A New Premise for Quantum Physics, Consciousness and the Fabric of Reality

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A New Premise for Quantum Physics, Consciousness and the Fabric of Reality

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Abstract: We submit a generalized interpretation of quantum physics on the basis of resolution of quantum indeterminacy, emerging from an integral and simultaneous change of physical relationships at the Planck scale. This model postulates "space-time instants of now" framed by us as "blinks of change" in the physical world. These "instants of now" can only be conceived as permanent conscious moments if they attain sufficient novelty and are regarded by us to be the basic building blocks of scale-invariant consciousness and the fabric of reality. We postulate that a transactional wave interaction of local and nonlocal information occurs within a discrete timeframe between each prior and subsequent "instant of now". The "Standard Reference Frame", created according to our premise, generates a general aspect of quantum entanglement in the universe, thereby providing nonlocal relations that affect all physical change. The proposed quantum physical model not only provides a basis for resolution of quantum uncertainty by causal self-observation of the universe, it also explains the existence of universal consciousness and puts the very nature of time and cause-effect relationships in a new perspective. The concept is conceived as a basic ontology for our cosmos, from which many of the current physical theories for mind/matter reality can be directly derived. It thereby offers insight into the well-known "implicate and explicate order" interpretation of David Bohm as well as the concept of "actual occasions" of Alfred North Whitehead. Our concept bears some similarities with Cramer's Transactional Interpretation of Quantum Physics, but partially differs from a recent hypothesis postulated by Lee Smolin on the nature of Qualia. Importantly, our concept requires a recurrent wave modality that returns to itself that generates an intrinsic aspect of entanglement. This ensures a self-referential information flux that can be fully accommodated by toroidal geometry and intrinsically integrates the aspect of universal consciousness. The toroidal geometry that is implied, allows the access to a 4^{th} spatial dimension that may reflect a sub-Planckian domain of mathematical relations and geometric forms (phase space), functioning as an implicate order. We believe that the present novel interpretation of quantum physics invites relevant views on individual consciousness of living organisms and their interconnection via cosmic musical master-code.

Introduction

During the past few decades, we considered how generally accepted quantum physics could be extended to provide support for Psi phenomena and transcendental experiences. Yet, this quest has taken us much further than anticipated as reflected on the present paper. A major challenge was to express the new view on quantum physics in the same terms of physics that have historically been used, yet were shown often to have a different meaning, especially if such words contained an embedded context of time and space. Yet, our premise does not require an entirely new scientific language, nor new particles or dimensions. The

theory is rather based upon the guiding of wave information in our 3-D world from a 4-D information domain (earlier called phase space, implicate order, zero-point energy field) that bears a discrete set of harmonic frequencies, to be considered as the recipe (set of rules) for the evolutionary creation of first life within the fabric of reality.

The New Ontology of the Quantum Physics Premise

The aim of the present paper is to explore the implications of our new premise with regard to the basic assumptions that underlie generally accepted quantum physics theory today. In particular our theory submits another look at how time and space can be understood. This may lead to a description of how nonlocal aspects may influence physical cause and effect. In particular, our premise may provide a meaningful extension to the interpretation of quantum physics implying an observation dependent "collapse" of the wave equation, by some called the measurement problem. We submit also that any extension and/or re-interpretation of quantum physics must provide an alternative for explain how "change" takes place in a physical context and that quantum observation should be seen in the framework of the universe as a causally self-observant entity.

In this respect our premise is *that all changes within physicality require a new view of how resolution of quantum indeterminacy occurs. We postulate that if such a resolution occurs it will simultaneously affect the whole universe through a perturbation of frequencies at the Planck limit of uncertainty.* At this level, the shortest time interval of physical change, so far experimentally confirmed, is on the order of an attosecond, 10^{-18} of a second. This paper aims to develop insight into, the "why and how" of an event is occurring, and how this creates a subsequent blink following the process of "blinking now" (see **Fig. 1).**

This concept also implies that, just as for related terms previously used by others such as actual occasions, causal views of events, experiences, or conscious moments, the process should be conceived as a process of information unfolding that can be seen as quantized evolution of actual cause and effect.

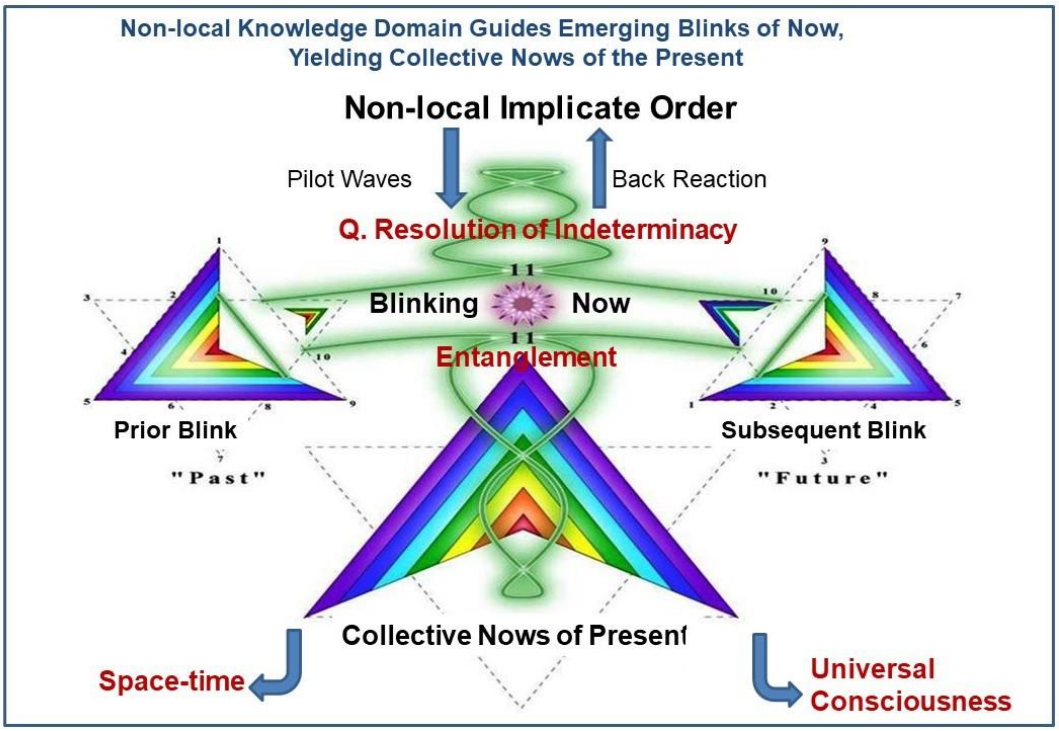

Figure 1: *The Premise of "Resolution of Quantum Indeterminacy", in which during transition of prior blinks of chance (in a state of uncertainty), into subsequent blinks, a superposition with eternal information from a*

*timeless universal conscious domain is achieved, resulting in a blinking now or blink of change. We submit that such transitions are registered simultaneously in the entire cosmos and become entangled with all other blink units. The latter, collectively, constitute the present state of blinks in the fabric of reality, (**Fig.1,** below). In this integral process the entity of time is created, being directly related to the flux of information from the non-local implicate order in which process the "blinking" now becomes universally entangled and the aspect of time is created.*

Thus, the inherent transition into blinks of change, due to the non-locally guided resolution of wave uncertainty, within the related action duration, defines a local "time clock" metric. The particular blinks of change, thus, are enfolded in a unique new pattern of implicit relationships of wave/particle fields within the ongoing fabric of reality. The superposition of the three recurrent waves can be conceived as guitar strings vibrating between two fixed points and "plugged" by the guided waves from the implicate order. Each of these wave bears an intrinsic and timeless periodicity (cyclic feature, see later). Linear (unidirectional) arrow of time, as we experience it, is only introduced by integration of "blinking nows" in the total collective now of the present (**Fig.1**, below). This integration process implies random interaction of the created blinks of now, yielding thermal response and chaos, that intrinsically must follow laws of thermodynamics and entropy. Thereby, *a universal time metric* is born that is related to the growing register of information that characterizes cosmic evolution and life. The sounds of the collective strings generate the classic "music of the spheres", a symphony build up from the musical master-code that implied the very recipe for the fabric of reality [**Meijer et al., 2020**].

