Article

Nonlocal Processes & Entanglement as a Signature of a Cosmic Hyperdimension of Consciousness

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ABSTRACT

Five groups of anomalies regarding spacetime laws reveal 'beyond spacetime' processes and point to a meta region of the universe that would accommodate them. They are (1) the nonlocality in entanglement; (2) nonlocality in psi processes; (3) a sub-Planckian (subquantum) region at the origin of the universe (preceding the emergence of matter, space, and time), as well as at the sub-Planckian scale in general; (4) a non-material 'dark energy' filling the cosmos; and (5) speeds breaking the speed of light C during the inflation phase. Moreover, the connective and/or semantic properties of these anomalies rule out a quantum vacuum or quantum mechanics (QM) explanation as well. Such a 'beyond spacetime' region, in cosmology, has to be modeled as a hyperdimension (HD). The *Infinite Spiral Staircase Theory* (ISST, Hardy 2015) posits a triune hyperdimension—of hyperspace, hypertime and consciousness—, that allows all five anomalies while laying a cogent grounding for meaningful (semantic) interconnectedness and mind-over-matter influences as exhibited both by psi and by the connective dynamics of mind and consciousness in Semantic Fields Theory.

Keywords: Physics of consciousness, psi, mind over matter, hyperdimension of consciousness, retrocausality, information field.

1. Introduction

Nonlocality has been established via the entanglement experiments, and defined as an exchange of information or a correlation between distant paired particles that cannot imply a signal transmission through linear space. Since space is indissolubly enmeshed with time in the *spacetime* of General Relativity (GR), nonlocality thus reveals a 'beyond spacetime' process. Another four groups of anomalies also point to such 'beyond spacetime' processes, at odds with GR. The first one regroups psi phenomena, evidenced as nonlocal processes by numerous experiments. The second group addresses (a) the origin of the universe before the Planck scale (at 10^{-43} second of the universe) that allowed the first particles, and thus space and time to exist, as well as (b) any point in spacetime coordinates at a sub-Planckian scale. The third anomaly is the existence of *dark energy*, about 69% of the total energy of the universe, and of which we know only that it is not ordinary matter or particles; some physicists view it as 'quintessence,' an unknown type of energy made of tachyonic (faster-than-light—FTL) virtual particles. The fourth anomaly resides in the inflation phase of the universe (at 10^{-36} second, just above Planck scale)

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that reached millions of times *C*. It is argued in this paper that, since the speed of light's limit *C* is an absolute constraint of spacetime, any clear contravention of this law, as well as of the other main laws of spacetime and the electromagnetic force, reveals a 'beyond spacetime' region—such region, in cosmology, having to be modeled as a hyperdimension (HD). Moreover, the five groups of anomalies (including the entanglement) show us that such HD must also accommodate meaningful (semantic) interconnectedness and mind-over-matter influences.
The *Infinite Spiral Staircase Theory* (ISS theory) (Hardy 2015, 2015a, 2015b), by positing a triune hyperdimension (of hyperspace, hypertime and consciousness), offers such modeling that gives a foundation to all five anomalies, as well as a grounding for meaningful (semantic) interconnectedness and mind-over-matter influences as exhibited both by psi and by the connective dynamics of consciousness in Semantic Fields Theory (Hardy 2001).

2. Nonlocality in Physics & Psi Processes

The entanglement experiments that have proven nonlocality use protocols derived from John Bell's Inequalities also called Bell's Theorem. With this theorem, Bell offered in 1964 a mathematical refutation of Von Neumann's argument against all types of hidden (deterministic) variables (that would have undermined QM indeterminacy); Bell concluded that if local hidden variables were forbidden, nonlocal ones—such as Bohm's Quantum Potential and Pilot waves—were certainly allowed. The first experimental support of nonlocality was given by John Clauser, but a sound proof was achieved by Alain Aspect in Orsay, in his 1982 series of experiments.

As noted by numerous physicists and psi researchers, psi phenomena present several aspects that contravene Einsteinian Relativity physics but mimic Quantum Mechanics (QM) behaviors—such as nonlocality and entanglement, retrocausality, the observer/experimenter effect—and yet psi phenomena are definitely mental processes, i.e. implying consciousness. In this perspective, Josephson and Pallikari-Viras (1991) argue that the nonlocal interconnectedness instantiated between entangled paired particles is the basis of psi phenomena (e.g. telepathy, remote-viewing, psychokinesis or PK), the reality of which has been established by hundreds of laboratory experiments. Also, a number of QM physicists—such as Heisenberg, Planck, Wigner, von Neumann, Stapp, Walker, Sarfatti—have implied the observer, and thus consciousness, in the collapse of the wavefunction (Hardy 2015, chap. 6). A position that is well resumed by John Wheeler's 1977 formula "Mind and universe are complementary" and expounded in Robert Jahn's and Brenda Dunne's *Margins of Reality*.

