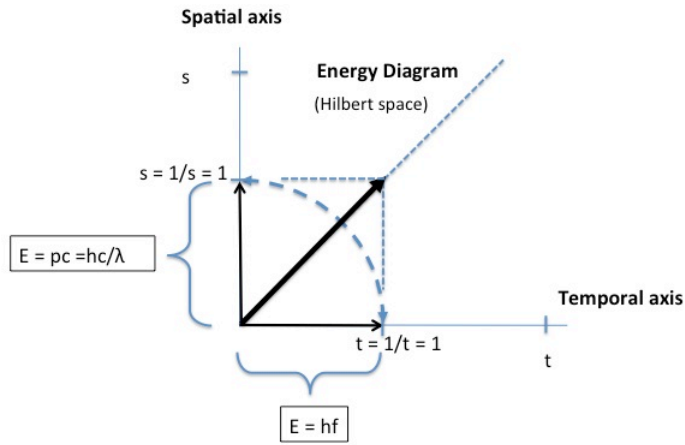


Figure 3

The advantage of keeping space and time as single dimensions (inverse space and inverse time in the quantum domain) is that the equation for energy in terms of de Broglie waves,  $E = hf$  (mentioned in Part 3) is quantized as the radius of the circle on the horizontal inverse time axis in Figure 3, since temporal frequency is a measure of inverse time. Since the other de Broglie equation is  $E = hc/\lambda$ , where  $\lambda$  represents the wavelength associated with the quantum particle, it fits the meaning of the vertical axis. And it becomes obvious, at least to a medical physicist, that  $1/\lambda$  represents spatial frequency. It is obvious because medical physicists work with medical imaging; and *spatial frequency* (measured in line-pairs per mm, for example) is an important concept normally used in practice for measuring image quality in diagnostic physics. It also provides a measure of



dose-contour fit to target tumors in radiation therapy treatment planning (Khan and Potish 2000) (Khan 1994) (StJohn 2005) (Bova, et al. 2003).

The constant  $\left(c = \frac{E\lambda}{h}\right)$ , is the speed of light and the slope of the diagonal arrow in Figure 3 as measured in the relativistic coordinate system. Here it is just a constant = 1 illustrating that space and time are simply two inverse ways of looking at motion. (Remember that a unit of time is just a unit of motion – a cycle that was “clocked” for use as a common denominator). And since the circle represents one wavelength and one unit of frequency,  $E$  and  $h$  are also 1. These “natural units” are not very useful for most applications because they are just out of range for any practical measurements in physics. For example, one unit of length is one light-sec, the distance light travels in one second or 186,000 miles. But they are used in theoretical physics. In Hartree natural units,  $c = 1$  and  $h = 2\pi$  (because  $\frac{h}{2\pi}$  is set equal to 1). Comparing that to the equation for arclength (A) of a circle,  $A = r\theta$  where  $r$  is the radius and  $\theta$  is the angle of the radius from the horizontal. So one explicit unit of energy simply refers to the radius a unit circle (the shape that implies the implicit concept of Energy).

The diagonal arrow is also the vector sum of the two perpendicular component vectors - the moment in time and the moment in space. Comparing these with “state vectors” in quantum physics suggests that a “moment” can be associated with its “state in space” and its “state in time”. The total energy vector represents the total projection and has a length that represents the total energy of the whole spatiotemporal sphere. Yet it extends beyond the radius of the circle as shown in Figure 4. It’s vector projection on the space axis is the physical radius of the circle, the same as the de Broglie energy equations, labeled  $E_d$  in this figure, so it represents the uncertain “size” of the particle (uncertain refers to the Heisenberg uncertainty principle). The equation in terms of mass-energy is labeled  $E_o$  and  $E_T$  is the total energy in terms of mass and momentum.