The question then is what might be the influences of all such changes within physicality to ultimately result in an integral pattern at each blink? Here we provide a plausible answer to that question, including how it revises "meaning" and "context" as related to some existing hypotheses in physics. For instance, with our premise there is no need to include the idea of a "probability wave" and observation/measurements to describe the "collapse" of the wave equation. The required resolution of indeterminacy, currently projected as collapse of the wave equation, is now conceived very differently in order to create each new macro-state of the universe. *In the context of our premise, observation and measuring are an implicit result, rather than a cause.* Consequently, *when* indeterminacy of the blink of chance is resolved, this occurs at the Planck level and is not limited to just macro correlation statistics. Generalizing the process of creation of blinks of change at this scale provides basic insight into the phenomenon of change within the physical world. Our new premise does not contradict known concepts in physics. Yet, in may enable reinterpretation of the underlying experimental foundation, since it offers a view on the causality involved at discrete quantum steps at the micro-level, which is usually described through the statistics of macro-measurements.

The nature of this causality, is in our opinion related to some forms of knowable and describable, nonlocal, influence, that is guiding the transition of a prior blink to a subsequent blink, finally leading to the creation of the basic blink of change or blinking now. We hold that all changes in physicality are entangled, and that by this information integration, the resulting entangled information creates the aspect of space-time. The following sections potentially depict the various crucial implications of our hypothesis. The term "time" of the current physical representation acquires a new meaning when viewing physical change as occurring within a "duration" of change between blinks. In particular this means that the resolution of indeterminacy of blinks represents energy exchange at the quantum level through bidirectional information flux that implicitly encompasses an unfolding of information in the Bohmian sense and the cosmic entanglement of the blink of change.

Even following the dawn of nonlocality, the associating of the so-called "passage of time" coupled to projections of "past" and "future" has impeded the acceptance of the more instructive "prior" and "subsequent now's". All this has resulted in a limited, even counterproductive, reference to physical cause and effect. As a consequence, only local "cause and effect", has been implied within the equations representing changes in physical relationships. We maintain that, as a consequence, both supposed macro and quantum events have disguised the working of a deeper level of reality.

The resolution of indeterminacy of blinks at the micro-level, postulated by us, introduces the view that *both* the prior "blink" and subsequent "blink" affect the physical state of the actualized " blinking now" (see Fig.1). This aspect implicitly requires some form of reversed or *retro-causation,* meaning that an effect may precede the apparent cause in the sequence of physical change [**Sutherland, 2006**; **Wolf, 2010; Sarfatti, 2015, Sheenhan, 2015**]. For example, phenomena such as precognition and pre-sentiment could be seen in this light if we assume that traces of advanced wave information in the brain are somehow superposed on the normal anticipatory activity of brain function. Of note, Dean Radin **[Radin, 2006**] remarked that given retro-causality, there exist questions about how to interpret experimental data, at least when the experiment involves chance on the basis of human decisions made either before or during data recording as earlier described by Libet (**see Wolf, 2010**).

In a world of entangled "relationships", both local information and nonlocal information beyond space-time, inherently represent types of "information" that influence human thought and may put a new light on so called Psi phenomena. That raises obvious questions as to the when, where, what and how of physical change representing the registering of such information within nature. We postulate the requirement of both a representation of simultaneity and "entanglement" will be generated through the nonlocal influence to be instrumental at *each transition of blinks*. This new way to resolve indeterminacy of each event or blink, creates a novel "Standard Reference Frame" to describe the changing relationships of the physical universe. Earlier, a flat spacetime continuum was conceived, called the Minkowski space, [**Minkowsky, 1907: Naber, 1992**], that provided the *spacetime intervals (snapshots), thereby* satisfying the postulates of the Special Theory of Relativity, and later was proposed to exhibit time in a cyclic mode [**Dolce, 2017**].

This, in fact, also provided a plausible basis for a holistic characterization of nonlocality, [**Davies, 1993**]. In this respect, Antoine Suarez concluded, [**Suarez, 2007**] "Quantum entanglement supports the idea that the world is deeper than the visible, and reveals a domain of existence which cannot be described with the usual notions of space and time. In the nonlocal quantum realm, there is *dependence without time*: things are going on but the time doesn't pass here".

Some obvious questions then arose: What power creates the "kicks of change"? What sources exist outside of space-time to induce changes taking place in the physical world? More precisely what mechanism determines if a particular change becomes operable at each transition of blinks. How should we envision new relationship patterns of the universe in Planck frequency steps, one after another? in fact, those questions are the heart of this paper. We believe that our premise and the conclusions that follow will provide answers that are directly related to how quantum physics is related to an understanding of the source of a fundamental manifestation of consciousness within reality, and to the manner in which humans create their own experience within that reality, **[Meijer, 2017, 2019**].

We submit that all such information has been, or will be, combined with other information to form meaningful information gestalts in the evolutionary unfolding (blinking) of local and nonlocal reality, and that information describing the collective physical relationships will permanently exist as a nonlocal eternal databank. In this respect we postulate that new information is unceasingly created via changing relationships during each blink. The assumed eternally expanding databank of nonlocal information will intrinsically influences each change in physical relationships created during the process duration, depicted **in Fig.1**. Thus, each physical blink of new "now" generated, must exist "somewhere in the cosmos", and resolution of indeterminacy of prior and subsequent blinks creates this nonlocal "somewhere" information That is, in the duration between blinks there is potentially a nonlocal source of information from an "anywhere" source that influences each subsequent "now". Of note, the traditional idea of time has no meaning in this supposed "somewhere" other than providing meaning for the word "eternal" [**Megidish, 2013**].

We thus hold that the aggregate of nonlocal information created in the process of all "blinking steps" along the way is eternally retained. In various theories, the eternal existence of changes in information

relationships was sometimes referred to as a higher dimensional space in which a universal wave function is expressed, as some kind of "knowledge field". [**Laszlo, 2007, 2012; Khrennikov, 2005; Zhang, 2005; Hardy, 2017: Irwin, 2014; Ney, 2013**], or as a domain of "potentia" [**Stapp, 2007**]. In this respect, the major question seems how certain information is selected to become manifest during all these exceedingly fast and numerous blinks of change. There must be some sort of complex process that selects such gestalts of nonlocal information and stores it in a meaningful data register. As Shoup and others did note, the resolution of indeterminacy is not a random process **[Shoup, 2006, 2002**] while David Bohm regarded this process as a holoflux of particles, intrinsically guided by so called pilot waves. We argued earlier that the latter process should have a symmetric character, in the sense that the generated information in our world feeds back to the supposed non-local information field as earlier proposed by several authors [**Sarfatti, 2013, Sutherland, 2006, 2016].**This fundamental aspect renders the supposed knowledge field, coined by Bohm implicate order, to be a dynamic and constantly adapting cosmic memory domain containing entangled wave information.