Psi exhibits nonlocality in two ways: beyond the brain and beyond spacetime. It thus broadens the strict definition of nonlocality in physics.

Beyond the brain. The 'receptive psi' is defined as a reception of information at a distance in space (remote viewing, telepathy) without any causal or perceptive mechanism; or from a distant time in the future (precognition) or in the past (retrocognition). Thus psi (and therefore consciousness) is radically different from the local functioning of the brain and perception, and can operate independently from it (as seen in the anomalous cognition shown by clinically brain-dead patients). Furthermore, for a person, psi information can be received or be expressed through a variety of channels in the mind-body-psyche system: anomalous vision, audition or

touch sensation, interoceptive perception, empathy at a distance, unconscious expression, body movements, anomalous verbal or written reception, altered state and meditative states, etc. Therefore psi processes are much more labile and flexible than just a wired capacity in the brain. This, in my view, shows that the way psi operates is beyond language and implies a fundamental level of organization of biosystems (Hardy 1998, 2000; Tart 1969). This is in accord with Josephson and Pallikari-Viras (1991) predicating that biosystems develop their own (first-person) self-meaningful links and exchanges that bypass the (third-person) dynamics studied in physics and are able to skew probabilities. Furthermore, such a basic type of meaningful exchange between biosystems supports the concept of a proto-consciousness in all living beings (at the very least), even those who do not have brains.

Beyond spacetime. Psi is not bound by the inverse square law of electromagnetism, since there's no decrease of its effect at enormous distances, as shown by the successful Earth-Moon psi experiment that Edgar Mitchell performed during the Apollo 14 mission (Mishlove 1997, Mitchell 1996). In many experiments on bio-PK (the influence of mind over biological systems), the distance to the targets was accrued without any decrease of the psi results. Furthermore, psi functioning is unconstrained by the EM spectrum waves: it operates inside Faraday cages and at a great submarine depth (Targ & Puthoff 2005, Mishlove 1997, Schwartz 2007).

Of course this doesn't mean that psi operates only and necessarily in these nonlocal modes given that many processes involve a conventional interaction with space and/or time, but it underlines that psi is neither bound nor constrained by spacetime laws. Based on these premises, ISST postulates that the processes of consciousness (to which psi belongs) instantiate a different, more global, layer of reality—an extra or meta dimension, distinct from spacetime, which is best modeled, in physics, as a hyperdimension.

3. Nonlocality Necessitates a Hyperdimension

The emergence of the concept of hyperdimension (HD) in physics stems from the endeavors to integrate the four fundamental forces within a unified theory, as envisioned at first by Einstein. Basically, two domains of physics—General Relativity (GR) and Quantum mechanics (QM)—, each with a set of laws and equations, were equally successful at accounting for physics processes, and both led to precise predictions that were substantiated and corroborated by experiments and/or observations. The challenge can be phrased thus: how can physics integrate in one unified theory the stringent fixed laws of spacetime with the indeterminacy and nonlocality of the quantum scale? Let's note that particles, having mass or matter-energy, are still bound (theoretically) by the foremost spacetime law, that of the speed of light limit. Yet, the Zero-Point fluctuations field (ZPF), modeled within QM, is a state of turbulence and of oscillations of virtual particles in the vacuum, a clear indeterminacy.

The situation was similar to the ancient opposition between the assumption of light as waves (proven by Thomas Young in his 1803 double-slit experiment), and that of light as particles (proven mathematically by Einstein in 1905 in solving the photoelectric effect). The century-old debate on the nature of light could be solved only by accepting a dual nature of light, positing

that a particle never goes without a wave, and *vice versa*, and Louis de Broglie extended this axiom, beyond the photons, to all particles, such as electrons.

However, the two sets of laws—Relativity theory accounting for massive bodies in spacetime, and QM accounting for the particles scale—had also widely different dimensions and units, such as the spin in QM. A mathematical solution in order to unify the two domains was thus to add extra dimensions, leading to five main superstring models with 10 dimensions, fusioned in 1995 by Edward Witten in the 11D *M-theory*.

The first scientist to model a HD was Theodor Kaluza who, in 1919, conceived of a brilliant way to rewrite Einstein's General Relativity equations by introducing a 5^{th} dimension (in effect, a 4^{th} dimension of space). To his great surprise, this solution was also nesting and producing two sets of equations: the EM field equations of Maxwell and Einstein's field equations for gravity, and additionally a scalar field equation called the *radion*. Then, in 1926, Oskar Klein developed further Kaluza's theory, by positing that the 5^{th} dimension had a physical reality, and was *curled up in a tiny circle*, the *radius* of which was at the Planck scale (i.e. precisely at Planck length, $1.6x10^{-33}$ centimeters).