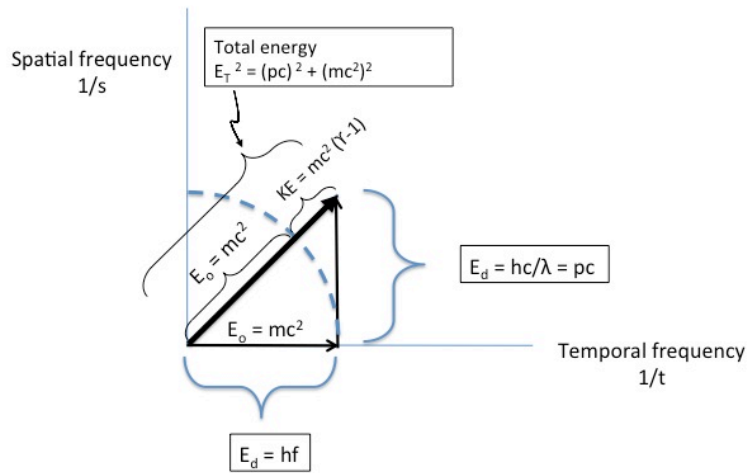


Figure 4

The equation in terms of mass-energy is labeled  $E_o$  for energy in terms of “rest mass”. And the sum of rest mass energy and relativistic kinetic energy (KE) is equal to the total energy. Notice that KE, the kinetic energy term in total energy ( $E_T$ ), is labeled in the figure as the part of the vector that extends beyond the circle radius. It has a well-defined length that doesn't seem to represent the same concept that we normally think of as KE being the energy of motion in a relativistic frame, especially if you think of the particle as an isolated object. However, recall that if the function represents mass, then the zeroth moment is the total mass, the first moment divided by the total mass is the center of mass, and the second moment is the rotational inertia (which is why the polar domain will be included in the next section for a complete model). Therefore, KE represents the statistical variance about the mean. It corresponds to the uncertainty in the size of the particle's radius i.e. the location of the particle's “surface” relative to the center of mass. Again, this corresponds to the Heisenberg uncertainty principle. If the circle represented the Bohr model of an atom, it would be the uncertainty in the location of an electron orbital. KE also contains the Lorentz transformation,  $\gamma$ , which is simply a transformation of coordinate systems. In this case, it's a transformation from the inverse system, the “polar

domain” in Figure 2, to the relativistic system. In other words, it means that the model is only complete if it includes *both* domains superimposed on each other.

The diffusion coefficient,  $D$  in the equation  $\frac{df}{dt} = D \frac{d^2f}{dx^2}$ , calculated by Einstein as mentioned in Part 1 is also a reflection of this. If we call the total vector  $f$ , then the diffusion coefficient is simply the ratio of the vector’s slope,  $\left(\frac{df}{dt}\right)$ , expressed with time as the horizontal independent variable, to what the slope would be  $\left(\frac{d^2f}{dx^2}\right)$ , if you rotated the axes so that “space” is horizontal, keeping in mind that “space” represents all of space, i.e.  $R^2$  so the abscissa  $dx^2$  in the denominator is an undifferentiated expression of a second derivative. If we use  $s$  and  $t$  from the relativistic axes in the equation for slope, it’s  $\frac{s^2}{t^2} = c^2$ , where  $c$  is the speed of light. Then as long as the particle is at rest with respect to that frame, the ratio of slopes is  $D = 1$ . This means that if a quantum particle is collapsed and localized, regardless of how it was collapsed, it is differentiated from its surroundings and immediately begins to diffuse as a wave function with a diffusion rate of 1, as if it were a spherical wave of light. But if you differentiate space and use units of measurement other than natural units, then the slope would not be 1. So at the macroscopic level, it *appears* to remain as a physical particle as long as it is being measured or observed. This was the problem faced by early quantum physicists, like Erwin Schrödinger, who interpreted the collapse as something that actually happens to the particle. And that is the problem. Nothing is happening to the particle; it’s an artifact of the reference-frame model. In Truth, the particle is actually a unit of motion – an undifferentiated process. So although you can use your consciousness capture it as a scalar quantity, it only lasts for an infinitesimal fraction of a second. The observation must be repeated (bitwise yet continuously integrated) to keep it objective.