The concept of recurrent flow of information modeled by toroidal geometry

In the process of developing the present concept as schematically depicted in **Fig.1**, we realized that we formulated a temporal transition that involves wave guided information processing resulting in "blinks of now" that encompasses three different wave modalities. First those of "prior and subsequent blinks". In relation to the prior and subsequent blinks one could see strong parallels with so called retarded and advanced waves as have been proposed originally in the work of John Wheeler [**Wheeler, 1990**] and later worked out in the transactional interpretation of John Cramer [**Cramer, 1988**]. The third wave component is seen as the pilot wave modality proposed in the important work of David Bohm. The latter aspect have been originally seen as a unidirectional process, but follow up studies in fact revealed the potential back reaction in which information is intrinsically fed back to the supposed implicate order [**Sarfatti, 2015; Sutherland, 2006, 2016**], by which this knowledge field is very dynamic and consequently not purely deterministic as previously thought [**Meijer 2015, Meijer and Geesink, 2017].**

The three wave phenomena thus generate a concerted action, that as mentioned above, introduces the aspect of entanglement as connected to any emerging "blinking now" or consciousness moment. We submit that involvement of the three wave modalities must occur in a distinct order: first the wave to the prior blink wave monitors the preceding state or retarded blink history. On this basis, through a subsequent wave an extrapolation is made searching a best fit with all related potential future states. After returning the superposed information is offered to a non-local 4-D information domain in which an appropriate pilot wave is selected and send back, (see **Fig. 1 and 3**). The resulting "resolution of determinacy" is not a collapse of wave function, but rather a guided process resulting in the entangled formation of a final blink of now or conscious moment that than can then be integrated in the "collective blinks of the present" (**Fig.1).** This entire complex operation should be seen as quantized on the level of the Planck Scale as a dynamic (standing wave) process. The latter in the meaning of the process theory of Whitehead (there are no objects but rather processes), and our "blinks of now and subsequent blinks" were defined by him as actual occasions and prehensions respectively.

The Planck scale, therefore, is rightfully seen as a sea of standing waves or spacetime ripples/vortices with inherent interconnections in the form of wormholes, earlier coined as a quantum foam by Wheeler. This does not imply that there is nothing *beyond* this quantized scale, which is assumed to represent ultimate small proportions as to space dimensions, time and information content. Actually, it has been proposed by several authors that even tinier elements should be assumed to exist beyond the Planck scale in a data field containing mathematical and geometric relations and presumably complex semantic structures such as qualia (therefore by some framed as qualia space). This domain is regarded by some as being 4-dimensional (4 spatial dimensions in addition to time) and would represent the earlier mentioned implicate order, according to Bohm as being related to the information holo-flux concept.

Our assumption of the intrinsically created cosmic entanglement in the complex transition-process, as mentioned above, clearly requires further detail and explanation. How can entanglement in physics be

created anyway and how is it related to our multifactorial process that includes resolution of quantum determinacy in our premise? If in the implicit information processing, wave propagation is the essential communication feature, it is required to define the very modes of wave form and mechanisms for their propagation (transverse or longitudinal modes or even cyclic modalities). We submit that a type of *recursive* wave trajectories, in which the wave returns to its origin should be involved. In fact, in the theories of Wheeler and Cramer, as treated above, retarded and advanced waves are assumed to return to their origin after accommodating and fitting information events in the past and future respectively. The same can be said for a bidirectional transfer of pilot wave information as treated above and the three wave modalities involved all have a self-referential character.

Could such a recurrent wave form intrinsically exhibit quantum entanglement properties? In recent collaboration with Mark Moody (**Moody, 2020 a and b),** we studied the features of harmonic waves in relation of our earlier work on the EMF frequency patterns that were revealed by us in both animate and inanimate systems, coined the generalized music (GM)- scale [**Geesink and Meijer, 2018**]. The particular alternating pattern of coherent and noncoherent wave frequencies that apparently is present in nature, exhibits a scale-invariant feature. This novel biophysical principle found by us through meta-analysis of biomedical experimentation in animal and human studies, were later expanded by similar analyses in the physics of superconductive properties, EMF-promoted entanglement [**Geesink and Meijer, 2018**]. as well as energy distribution of elementary particles. These different studies all showed numerically identical and discrete frequency patterns that exactly were fitted by the fractal, octave-like musical scale. The musical aspect was supposed to be related to the physics of photon and phonon/soliton wave particles and was proposed to have a scale invariant cosmic character [**Meijer et al 2020 d**]. Therefore, it was considered as a cosmic musical master-code that is both guiding life processes and fundamental atomic and molecular fundamentals. This coding information therefore was seen as associated with a part of a general photon-background field that even could represent elements of the implicate order. The particular vibrational features can also be inferred from distinct frequencies of the well-known zero-point, as well as energy fie cosmic microwave background (CMB), **Meijer et al, 2020 b**).

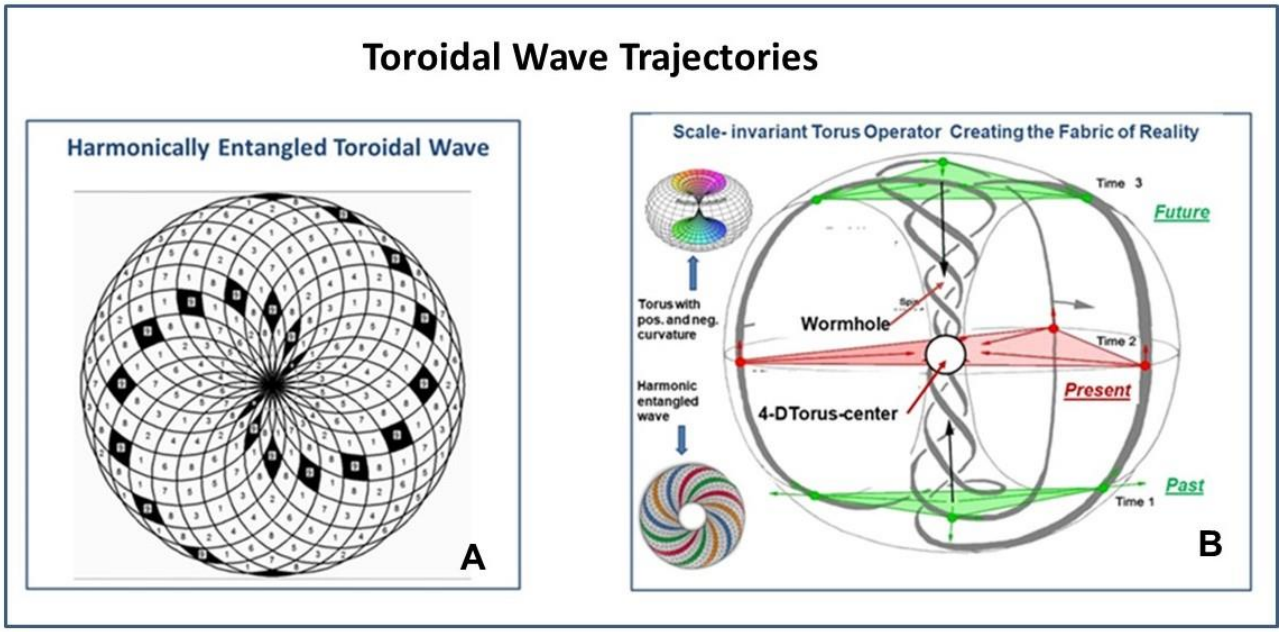

Figure 2: A: *Harmonically entangled wave trajectories on a torus on basis of the 12 EMF frequencies of Geesink and Meijer and 9 harmonic wave studies of Moody, B: Torus Geometry showing mirrored trajectories that pass past and future domains and after winding return to the center that opens up to 4-D information domain*