The logician Kurt Gödel has predicated that any operative system of rules (or laws) cannot base its self-consistency (or validity) internally, but necessitates an external, more encompassing system to do so (Gödel, 1992). Gödel's *incompleteness theorem* thus shows that any system of rules is necessarily incomplete and needs a more global system, literally, a *meta*dimension, in order to ground its self-consistency (*meta*, in Greek, means *beyond*, or *more global*).

However, following Klein's argument, it seems more and more evident that an extra dimension, such as a Kaluza-Klein 5^{th} dimension, beyond being a mathematical or abstract solution, is also a physics necessity—and this shows the deep coherence between on the one hand, maths and physics, and on the other hand between maths and nature. This coherence could be the reason why elegant and beautiful theories have, according to many physicists, the greatest probability to be 'true' and an exact description of reality (Trinh Xuan Thuan, 2000).

Nonlocality at the origin of the universe and at a subquantum scale

A second group of anomalies (in regard to spacetime laws) happens at the origin of the universe. Firstly, during the inflation phase, at 10^{-36} of the first second and now equated to the Big Bang, the universe bloated to 10^{50} times its size in a split instant. This led the pioneers of the inflation theory Alan Guth and then Andrei Linde, to calculate that this process happened at million times the speed of light C. Secondly, long before this inflation phase, at precisely 10^{-43} of the first second, the radius of the universe reaches Planck length and Planck scale. Before this, there can be no particles—and therefore no matter, no space, no time, and consequently no causality; and of the four forces, only gravity exists before Planck scale. What is there then before Planck scale? Some physicists propose a field of information. Several invoke a state of supersymmetry, a unified substrate with as many particles as anti-particles, that would lead to a series of symmetry-breaking transitions, such as the decoupling of matter from radiation, starting with the decoupling of the neutrinos at the first second, and then that of the photons at 10^{2} seconds.

However, supersymmetry can happen only much later with the Higgs field, a quark-gluon plasma existing between 10^{-12} and 10^{-10} second, and consequently it cannot explain what happens before Planck scale, i.e. before any particles are allowed.

Several physicists thus point that below Planck scale the universe is ruled by another type of physics altogether, among them Yakov Zel'dovich, who first figured that the Planck length is a "cut-off," a threshold before which no particle or EM wave could exist. Thus before Planck scale, we reach a totally anomalous state of the universe, beyond spacetime and beyond matter. Let's note that any point in spacetime coordinates can open on such subquantum scale or region—thus as Klein underlined it, on the 5th dimension—, and particularly any particle, as it is modeled as a dimensionless point in Relativity theory.

As the sub-Planckian region (at the universe's origin) existed before spacetime came to be, it is by definition nonlocal, i.e. not bound by the constraints of spacetime (such as the time arrow, the speed of light C, or causality). We thus meet here the same type of quasi instant faster-than-light (FTL) transmission of information as instantiated by entangled particles in an EPR-type experiment (along the Einstein-Podolsky-Rosen, or EPR thought experiment, that John Bell refined). Thus we can argue that the speed of light C expresses a limit only within spacetime, or more precisely, that it sets a boundary to spacetime and General Relativity theory (GR), and that, consequently, any FTL, by breaking spacetime's C barrier, points up both a hypertime and an extra dimension.

The alternative way to explain such FTL within the spacetime region would be the Varying Speed of Light (VSL) hypothesis, developed (independently) by physicist John Moffat in 1992 (Perimeter Institute) and in 1999 by cosmologists João Magueijo (Imperial College) and Andreas Albrecht (UC Davis) (Magueijo 2003; Hebden 2012). Let's note that this VSL solution is a competitor to the inflation theory and would be put into question if the discovery of primordial gravitational waves in the Cosmic Microwave Background (CMB) was to be confirmed. These waves (appearing as a specific 'B-mode' polarization of the CMB) should be produced by the expansion of space during the inflation phase and thus would substantiate inflation theory. On March 17, 2014, the team of the BICEP2 (*Background Imaging of Cosmic Extragalactic Polarization*) telescope at the South Pole announced the detection of the very 'B-mode' polarization linked to inflation, but six months later the PLANCK space telescope team explained it as being due to cosmic dust. However In October 2014, scientists of the POLARBEAR experiment were able not only to measure B-mode polarization, but to ascertain that it was of cosmological origin, thus corroborating inflation theory.