Without considering consciousness, the total energy vector is what connects and unifies the quantum domain with the relativistic domain. It is what represents the fact that an object *must* be considered both at rest and moving depending upon how you look at it. The words “at-rest” and “moving” refer to reference frames and are only mutually exclusive concepts if the person using the words thinks that they are referring to the particle rather than the reference frames. The phrase, “depending on how you look at it,”

means just that: how you – the observer – set your reference. “At rest” is a “state” or temporary “moment” that refers to the reference frame of the *observer*, not the particle itself.

It is also important to realize that the words “particle” and “wave” refer to the scaled-models, not Truth. Truth is the implicit concept that perceives, not the “kernels” or “units of truth” that are perceived. A particle and the observer are both *units of truth*. But the observer is a unit of truth that has convolved to the point of self-reflection or consciousness. So if we let the center of the circle in Figure 4 represent *the observer*, the total vector, which is always longer than the radius of the particle, represents the projection of the observer’s awareness beyond his own body. One challenge for social physicists is to determine if this can be associated with the emission of ultra weak light reportedly emanating from all living systems called biophotons. (Van Wijka and Van Wijk 2005) But since biophotons are ultra weak they are very hard to measure. In the next section, the holomorphic process model will reveal a special effect that predicts a particular characteristic of biophotons that might make them distinct from other photons.

### Using Phase Vectors and Phasor Diagrams For The Complete Model

Understanding the value and limitations of coordinate systems allows us to flip back and forth between them and use tools that are specific to each without getting confused about the nature of the particle. Vectors are defined by their magnitude and direction and are used in rectangular coordinate systems. “Phasors” as shown in Figure 5 are “phase vectors”, i.e. they define their angle as measured from a reference (usually the horizontal axis) in a polar coordinate system. They are commonly used in electrical engineering to represent waves of alternating current or radio signals. In most applications, phasors always have constant magnitude, like  $E$ , the radius of the circle in Figure 4, so they are most useful for constant amplitude waves.

The “linear time scale” for phasors shown in Figure 5 refers to the circumference of the circle identified by the circular arrows in the figure. It is scaled the same in both directions so there is no warping effect and no need to boggle the mind with visions of warped space. A phasor diagram only needs one axis, like the horizontal axis, to scale its

magnitude and refer to its angle. But in this application we need both the quantum and relativistic systems because whatever happens in one domain also happens in the other and we will be able to jump back and forth as needed. This is what you do when you think of a particle at rest and then jump to think about it as being in motion relative to anything else that is moving.

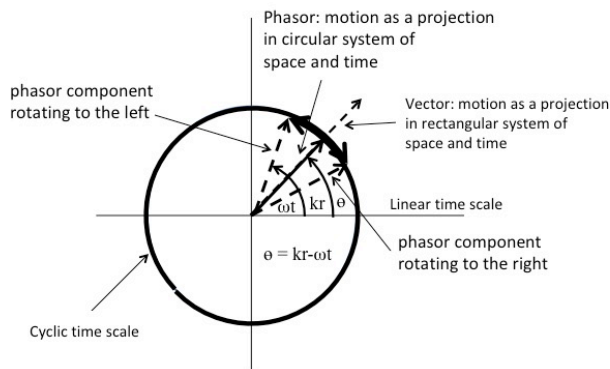


Figure 5

Even though energy was *apparently* collapsed into a particle, it is still in motion relative to everything else in the universe, so the phasor in Figure 5 is shown as being split into a spatial component ( $kr$ ) and a temporal component ( $\omega t$ ), and the difference  $(kr - \omega t) = 0$  represents the phase difference between the two. Since a particle exists in perpetual motion, the phase difference must continuously increase with time. So one phasor must rotate to the left and the other rotates to the right at a constant angular rate,  $\omega$ . As an explicit particle, it is moving. But as implicit Energy, it is not. So the original, total phasor remains unchanged. At rest, the particle is a unit of light, and it is our mental coordinate systems that are spinning at the speed of  $\omega$  in opposite directions.

From an observer's perspective, the coordinate systems appear stationary, so we would measure the particle in the relativistic coordinate system, where the total phasor is the total energy vector in Figure 4. In reference to our relativistic frame, as the left vector begins to get a higher slope (as shown in Figure 5), it would be interpreted to mean it was increasing speed (increasing slope thus accelerating outward) and growing larger (i.e. the

vector component on the space axis), so that suggests it is diffusing. Similarly, the right vector projects as if it were slowing down (accelerating inward) and getting smaller or collapsing. So this suggests that the particle is beginning to separate itself, differentiate or defuse (recall that the diffusion coefficient would be the ratio of the two slopes) into an inner sphere and an outer sphere.