Returning to the recent work of Moody, the CMB oscillations were put by this author into the context of the basic atomic energy levels of the hydrogen atom, the element that as building block comprises over 90 % of matter in the cosmos and is known as the first element formed after the supposed Big Bang and therefore

dominant in the CMB spectra reported. These CMB-spectra revealed a harmonic energy distribution pattern. On the basis of the known hydrogen atomic spectrum that also exhibits identical harmonic wave features, Moody arrived at the concept of entangled wave function on the basis of series of fundamental frequencies integer values of 1, 2 , 3 , 4, 5, 6, 7 , 8 and 9 that are known to have harmonic interrelations (**Fig. 2**). These very values of Moody fit for a large part perfectly with the discrete values of EMF frequencies revealed through our entirely different and empirical meta-analysis of the abovementioned biophysical phenomena (**Meijer et al 2020a, Geesink and Meijer, 2018**). Importantly, Moody indeed collected evidence for the presence of quantum entanglement by studying the features of the derived series of frequencies 1,2, 3 , 4, 5, 6, 7, 8, 9, 0, 9. 8, 7, 6, 5, 4, 3, 2, 1 on the basis of complementarity and symmetry of many physical phenomena, expressed in the entangled quantum wave modality.

It is of considerable interest that the abovementioned three wave processes at the Planck scale can be envisioned as three recurrent and entangled waves but that the combined processes can be pictured as interacting toroidal trajectories (see **Fig. 2**). A typical features of energy/information flux on the torus is that the spiral trajectories arise from the very center, meet both past and future aspects, rewind to enter the center in a self-referential manner. The Torus center is known to be instrumental in so called quaternionic torus movement that can open to a 4-dimensional domain. The latter holonomic process according to David Bohm could thus model the interaction with the hypothesized implicate order, while the recurrent wave trajectories that return to their origin can be well explained the implicit entanglement in this type of wave function. **Fig. 2 and 3**, therefore, contain all the separate processes depicted in the **Fig.1**, as picturing the present concept.

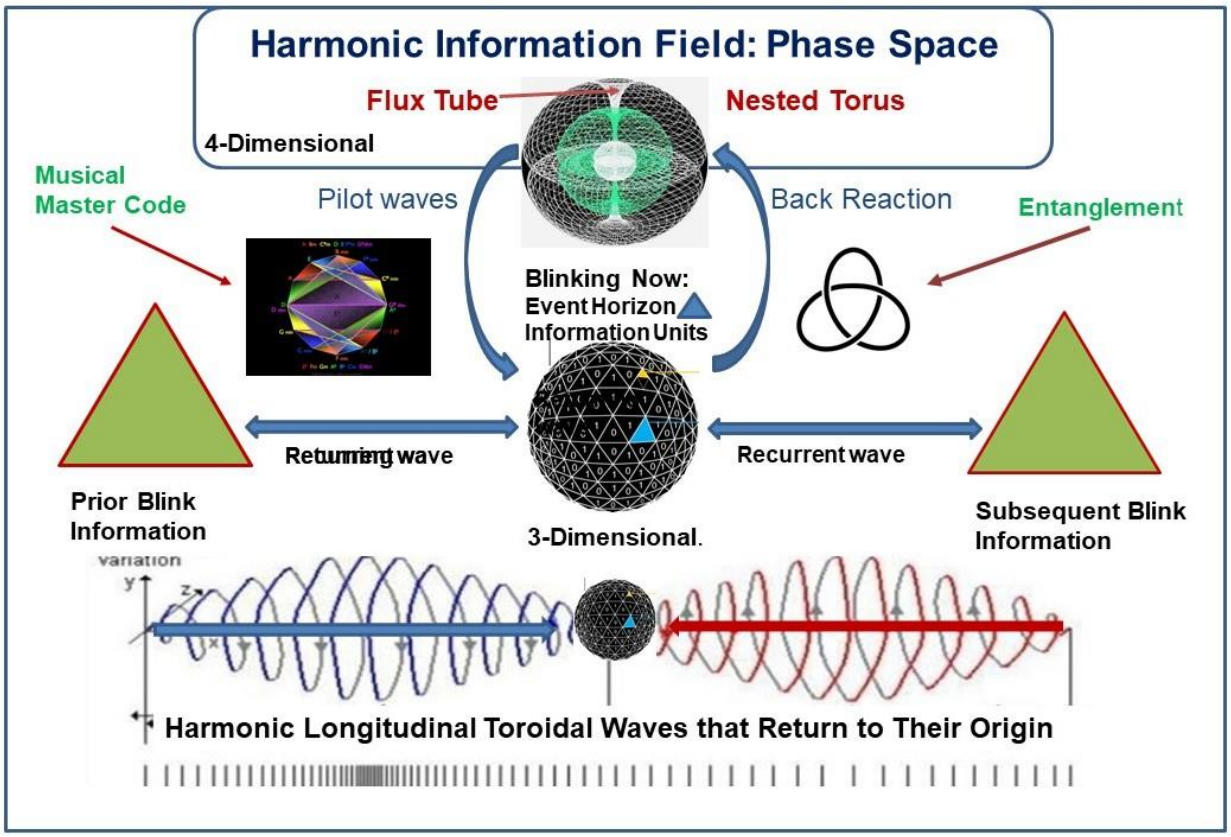

Figure 3: *The information waves send out to past and future blinks are recurrent and transfer the particular information into a "blinking now", also being perceived as "instant of consciousness". This information is collected in its event horizon memory (middle) and expressed as information units on the Planck scale (blue triangle). The blinking now simultaneously receives pilot information from the harmonic information field coined by David Bohm "the implicate order". An intrinsic back-reaction to this knowledge field renews overall information of this field. The collective information fluxes generate quantum entanglement of this blinking now by which the information is integrated in the collective present as depicted in Fig. 1. The processes of*

information flux are postulated to have a toroidal recurrent character, both at the level of prior and subsequent blinks (bottom part) and bidirectional information transfer between the 3-D Planck scale and the sub-Planckian 4-D information field.

Toroidal flux tubes of different length, in a fractal context (top part), are instrumental as wave operators and guide information with harmonic frequency relations according to a proposed musical master code of the implicate order.