Nonlocal entanglement as an anomaly regarding QM indeterminacy

To further the Infinite Spiral Staircase argument, in an EPR experiment, the entangled paired particles (photons or electrons) are themselves existing in spacetime, but *their entanglement instantiates nonlocality and is rooted beyond spacetime*. And this leads us to a possible solution, the ISS hypothesis, namely that the process of entanglement reveals and expresses the workings of a hyperdimension beyond the boundary of spacetime that would precisely be the *bulk* of the HD, a quasi spatial (or hyperspatial) region encompassing spacetime; this bulk would be blended

with the hyperdimension at the origin, both operating at a sub-Planckian scale. Now, interestingly, the entanglement also reveals degrees of freedom (i.e. extra dimensions) distinct from the quantum indeterminacy: According to Pauli's *laws of spin*, the total angular momentum of the two entangled particles must be equal to zero (e.g. one lefthanded spin -1/2 + one righthanded spin +1/2 = 0). Thus, whereas each particle's spin appears to be probabilistic, Pauli's complementarity of spins is definitely not an indeterministic law when one considers the global system itself consisting of the two entangled particles (and expressed by a single wavefunction).

This no-indeterminacy of entanglement shows an anomaly or boundary within the QM (Copenhagen) interpretation that postulates the indeterminacy of quantum events and that sets their apprehension only in terms of probabilities. Yet QM has been corroborated in so many ways that we cannot deny its reality, but only delimit it to a certain region or scale, at the very least that of the quantum vacuum and Zero-point Fluctuations field or ZPF (in which case a hyperdimension, being below this quantum scale, would not contradict QM).

The entanglement anomaly thus reveals a boundary to both spacetime (GR) and the quantum domain (QM), similar to the anomalous FTL processes underlining the boundary of spacetime. For both GR and QM to preserve the consistency of their system of laws/processes (their scientific domain), the anomalies have to be set outside of these systems and we need therefore to postulate a meta or extra dimension. Thomas Kuhn held, in his 1970 study on *The structure of scientific revolutions*, that anomalies in a scientific domain would eventually become the stuff of a new paradigm, a new scientific worldview, but also the foundations of the system of laws of a novel meta-domain.

So that we have a solid and cogent ground for hypothesizing that a hyperdimension beyond spacetime exists in the universe at a sub-Planckian scale or level of organization. This hyperdimension (HD) would (1) exist below Planck scale as hyperspace, both at the origin and at any point of spacetime; (2) be distinct from both the spacetime region and the quantum vacuum; (3) instantiate an extremely high FTL (as hypertime); (4) be clearly non-material and not bound by material causality, and yet non-random—i.e. not bound by the laws of both spacetime and the quantum vacuum; (5) express coherent exchanges of information and very possibly of matter-organization (as a teleportation derived from entanglement).

Dark energy: a non-material energy, thus beyond spacetime?

Now, another set of data reveals the measure of this extra or hyper dimension, namely the discovery of dark energy and dark matter, both being of an enigmatic nature but certified not to be ordinary matter (the stuff of particles, gas clouds and galaxies). Dark energy and dark matter account respectively for 69% and 26% of the total energy of the universe (according to the most recent and precise March 2013 PLANCK cosmology probe measurements), which leaves only 5% for ordinary matter. We thus have 95% of the energy of the universe whose nature is a total mystery, apart from the fact it is *not* matter, and the case for dark energy is even more compelling since its energy density is repulsive, and thus opposite to the gravitational effect setting an attractive force. Several physicists (such as John Brandenburg, Jack Sarfatti) view dark energy as consisting of virtual anti-particles with tachyonic speed.

In a perfectly sound physics logic, we can deduce that only 5% of the nature of the universe is actually covered by the entire field of physics and cosmology—that is, physics has reached at the present only 5% of its knowledge domain. A conclusion imposes itself: physics can no longer be founded on a matter or materialist paradigm that claims matter to be the only reality (with consciousness being only a by-product of the bio-matter of the brain) and thus local material causality to be the only rule. This materialistic and reductionist set of assumptions is shredded to pieces by (1) entangled processes, (2) the pre-Planck scale, and (3) dark energy. Physics, therefore, necessitates a post-materialist paradigm; however, this doesn't entail to remain captive of the forceful antinomy dualism-monism (spiritualist paradigm versus realism), nor of the concept of a creator as a person. It just entails to posit a hyperdimension of consciousness and/or "active information" (in the Bohmian sense); and this could be achieved by positing Pilot waves able to 'guide' or 'pilot' the wavefunctions via a Quantum Potential (Bohm 1980; de Broglie 1939), or else by hyperdimensional *semantic fields* able to bend probabilities at the quantum scale and/or guide the organization of events and matter processes (Hardy, 1998). In the first case, let's note, though, that Bohm's and de Broglie's Pilot waves are modeled as the waves attached to Standard Model particles (e.g. they are the wave aspect of particles and thus integrated in wavefunctions within spacetime), and therefore to achieve our objectives, Bohm's still mysterious Quantum Potential, already a nonlocal term in the psi wavefunction, would have to become also a hyperdimensional force or energy.