### The Golden Twist

But this is only our perception and there is a limit to how much our perception can stretch or “pretend”. This limit is revealed at a point in their rotation where the slope of the two phasors reaches a very special value. Figure 6 shows this for the left phasor and Figure 7 for the right phasor. That special value is the point where the slope, which is a ratio, reaches the golden ratio,  $\phi = 1.618 \dots$ . What’s so special about the golden ratio? It can be written in the form  $\phi = 1 + \frac{1}{\phi}$ , which means that if the reference scale shifts by one unit on either axis, i.e. one moment in time and one moment in space, then the rotated vector with the slope,  $\phi$ , can be replaced by a new vector (shown as phasor 3) with the same slope as phasor 2, shifted one unit as shown in both figures. Note that the “size” of each “new particle” in our reference frame (projection of phasor 3 in either case on the space axis) is the same as the original particle (phasor 1). Yet its total magnitude is slightly larger.

And there is a “twist” to this event: the two new vectors are rotated  $13.3^\circ$  in opposite directions. This may be correlated with the apparent “spin” of quantum particles. However the two vectors can be superimposed by rotating both coordinate systems, shifting the origin of both vectors in time and renormalizing the scale of the space axis (since the particle appears to remain constant in size). The resulting phasor, as referenced to the new renormalized coordinate system is exactly the same as it was at the beginning. But phasor 3 was slightly larger in magnitude than phasor 1, and renormalizing it to fit our perception *hides that information*. The only evidence that anything happened is our perception of time moving forward.

Nothing about the particle itself has physically changed. But the observer’s perception changed. And the change was different in spatial perception than it was in temporal perception. We “sensed” that it moved in time, but we interpret it to be

unchanging so we think that *time* changed. Where did it go? Because the space axis was renormalized but the temporal axis was not, the old temporal phasor still appears to represent a smaller particle (projection of phasor 3 on the space axis), which would mean that it is now collapse *inside* toward the infinitesimal center, into the “past”. This might correspond to current models of physics with energy levels that represent electron orbitals, but that has not been verified. However, the golden ratio can also be written in the form  $\phi^2 = 1 + \phi$ . So this refers the slope back to the inside domain of the original reference frame and presents the “old” energy term as being squared. In classical wave theory, the square of a wave’s amplitude refers to intensity, i.e. the amount of energy that passes through a unit area perpendicular to the wave direction in time. In this case, that direction is inward. If this model represents a living being, this suggests that the inner “particle” can be associated with a qbit memory.