In **Fig.3**, the nested torus model is used in order to emphasize the fractality of wave phenomena and implying that the toroidal flux tubes of different length may introduce the harmonic frequency relations, as found both in the work of Moody and that of Geesink and Meijer). Here we see the torus as the universal operator in the dual transfer of information between the 4- D data field to the reality of the 3-D world, here at the Planck scale. Yet, through its scale invariant (fractal) character it is instrumental on the level of our own planet, galactic system and the whole cosmos. If this integral process, of creating blinks as conscious moments, is by definition cosmic it implicitly reveals the presence of a collective universal consciousness, (see **Meijer, 2019**

We therefore hold that the three wave modalities playing a combined role in the premise show such a fundamental character of recurrent waves that intrinsically imply the presence of quantum entanglement. It should be mentioned here that the recurrent character even allows a series of entangled frequencies in time. In the scheme as pictured in **Fig. 3** this basic property is included and it is depicted that in creation of each blinking now and interaction with information of the implicate order. Causal cosmic observation, both the aspect of resolution of indeterminacy (and thus generation of material aspect of the wave\particles) as well the presence of entanglement is realized. Through the intrinsic entanglement every blinking now is integrated within the whole fabric of reality. Of note, the universal entanglement may be the fundamental basis for the creation of space time (see ER=EPR conjecture of **Maldacena and Susskind, 2013**; **van Raamsdonk,2010**). It is of interest in this respect, that a meta-analysis of earlier performed EPR experiments showed that discrete photon frequencies indeed promote states of entanglement and that the particular frequency pattern is compatible with the earlier mentioned acoustic GM- scale that can be modeled by toroidal geometry (Geesink and Meijer, 2018, as depicted in **Fig. 2** and **Fig. 3,** (upper part).The consequence is that the three, concerted, wave interactions in forming the "blinking now's", generate *an implicit metric of Time*, and represents a Time modality fundamentally based on activity dynamics. This s further treated in the next section.

Regarding the Nature of "Time"

Nearly two and a half thousand years ago, Aristotle contended that, "time is the most unknown of all unknown things" and, indeed it remains a general philosophical dilemma. Many philosophers since have contemplated the nature of time [**Barbour, 2009: Hawking, 1988: Rovelli, 2018; see Fg.3**], and in particular, whether time is duration based upon human perception, or duration of physical manifestations like an objective and intrinsic clock of reality, [**Schoen 1993]** and in either case, whether the "present" is "instantaneous". In his doctoral thesis, Henri Bergson distinguished between time as we actually experience it, lived time – which he called 'real duration' (*durée réelle*) – and the mechanistic time of science.

Alfred North Whitehead wrote, "We diverge from Descartes by holding that what he has described as primary *attributes* of physical bodies, are rather the forms of internal relationships *between* actual occasions." [**Whitehead, 1929**]. This is a view that every "event of change" within physicality should be considered in terms of the changing relationships of the physical objects involved. Thus, "time" in our new concept does not have the meaning of an extra dimension, but rather, a measure *derived* from the resolution of indeterminacy, in other words: from the changing relationships that result from a sequence of rapidly changing blinks and "time" thereby becomes an attribute construct of the source of our changing physicality.

The speed clock of quantum mechanics currently incorporates "time" as was historically/eventually viewed as a "measured" rate of change in terms such as hours, minutes, and seconds for the observed temporal changing of the physical world. However, this would imply that the Planck frequency of blinks would be

determined by an arbitrary idea of a "second" instead of vice versa. Within the blinking universe concept, the duration of a second of "time" may rather be thought of as equivalent to a count of blinks of changes, about 5.4×10^{44} discrete blinks, rather than just the physical measurement of the results from a fraction of that number of change steps upon which our theories are based. This new perspective regarding time as an attribute of changing relationships also bears significance in relation to cosmology, biological processes, or a double-slit experimental set-up.

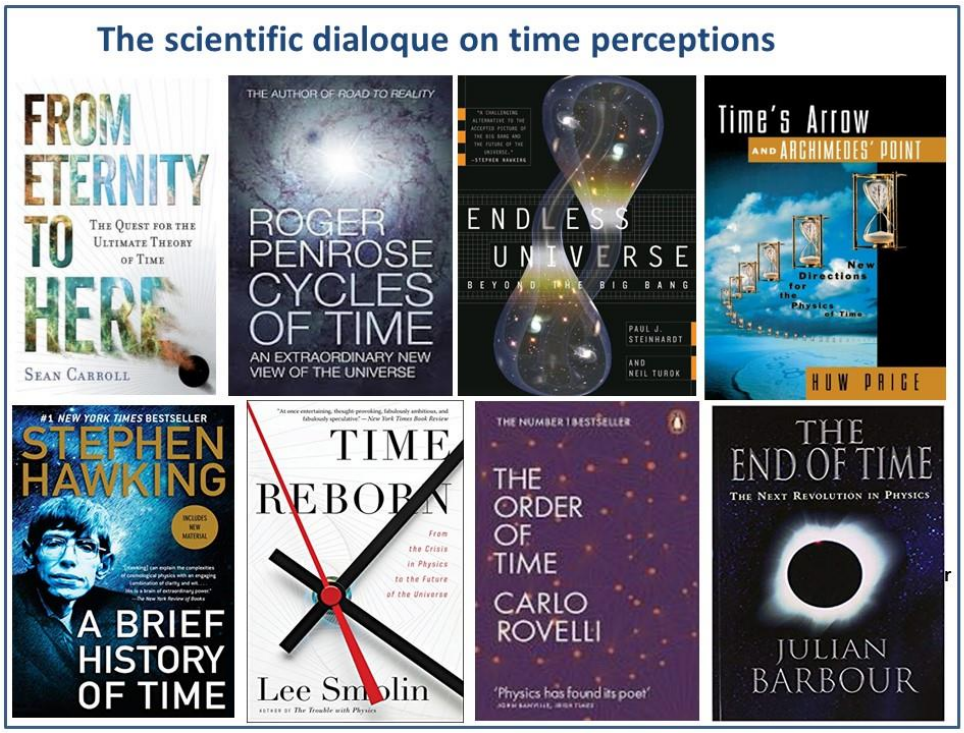

Figure 4: *Various well-known science philosophical works on the nature of time by (from top to bottom): Carroll, Penrose, Turok, Price, Hawking, Smolin, and Barbour*

We concluded that the evolved terminology of current physics has grown to be both a blessing and a handicap in the process to describe reality in a universal way. In this respect, the terms "time, "speed, and "momentum" are given a more useful and meaningful connotation when viewed within the context of the fundamental reference frame provided by our premise about how change occurs in our reality. Although the word "speed" is clearly meaningful in the equations of physics, it also hinders the understanding of how our characterization of "simultaneous" as the "duration of an event" of physical change and disguises the fundamental nature of "change" per se.

It should be realized in this respect that the rate of change within physicality at Planck dimensions (in our premise using the terminology of current physics) is not a limiting idea: current physics terminology does not in principle pre-empt possible evidence of change occurring "faster than the speed of light, as has been experimentally shown in the satellite to ground quantum teleportation, as reported by [**Yin et. al., 2017**] and teleportation of a qubits by Zeilinger, [**Zeilinger, 2000**] and were also included in an interesting theory of "faster than light" tachyons as carriers of information, supposedly involved in the feeling of intent in our brain in which a tachyonic field is interacting with a bookkeeping Akashi record or implicate order [**Wolf, 2010**]. Interestingly, the author pictured *time intervals* between two "time observables", involving so called echo and offer waves, that as neural events are responsible for a backward-through-time wave function collapse, being very much in line with our premise. He postulated a type of self-observation in which quantum wave function, in a repetitive manner, observes itself over and over again. This resembles the recurrent and toroidal wave modalities as proposed in the present work. Thus, time has very much to do with aspects of consciousness and may bear a periodic (cyclic) character.