4. Integrating Psi & Consciousness in a Global Theory

As we have seen, psi implies nonlocality as its processes operate (a) beyond the brain, (b) beyond spacetime, and (c) beyond material causality—therefore in a meta dimension of reality; and, as I have argued, *b* and c demand that this metadimension be a hyperdimension distinct from the spacetime region, and yet grounded in a physics allowing nonlocal consciousness, such as the one referred to as *hyperphysics* by Bernard Carr, and involving brane sheets (2D surface branes) in a hyperspace (Carr 2009).

But in ISST psi processes involve more than just *a hyperspace*—via the mental capacity to perceive and affect distant events/objects as if 3D ordinary space was not a barrier; and *a hypertime*—via the mental capacity to perceive events and to communicate with minds in the past or future as if 1D ordinary time was not a barrier. Let's see the specifics.

Conative and psychosocial factors working via the syg hyperdimension

(1) The fact that *intention and will (conative processes)* can direct or influence psi results as in healing experiments, implies *free will capacities*, that is, the ability to set goals for oneself (even if it just means accepting the targets chosen randomly in an experiment).

(2) It has been experimentally proven that *psychosocial factors* have an effect on psi results; these are factors such as relational bonds and openness, one's beliefs and expectations, one's positive thinking and self-confidence (as in the sheep-goat effect

and experimenter effect). This shows that the dimension of consciousness, and specifically of individualized minds, is a set of properties within this hyperdimension.

(3) *Emotional, semantic and meaningful factors* have an effect on psi results. Such emotional response to a *future* target or event have been demonstrated (a) in presentiment experiments (Radin 2004), and (b) in the precognitive collective unconscious reaction to imminent world-wide emotional shocks, as presented in the Global Consciousness Project (GCP) experiments (Radin & Nelson 1989, Nelson *et al* 1996). For example, a few hours *before* such world-wide shocks as the death of Diana, the twin towers attack, or Charlie Hebdo's attack, the distribution of randomness among many Random Events Generators (REGs) disseminated on the planet shows an enormous peak away from the baseline.

With these conative, psychosocial, and semantic factors having an effect on psi, our HD is now infused with consciousness, individualized thoughts, and self-awareness (as in knowing one's own beliefs), and it allows a meaningful interaction with others and the world.

Mind over matter processes via the syg-fields of all systems

The fact that the psyche is able to affect biosystems has been demonstrated chiefly by psychokinesis (PK) or 'healing' experiments on biological systems such as bacteria or tissues in Petri dishes, blood samples, electric fishes, mice and the likes, in biological laboratories and using double blind protocols. This type of targets being immune to suggestion renders an explanation by the placebo effect irrelevant. More than 150 'bio-PK' experiments have demonstrated that the mind and consciousness are able to not only interact with biosystems, but moreover to influence them through directed intention—a definite PK effect. Another set of 'micro-PK' experiments have shown that the mind can have an influence on random processes as well. The thorniest, and at the same time the most exciting question is by which processes, or means, does consciousness interact so deeply with matter that it can, with a simple intention, modify the organization and growth of biological matter?

While these facts are amply proven (one meta-analysis sets the odds for them at one chance in a trillion) their *modus operandi* (mode of operation) remains clouded in mystery, just like the nature of gravity, or the entanglement of particles. Yet ISST and Semantic Fields Theory (SFT) may shed light on a physics dynamics and substrate of the process, understood thus: *A semantic constellation in the mind (such as an intention or visualized aim), is able to supersede itself to the semantic field of a biosystem (or that of a random system) and modify its organization.* The actual rate of success in an experimental meta-analysis is of little import compared to the fact that we are witnessing, with the mind and consciousness, an efficient cause operating nonlocally and its effect on biosystems and natural systems. The fact that it has happened is enough to upset the materialist paradigm that needs it to be strictly impossible, due mainly to its assumption that consciousness is a product of the brain and entirely localized in it, thus forbidding any effect at a distance.

All these conative, emotional, psychosocial, and semantic factors imply consciousness in its fundamental reality, since the Semantic Fields theory (Hardy 1998) defines consciousness as the process of attributing meaning to the world, to others and to ourselves, via a constant reorganization of our individual and collective semantic fields (and of course, any emotion, behavior, interaction, and thought, is loaded with meaning and their dynamic networks are the stuff of our personal semantic field).