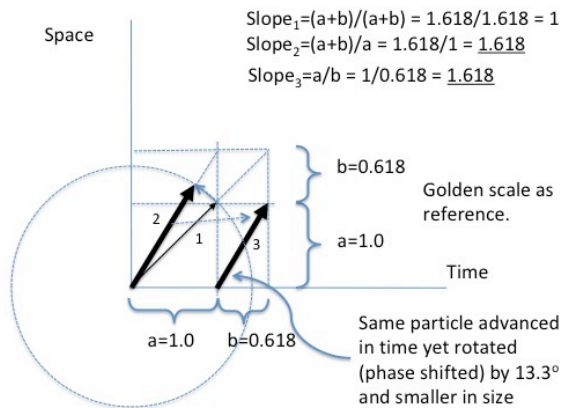


Figure 6

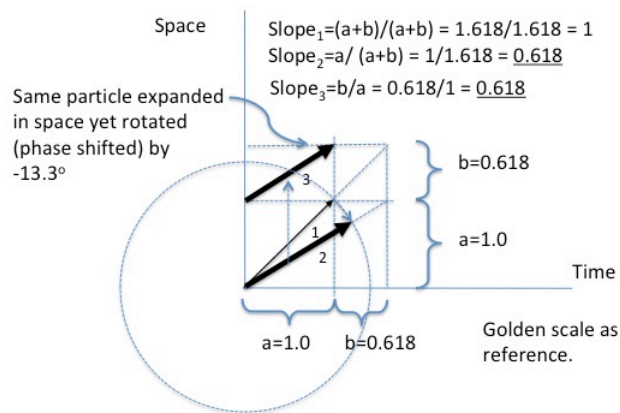


Figure 7

The golden ratio has been known for centuries and used in art and architecture because applying it to determine proportions for figures and buildings creates aesthetically pleasing results. And it appears as a common pattern in leaves, plants, fruits and flowers (very obvious in pineapples and pine cones) as well as seashells (for example the nautilus) and animals, including humans. Clearly it is much more than a tool for art. According to the holomorphic process it is the relationship that shapes every fiber of our being and every moment of time.

Leonardo da Vinci once said, “To develop a complete mind: Study the science of art; Study the art of science. Learn how to see. Realize that everything connects to everything else.” The holomorphic process applies to both the science of art and the art of science. And it promises to reunite physical science with life science to develop a complete mind.

## Holomorphium

The holomorphic process theory can be applied to many other processes and areas of knowledge. And since life sciences, like genetics, biology and botany provide numerous systems and subsystems that can be measured directly and tested for process



response, they may serve as the best proving grounds for the holomorphic process model, just as chemistry did for the quantum model. But physics still has some unanswered questions and problems that the holomorphic process can help to solve. And the solutions to these may also serve to demonstrate its inherent unity with life science. For example, it is known that there are micro particles of a gold-like metal in the human body. According to one source<sup>2</sup>, “Gold specks in your body are not there by coincidence. They have a purpose. Specifically, they are responsible for transduction of electrical signals across your organs, muscles and other tissues.” If they are produced by the body, then they might be formed in proportion to the golden ratio. And the golden ratio, as it applies to holomorphic process model, predicts that they are a form of metal that exists in theory but has yet to be discovered, called a “superheavy” element.

The ratio of the atomic number to the atomic weight of elements in the part of the periodic table of elements that includes gold crosses over from less than to greater than the golden ratio. The magic number of protons and neutrons needed to make the legendary “island of stability” of superheavy elements is 114 and 184.  $184/114 = 1.614$ , which is very close to the golden ratio of 1.618. The reason that is relevant is because the “event particles” that holomorphosis models predicts, which would become part of our bodies as we process information into qbits of memory, might actually form these traces of gold. If this is found to be true, then I recommend naming this element “Holomorphium.”

### Hologenesis

If the holomorphic process proves to transform events, including words, into quantum event-particles that can be associated with the genetic code in RNA and DNA, then words that are not centered on truth might be associated with genetic flaws and disease. And if it is correct that life is simply the self-sustaining harmonic process described here, then it must be centered on Truth in order to resonate and participate in the holomorphic process. Those bits of untruth that humans create with words lack the necessary center for their stability. They are just shadows and have no substance. Yet they might be combined with other units of truth to give them *relative* stability and link

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<sup>2</sup> From <https://freewithgold.com/natural-occurrence-of-gold-in-the-human-body>

together as strings of genetic code that mimics life, just like viruses. Those strings would have to “seek out” another string that actually is stable, such as a living DNA molecule. The idea needs a lot of work, but perhaps you can see how this suggests that large amounts of information based on untrue information (like political propaganda) might actually contribute to or even create viruses. Everyone knows about computer viruses so this idea should not seem as absurd as the germ theory was when it was first suggested.

## Conclusion

Social physics may be our best hope for science to *save us from ourselves*. The holomorphic process suggests that even the global climate is affected by our actions and attitudes in far more profound ways than just carbon emissions. Although statistical analysis of “big data” is an important start, fully understanding the theoretical aspects of social physics is absolutely critical for us to find the best solutions to our problems. And we should start by recognizing that although we are what we are (male, female, black, white, American, Hispanic, etc.), the only thing that really matters is, as holomorphic sentient beings, *we are what we do*. All men and women are not equal; they are *created* equal by the holomorphic process. What they *do* determines what they *are*.

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<sup>i</sup> <https://www.lexico.com/en/definition/metamorphosis>