How are the various physical concepts on time related to the way we conceive and experience time in our daily lives? Many questions remain about how our brains create time from the atomic/molecular scale upward to 'consciousness' and how to understand the connection between the changes in an evolving universe and the time we create with our brains to measure it. A correct conception of 'time' requires that we understand 'time as information' and that time is as real as information is, (**Hitchcock 2003**). The latter author postulated:

The brains' builds maps of changing patterns in order to extrapolate how these patterns might evolve. These maps of reality are formalized into physical 'laws' using mathematical structures such as space-time. 'Time' is the result of our brain's need to detect patterns of change for our own survival. Our brain act as a Time-computer and is essential to our maps of reality. Such maps are used to create ordered sets of time labeled *observed* events or time calibrated internal thought processes whose 'linear' or non-linear causal time ordering may result in the location of, so called, *info-states,* representing the events in memory and their contents. An info-state of a system, therefore. is the set of configuration observables for that system along with the *information content* usually expressed as the wavefunction for this system. Thus, this represents one of the places where the 'neural' *merges* with the 'quanta' of 'change'.

All unstable systems in the universe produce information when they undergo a 'change' to a more stable configuration. At the quantum level we see this in the emission of light when electrons jump to lower energy configurations. The light emitted by these atoms are signal that carry information about the quantum structure of the electronic orbitals. Signals can be the result of reconfiguration in many body systems acting collectively. The changes in the collective excitations of these systems can result in photons, phonons, excitons, and many other 'quantum' signals. They can also give rise to mesoscopic and macroscopic signals such as electromagnetic 'waves' and sound waves in the limit of many quantum signals acting collectively as a 'classical' object. The incoming signal from the standard clock and the target signal (i.e. the observed signal from the source) are detected and converted into a configuration of the detectors conceived as info-state, containing the information deposited in the detectors that represents some or all of the observables involved in the creations of their respective signals and sources.

The *attention* of the observer identifies and grabs the info-states for two events from the working memory in order to find a *time difference* between their *pre-time labels*. It loads them into a 'comparator' to compute the difference between the *pre-time labels* for the two info-states in order to compute reference event info-state, allowing the assignment of a conventional time label to each event in working memory whose meaning is the elapsed time with respect to a standard event. The time difference between the two events is the difference between the newly assigned final *time labels*.! T-computers detect signals and process them as info-states propagating sequentially (in space not necessarily 'in time') through the physical logic gates forming a causal network. The prime function of the T-computer is to pair the information representing an observed event with a 'time label'. The brain receives information from the senses. In order to identify its causal relationship to other events it needs to time label this information and store it in a working memory. 'Time' differences and the information defining the order of info-states representing the observed events can be used to create temporal pointers or 'arrows of time' between 'earlier' and 'later' info-states. This is one of the possible 'outputs' of the T-computer working with consciousness to create time. The computation of the difference between the time labels for any two info-states results in another 'bit' of information that we call the 'time' elapsed between the two observed events. From this perspective, 'time' does not exist a priori, but is in fact a computed measure of change. This time can be interpreted as elapsed time between events or the lifetime of are configuration process. The *ordered set of these time numbers* can be used to construct a timeline.

Regarding Cause and Effect in Relation to Nonlocality

The words "speed" and "time" as in "the speed of Light" make it difficult for understanding all processes that may influence cause and effect and "meaning" related to physical change. Our premise interpreting "time" as "duration" leads to understanding a much more promising characterization of cause and effect.

Purely local representation of causes and effects has been experimentally demonstrated to be inadequate to describe all change occurring within our everyday objective reality. The conclusion of Aspect [**Aspect, 1982**], Gisin, [**Gisin, 2001,2002**], and others [**Bergson, 1889: Bohm and Peat, 1987**] is that the historical assumption of an objective reality is false.

So, the major question that begs for an answer is how only certain information is *selected* to become manifest during the exceedingly fast and numerous blinks that change the world in locally observable and measurable ways. As Shoup and others have noted, the resolution of indeterminacy is not a random process [**Shoup, 2006, 2002**], as assumed for some related theories. Our premise implies that some sort of complex process that generates an exceptional and fundamental awareness exists to select such gestalts of nonlocal information. We therefore emphasize that *not every blink of change will be integrated in the collective present*, or personal consciousness. Here we consider the basic definition of active information that can only be selected on the basis of novelty: that *type of information that makes the difference*. Such a weighing process, in our opinion, provides the unique conscious moments that form scale-invariant consciousness [**Meijer, 2012**; **Meijer and Geesink, 2017].**

This aspect was also recently put forward in the "energetic causal set theory" by Lee Smolin, calling it *the principle of precedents*. On the basis of views of events (snapshots or in our terminology blinks), he proposed at least two categories of views of events: one with many near copies and those that have a very small number of copies and therefore are rather unique. But what is the discrimination parameter here? In our opinion this requires a domain with a complete semantic ensemble of views, in the sense of memes or complex qualia that can only be detected in a quantum search in an integral register of conscious moments (**see Fig.3**). In the theory of Penrose and Hameroff such a selection is made through a gravity mediated fit of "spacetime ripples" called "orchestrated wave reduction". This process would take place on the level of the Planck scale with its minimal dimension that render gravity a dominant force [see **Hameroff and Penrose, 2017**].

Questions regarding the nature of indeterminism have been recognized for decades. Including, as noted by Pylkkänen **[Pylkkanen, 2016**], "What worried Einstein and Bohm was not merely the famous indeterminism of usual quantum theory but also the fact that the usual interpretation did not give a description of physical reality over and above predicting experimental phenomena. In other words, the usual interpretation did not provide a quantum ontology, or a description of the nature of quantum systems, regardless of whether or not they are being observed." We believe our premise provides an interpretation of indeterminism that extends beyond the positions and trajectories of physical particles to provide such a quantum ontology.

Gottfried Wilhelm **Leibniz (1646-1716)** said, "Space and time are merely bookkeeping devices for conveniently summarizing 'relationships' between objects and events within the Universe." Much later, with the advent of quantum physics, James Jeans [Jeans, 1942] argued that, "the physical theory of relativity has now shown that electric and magnetic forces are not real at all; they are merely mental constructs of our own perception, resulting from our rather misguided efforts to understand the motions of the particles. This seems also true for the Newtonian force of gravitation, as well as for energy, momentum and other concepts which were introduced to help us understand the fabric of reality—all can be conceived as mere mental constructs, and do not even pass the test of objectivity."

With the growing work to connect quantum physics with consciousness, there appears to be an increasing number of papers viewing changing relationships as information, which take nonlocality into consideration. More recently Jahn, [**Jahn and Dunne, 2012]** have pointed out that: "common concepts of physical theories, such as mass, momentum and energy, electric charge and magnetic field, as well as the quantum wave

function, and even the concepts of distance and time, are not more than useful organizing strategies consciousness has developed for organizing its world. It is no wonder that astronomer Henry in a paper in Nature postulated that the Universe is rather entirely mental [**Henry, 2005**].

Regarding Information

As many researchers have pointed out, [**Bohm, 1980; Charon, 2004; Deacon 2014; Meijer, 2012, 2015; Radin, 2006; Tiller, 2009**] any "relationship" in nature requires "information" to describe it, and that such information can take the form of being nonphysical. The changing *relationships* of physicality such as regarding the momentum, spin and polarization of particles, and all other relationships relating any physical object to any other physical aspect of nature, can described by physical as well as nonphysical information.