Only a theory granting a hyperdimension of self-organized consciousness to all beings and systems, with its own hyperdimensional and tachyonic energy linked to consciousness (*syg-energy*) can allow systems to interact so deeply for minds to influence the organization of matter. Let us take the case of healing. ISST doesn't view it exactly as mind modifying matter; but rather as a stronger semantic field imposing its organization or vision on another weaker semantic field (e.g. that of a sick organ, or that of a depressed mindset). So that we have a much more cogent interaction in terms of physics: the like interacting with the like, via a common substrate, the *sygons* constituting syg-energy. ISST postulates that virtual particles called sygons (endowed with specific frequencies) are launched from the ISS (or phi-based spiral) unfolding from the origin up to Planck scale and the inflation phase. These immensely faster-than-light sygons will constitute the semantic fields of all systems (their hyperdimensional level) and are the medium of their nonlocal exchanges and inter-influence. In other words, in bio-PK, networks of sygons are swapping qualified information (meanings, goals, healing intentions) with the target system. Only in a second phase will the target's semantic field (that of the sick organ), now infused with a healthy and balance order, transmit or impose its novel semantic organization on its own cells and molecular configuration, thus healing itself by virtue of its re-equilibrated semantic field.

In this specific domain, we meet Sheldrake's morphogenetic fields, since he viewed these as guiding the morphogenesis and thus the organization of biological systems. The crucial parallel is that a field on another dimension (in Sheldrake's case a field of form, in ISST a hyperdimensional semantic field) would have the capacity to organize and reorganize a biological organism. However, Sheldrake never expounded the configuration of these fields and how the process invoked ('morphic resonance') worked (whereas SFT did), nor the nature of the fields (whereas ISST does).

Thus, psi and consciousness are explained in a sound way by the consciousness or Syg hyperdimension via the quite stupendous properties of faster-than-light sygons, this syg energy launching *semantic connective and network processes* able to modify the organization of biosystems and matter-systems. (The connective dynamics of semantic fields, their coupling with brains, and their evolution, are discussed at length in *Networks of Meaning*.) We have now a cosmos-size field of consciousness made of an immense number of embedded and interacting semantic fields (individual ones such as minds, and collective ones such as cultures, religions, or sciences). Each single mind is thus a complex and multilevel network of semantic constellations (Hardy 2003), having the capacity, given specific conditions, to influence—via their own intention and will—the semantic-field layer of resonant or coupled complex systems.

Retrocausal Attractors set by intentions & the Experimenter Effect

Semantic Field Theory (SFT) has modeled precisely the way our intentions and anticipations create a multilevel web (a specific type of semantic field) rooted both in the future time and the present time, that acts as a *Retrocausal Attractor* favoring the anticipated event (Hardy 2003). When, in the present, we intend something, or anticipate, or make a positive thinking technique (e.g. a visualization) about a future event, we create *weighted paths* between the two time-frames and events—paths that are in effect bending odds and attracting the realization of the visualized situation or event. This syg influence will be much stronger when the intentions are rehearsed and reinforced, as in a recurrent visualization technique.

First of all, in a simple psychological sense: our psychomental disposition and state of consciousness during a visualization will predispose us, at the future time, to a mindset and behaviors favoring the visualized event. But SFT adds that the semantic constellation is indeed rooted in the future time and environment—due to the fact that the Semantic Dimension (now the Syg hyperdimension) is beyond spacetime and thus able to connect with any coordinates in space and time. The visualization at the present time creates an Event-in-Making semantic constellation that (being in the Semantic Dimension itself) is spread over the physical linear time (of spacetime), and rooted both in the present of each visualization and in the future spacetime coordinates. And this constellation (1) retrojects its configuration (mental and physical) back to us, thus retroactively and in a retrocausal way. And (2) it simultaneously creates its niche in the future spacetime, attracting all relational and physical elements needed for its completion—hence creating synchronicities and serendipitous opportunities also retroactively, between the future time and the present, all favoring the realization of our visualization and positive thinking.

Of note is the fact that the Retrocausal Attractor effect is working from the future syg-constellation backward, and modifying the organization of matter-systems and biosystems in the continuous present via a *retrocausal PK effect*. Also noteworthy is its proactive effect, with the present syg-constellation influencing proactively the future situation as well, including an effect on the future environment (human and physical), and thus setting a definite 'forward PK' component. This Retrocausal Attractor can also be orchestrated by a couple, a group, a society—as in the case of the healing effect of a group prayer (Schwartz & Dossey 2010).

The modeling of the Retrocausal Attractor gives a foundation (in terms of physics and complex systems or chaos theory) to the experimental evidence of the effects of positive thinking on health (Seligman 2006), the effects of beliefs and expectations on performance, and of the observer/experimenter effect on measurements or experimental results.

It is also a fact of experience for many researchers that there exists a collective dimension to consciousness. Yet, the theories put forward give only a basis for the 'memory' (or data reservoir) aspect of this collective consciousness or field—such as that of Ervin Laszlo, or Rupert Sheldrake. Much more difficult is to account for the creative, innovative, intentional, and free thinking aspects of consciousness, as well as for its extreme flexibility, variety, and divergent processes. And most of all, for its capacity for self-reflection (self-reference), anticipation, and the power to transform itself internally.