Nonphysical information is also required to describe of any kind of relationship represented within human thought. For instance, Erwin Schrodinger [**Schrodinger, 1958**], in his book Nature and the Greeks, declared: … "the real world around us and we ourselves, i.e. our minds, are made up of the same building material, the two consist of the same bricks, as it were, only arranged in a different order—sense perceptions, memory images, imagination, thought. It needs, of course, some reflection, but one easily falls in with the fact that matter is composed of these elements and nothing else. Moreover, imagination and thought take an increasingly important part (as against crude sense-perception), as science, knowledge of nature, progresses."

John Wheeler, [**Wheeler, 1990**] suggested in his "it from a bit" doctrine first characterized in a 1989 essay, [**Wheeler, 1989**] that information may be fundamental to the physics of the universe. And further, that, "every "*it"*— every particle, every field of force, even the space-time continuum itself — derives its function, its meaning, its very existence entirely — even if in some contexts indirectly — from the apparatus-elicited answers to yes-or-no questions, and thus to binary choices or bits." In other words, all physical modalities are information-theoretic in origin. Subatomic particles are primarily characterized by physical information, apart from matter and energy. "It from bit" thus symbolizes the idea that every item of the physical world has a very deep bottom, hidden from us. Nevertheless, Wheeler postulated that we live in a *participatory* universe [**Meijer, 2015**] in which we produce information by which the universe learns about itself!

A hypothesis relating to the manifestation of physicality, was earlier characterized in David Bohm's Holomovement interpretation of quantum physics. According to Bohm, [**Bohm and Hiley, 1987**], "The most fundamental reality then, is the Holomovement—"an implicit and an explicate unfolding of information into physicality". Our premise regarding the resolution of indeterminacy is a further characterization of Bohm's insight, postulating that reality materializes at the generation of each new explicit "blink of change", that also can be envisioned as the realization of conscious moments [see also **Primas, 2003**].

In a 1990 paper by Bohm [**Bohm, 1990**] extended the importance of information as a fundamental concept, introducing the term "active information", while characterizing his view of the process of change wherein mind and matter are connected at a mental level. He and Basil Hiley [**Bohm and Hiley, 1993**] later built upon the significance of nonphysical active information when extending Bohm's concept of an implicate order to a wholeness nature of the universe.

Information, thus, provides both identity and meaning—"how something is in relation to something else" [**Davies, 2014**]. A fundamental importance of information is therefore to identify how something differentiates, or how it makes difference as a fundamental and implicit and intrinsic constituent of nature. Interestingly, Information about the details of a particle at one place in spacetime can be "teleported" to form an identical particle at another place in space time, while even entanglement between particles can exist that have never co-existed. [**Megidish, 2013]**. Likewise, content comprising thoughts, cannot exist without representing a modality of nonphysical information being associated with a frame of reference that provides meaning about the relationship(s) they describe. Consequently, information is fundamental to the

description of any form of identity, physical or nonphysical, and any change in a relationship creates new information to describe the resulting new relationship(s). Even mentally conceived changes, being "subjectively" attained, such as suggestions, contemplations, value judgements, desires, expectations, intentions, and imagination or planning types of thoughts require nonphysical information in order to represent their context. Information, inherently nonphysical, but physically definable in properties such as spin, momentum, charge and polarization, once created, cannot be erased. Thus, all information, for example, describing an atom, an object, a thought, a physical process represents information that through human contemplation identifies a relationship with associated meaning within physicality. Yet, the earlier treated back reaction in pilot wave guidance ensures that it is available as potential active information within the timeless framework of the nonlocal eternity of universal consciousness. As treated before, we also hold that simultaneous universal resolution of indeterminacy creates such nonlocal "somewhere" information.

The here proposed "*blinking active interconnectedness*" of information provided the "recipe" (in the sense of a set of rules) necessary for biological evolution and first life [**Meijer et al, 2020b**], as well as for the proper functioning of living organisms in general. An illustrative example is that of the human body. It is composed of trillions of cellular units of information, exhibiting a versatile intra- and intercellular complexity. All these cellular entities have evolved blink by blink in the unfolding of information in biological evolution, and work together to represent something greater than just the sum of its parts (Aristotle). Such a condition requires the faithful storage and retrieval of life information, supported by long-range communication fields, instrumented by photonic, solitonic and phononic (acoustic) codes that pervades reality in a non-local context. This is the sought-after window for bringing a nonlocal implicate order of Bohm into our reality, [**Williams, 2019**]

Regarding Fundamental Consciousness

The premise presented here, hopefully, may open the door for additional fields of inquiry, not only within physical sciences, but also in psychology, parapsychology, and philosophy. It may represent a new basis for identifying potentially new cause and effect modalities involved in the selection of the nonphysical information that somehow plays a role at each "kick-by-kick blink". The creation of a blink in the physical world based upon local as well as non-*local* information may suggest that an additional source of "kick" energy to create the blink is required, such as the zero-point energy field, alternatively conceived as a superfluid quantum information space [**Meijer et al., 2020 c**].

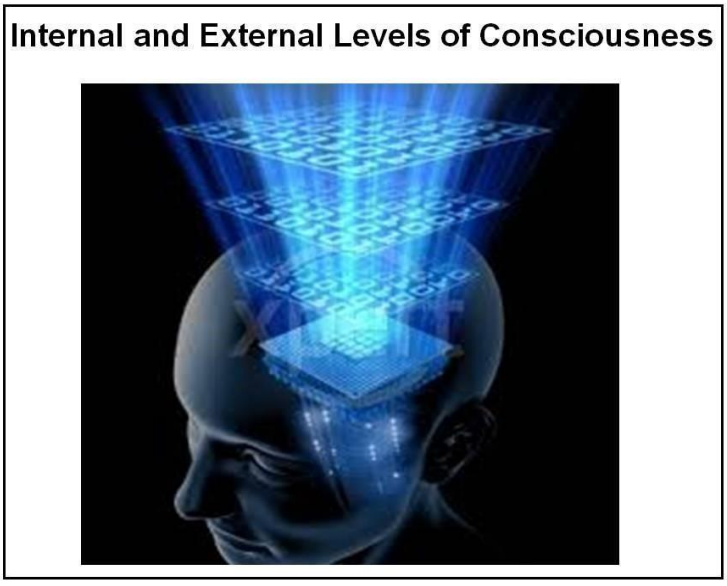

Figure 4: *Cartoon of fractal layers of collective blinks of change with active information that produce scale invariant consciousness in brain, whole organism and beyond,* (see Meijer and Geesink, 2017)

In the formulative era of quantum mechanics, Max Planck [**Planck, 1931**] is quoted to have stated, "I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness." "There is no matter as such! All matter originates and exists only by virtue of a force. We must assume behind this force the existence of a conscious and intelligent Mind. This Mind is the matrix of all matter." The existence of such a consciousness has also been assumed or inferred by many physicists in recent times. These include not only the earlier conceived implicate order of Bohm [**Bohm, 1980**], but also the domain of "potentia" of Stapp [**Stapp, 2007**], the God Theory of Haisch [**Haisch, 2006**], the Primacy of Consciousness by Russell [**Russell, 2002**], and many others, [see **Meijer, 2015, 2017, 2020**]. They all have concluded that some type of fundamental and collective consciousness should be operative [**Meijer, 2020**].