The triune hyperdimension as the One-plural, a global consciousness field

Given that this hyperdimension of consciousness (Syg HD), co-exist and co-evolve with a hyperspace and a hypertime, the solution of ISST is to posit a triune HD, a braid with three entwined strands: hyperspace (Center), consciousness (Syg), and hypertime (Rhythm)—a CSR hyperdimension opening at the Planck length and operating below Planck scale, in any particle and system in the universe, including at its origin. This CSR hyperdimension thus instantiates:

- (via Syg:) a cosmic consciousness, plus a syg dimension and semantic fields and processes in all systems; self-consciousness and self-reference in the most evolved ones, such as intelligent beings and civilizations in the universe;
- (via Center:) self-organization via networks dynamics and individualization (organizational closure) of all systems;
- (via Rhythm:) FTL communication and exchanges in resonant systems through the *sygons*;
- A topology in hyperspace in the form of a phi-based or golden spiral (the ISS)
- a holographic system at the global scale, in which the collective consciousness (via its field of information imprinted in the cosmic ISS at the origin) is in constant 2-way flow and communication with the individual ISS of all systems.

The FTL sygons populating the hyperdimension are a *semantic (syg) energy*—an energy of consciousness able to effect work and actions in spacetime (the very physics definition of energy). The sygons provide the *dynamics of instantaneous exchanges of complex information* between semantic fields of any type—whether natural systems, plants, animals, objects, or evolved minds. Semantic processes driven by sygons use connective dynamics—such as network-linkages, inter-influence, and co-evolution between systems. They also include the reorganization and in-forming of matter- and bio-systems by psycho-mental processes (such as intentions, needs, and emotional bonding). The connective dynamics instantiated by sygons operate through resonances of meaning and semantic links of any kind; these are clearly semantic dynamics involving body-consciousness, the psyche and minds.

Thus, at any point in spacetime (in any particle and system), the triune CSR hyper-dimension opens at Planck scale and operates below it as an individualized ISS spiral bearing a near-infinite databank about the whole universe and this individualized system. So that, like pores on the skin opening on the air outside our bodies, each individual ISS opens on the bulk of the cosmic hyperdimension, itself in sync with the HD at the origin. The cosmic hyperdimension is indeed a whole, the One, whether at the origin or within the bulk; it pervades spacetime systems below Planck scale—and in this respect, it can be modeled using an ontological argument (Hardy 2015, 2015b). It is Carl Jung's collective unconscious, the Tao, the Brahman. It is Plotinus' "One immaterial," the soul of the universe pervading all its parts.

5. Cosmic Consciousness & Panpsychism: The ISST Paradigm

ISST postulates that the hyperdimension of consciousness exists not only at the beginning of the universe (in the cosmic Infinite Spiral Staircase or ISS), but also at the core of any system in the universe, from particles, to living beings, to galaxies. In all these systems, the hyperdimension

operates at a sub-Planckian scale, via the faster-than-light sygons—the virtual strings/particles that are a dynamic semantic energy and active information.

The syg hyperdimension allows a potential of consciousness in all systems, a layer of meaningful organization and interaction called the system's *semantic field*. ISST thus belongs to the broad philosophical stand of *panpsychism*, that posits consciousness as pervading all beings and things in the universe, however to a different degree—from a proto-consciousness to an evolved self-referent intelligence in human beings. Panpsychism has been heralded by the Greek philosophers Thales, Plato and Plotinus, by the Advaita Vedanta philosophy in India and Tibetan Buddhism. In modern times, by Leibniz, Spinoza, Whitehead, and recently David Chalmers (1996), as well as the physicist Roger Penrose. The psi researcher Dean Radin and his colleagues considered panpsychism as a sound explanation of the observer effect, as stated in their 2012 report on an experiment using an optical double-slit protocol, furthering the famous experiment by Thomas Young (Radin et al, 2012).

The panpsychism of ISS theory has very specific physics and cosmological features, as it derives from a semantic or syg hyperdimension enmeshed with hyperspace and hypertime, and existing in all systems at all scales in the universe.

The holographic universe and the Anthropic Principle

The concept that the universe would be organized as a hologram has first been expounded in quantum physics by David Bohm (1980, Bohm & Hiley 1993), and then in brain sciences by Karl Pribram (1991). However, in Alexandria in the third century CE, the Greek philosopher Plotinus taught that the cosmos was One, a whole, holographic, system and conscious due to a cosmic soul (*psyche* in Greek, *anima* in Latin). He states "This universe (…) has in itself a *soul* (psyche), who pervades all its parts." (*Ennead 4)* And also: "The immaterial [the One] is as a whole in everything." (*Ennead* 6.4) This is exactly our modern concept of a hologram: a system in which all parts are in interaction with the whole, and in which the information about the whole is contained in any part. Moreover, if the whole (as cosmic soul) is in all things and systems, how better to model it than by postulating a hyperdimensional and (proto-)conscious layer in all systems—their semantic fields? Then the semantic fields of all systems form the semantic dimension that, in ISST, is the Syg hyperdimension, cosmic consciousness as a whole.

Closely related is the Anthropic Principle (from the Greek *anthropos*, human), that, in its strong version, hypothesizes that the universe is not only a coherent and conscious whole (Gaia), but that it self-organizes toward favoring life and intelligence. There are indeed around thirty parameters and constants in the universe that are extremely fine-tuned; some of them allow a long enough time for galaxies to form; others exhibit the precise ratios of chemicals and physical constants necessary for the development of evolved life forms, of intelligence and cultures.

Brian Carter (1974) and James Lovelock (1979), argue for a 'strong anthropic principle' that is, an underlying harmony rooted in the origin, that makes the universe to tend toward favoring intelligent life. Similarly Ervin Laszlo (2004, 2009) grounds the coherence and self-consistency

of the whole universe and its fine-tuning (that perforce imply FTL signal-transmission), in a holographic Akashic field.

According to the recent *Holographic Principle*, the universe is a hologram which is isomorphic to the information "inscribed" on the surface of its boundary. The concept of a *holographic universe* (developed by Nobel laureate Gerard 't Hooft and then Leonard Susskind) states that all the *information* about the universe is inscribed on the 2D surface of its cosmological horizon (the diameter of the observable universe being 92 billion light-years, or 92Gly). Therefore the cosmic information is a measure of entropy as a spectrum of microstates (Brandenburg & Hardy 2015). The quantum vacuum could be this curved surface boundary to spacetime, being 'imprinted' with the information about all particles and systems (Hardy 2015c). However, in such models, the information is not active in itself and thus cannot be the means of a nonlocal communication and inter-influence between systems. ISST offers a solution.

ISST panpsychist framework

Semantic Fields Theory postulates that all physical systems at all scales have a semantic field (syg-field in short), which is none than their hyperdimension, with each particle and system having an individual replica of the ISS bearing its own organization and information in an excited state. Let's view a human being as a mind-body-psyche system: The ISS of all particles, molecules, and cells coalesce in a specific network-system that is the syg-field of an organ, of a biosystem, or of a layer of organization, for example a body proto-consciousness. The higher layers of consciousness, such as minds, allow a self-referent intelligence, strongly coupled to the brain and neuronal layers. (This self-organization is not hierarchical since it allows for horizontal and transversal links between layers, instantiating both top-down and bottom-up interactions between networks of processes.) The global semantic field of an individual (the ensemble of their semantic networks and constellations) is created, organized, and evolving via connective dynamics: it is their hyperdimensional being, their spirit or soul.

Due to the fact that all matter-systems (e.g. a museum) and bio-systems (e.g. a tree, a lake) also have such a hyperdimension (their syg fields), these systems have a more or less evolved consciousness—a proto-consciousness at the very least. Thus, via our individual semantic field, we are in constant nonlocal exchange with all resonant syg-fields, not only our friends and family, but also the places, animals, plants, machines, houses and gardens, philosophies, and works of art that we love. With other beings, we form networks of links and thus collective syg-fields, a group, a village, a culture, a federation, up to the most global one: the planetary syg-field—Carl Jung's collective unconscious. The properties of sygons afford us with instant meaningful and qualified links and exchanges with all resonant systems, through their own syg-fields. It is the sygons that instantiate the nonlocal semantic dynamics, the connection and inter-influence between syg-fields—meaningful and grounded in similarities, resonance, and any type of links (from love, to hate, to contiguity). The sygons provide us with a huge on-going network of interactions driven by meaning and unimpeded by distance in time and space. The greater part of these interactions and exchanges remain at the unconscious level, yet they are the source from which stems the occasional emergence of psi information to awareness.

6. Conclusion

The faster-than-light sygons creating semantic fields and ongoing networks of links in the hyperdimension are what makes psi possible, and they explain the nonlocality of entanglement and of consciousness. In my view, only a hyperdimension populated by self-organizing networks of FTL sygons (as tiny or large embedded semantic fields) can ground and explain psi, both as a nonlocal information exchange, and as an influence of mind over matter and biosystems. The sygons can also explain other types of nonlocal and collective psychic phenomena—such as Jung's synchronicity and collective unconscious, the sharing of dreams, simultaneous discoveries, and reincarnation-type of memory.

At the planetary level, the syg hyperdimension is the 'soul of the Earth,' a concept found in many cultures and religions, fitting Jung's collective unconscious and Teilhard de Chardin's noosphere—also a memory field, or Akasha. At the cosmic level, the syg hyperdimension is the 'cosmic consciousness,' a global semantic field of meaningful interconnections, that is plural and yet a whole: it is the Tao, the Brahman, the concept of the Whole, the One.

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