The process for resolving indeterminacy in the unfolding of the future, as described in the present paper, also makes clear that the thoughts and deeds of the human race may drastically change subsequent physical relationships. This, for instance, implies that the influence of "free will "(or better, free choice) does influence the sequences of "nows" that are individually and uniquely experienced. Experiences are stored in brain memory, but also nonlocally registered within each human life. Both quantum physicists and philosophers: agree: we attempt to find meaning within the quantum world through a reality that we partly create ourselves but also intuitively derive from some source of universal knowledge. The source of the selection/relevance of specific information that manifests at each "now" from that eternal supply is conceived in our concept by describing a *specific manner* in which such a type of Fundamental Consciousness enters the picture rather than just an assumption that such a fundamental consciousness exists.

This interpretation of how resolution of indeterminacy unfolds physical change also answers the question that Chalmers has posed as "how do the experiences of fundamental physical entities such as quarks and photons combine to yield the familiar sort of human conscious experience that we know and love". It provides a framework for viewing how the combination of nonlocal information and a fundamental awareness underlying reality results in the experience of human consciousness in a physical world, described by some as a form of Panpsychism.

Our premise also provides a supportable answer to the questions prompting the earlier mentioned Hypotheses and the Principle of Precedence of Smolin [**Smolin, 2020],** related to the author's cause of the "events of physical change" and, in particular, unique "causal set of views" or "ensembles of views", that may create the qualia of human consciousness. We also agree on his notion that such qualia can only be integrated in human consciousness if some sort of resonance is realized with a range of energies such as perceived colors or perceptions of tones. This idea of Smolin is also very much in line with our hypothesis of harmonically guided wave transition from a universal register (**see Fig. 3**). However, we believe that our premise provides an alternative way to support the Physical Correlates of Consciousness (PCC) as postulated by the author, in relation to the nature of human free choice. It is important to note that when the universe makes a choice this cannot be solely determined by a set of past events: it should also include a "feeling of the future" as earlier proposed by John Cramer, David Bohm and more recently by **Wolf, 2015**. (see **Fig.1 and 3**). Such a predictive process can only be obtained on the basis of a reference frame that contains a complete set of collective histories, combined with their potential future extrapolations. In our view such an overall reference frame is build up for any conscious system through the supposed back reaction as a crucial part of the Bohmian pilot wave instrument of the cosmic wholeness. This process provides an ongoing actualization of the knowledge domain into a dynamic data bank. The latter ensures a non-deterministic guidance of conscious states in which the crucial aspect of free choice is implicitly guaranteed.

Regarding Psi Phenomena

Does our premise also provide an interpretation framework for Psi phenomena such as clairvoyance, telepathy and remote viewing as an extension of current physics), and does It increase our understanding of the processes of accessing information at a "distance" in time and space? This addresses the question if we

can acquire of knowledge on the basis of transcendental consciousness, as it is supposed to be eternally preserved and nonlocally available even beyond space and time.

Many psychological factors that may play a role here have been demonstrated in well controlled experiments and meta-analyses of peer-reviewed literature. Telepathy, remote viewing, clairvoyance, precognition, presentiment and psychokinesis, (**see Fig.5)** have been experimentally demonstrated up to high levels of confidence, and invite to incorporate such information in current science, [**Pereira, 2003: Radin, 2006: Cardena, 2018**]. Many relevant investigations in this field have shown, that a large percentage of humanity has reasons to believe in ESP of some kind. This is often based on verified near-death experiences and clairvoyance capabilities. Credible measurements of paranormal phenomena in essence represent a form of worldwide experimental verification of the very deepness of reality.

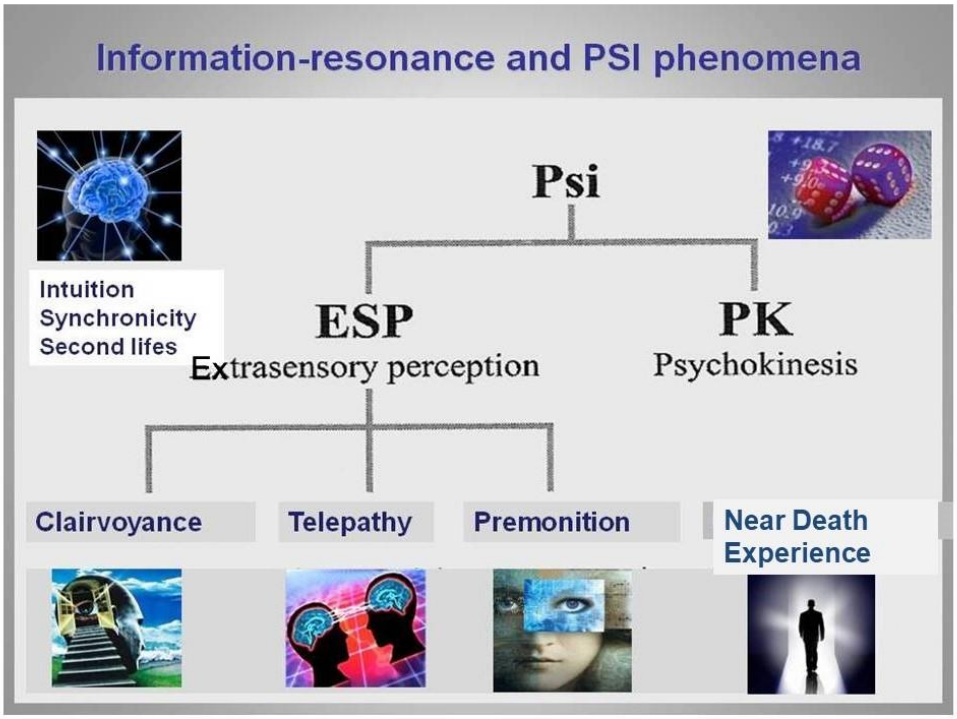

Figure 5: *Meta-analyses of literature revealed Psi phenomena and extrasensory perception on the basis of non-local information resonance (see* ***Radin, 2006****)*

Our premise provides a plausible basis for the manifestation of "mind", to be considered as an extended type of brain functioning that includes nonlocal sources of information. Humans can increase the extent of available nonlocal information incorporated in every day functioning with training and practice to open the gateway to such an extended reality, [see **Meijer et al, 2020**]. Many others naturally do so without knowingly focusing their transcendental awareness, such as when experiencing intuitive impressions, as a (sometimes intense) sudden "knowing" in their daily life or during insightful scientific research. Other examples are the atypical awareness of young children with talents or knowledge beyond their experience as well as documented cases suggestive of reincarnation. [**Stevenson, 2008).**

Since our brain, anytime, is seeking the most optimal actual representation of personal reality, it seems to operate not only by retrieving stored short- and long-term memory information, but is also constantly mirroring this information in relation to potential future states (predictive coding). In this respect the earlier mentioned advanced wave modalities of Wheeler and Cramer (**Fig.3),** could play a role, and one could even speculate that traces of such probing processes could become conscious, especially in an emotional context related to an intense attention aimed at a strongly felt connection with another person. In this framework capabilities of premonition and clairvoyance (**Fig.5**) could emerge into useful and sometimes crucial information.

If our guided resolution of indeterminacy theory is confirmed to be plausible and further pursued more deeply, it should provide additional insight in how non-physical influences induce anomalous physical changes.

Regarding Energy in the Universe

Although, the interpretation of historically derived laws of conservation of energy, in thermodynamics in particular, are based on a "closed" and entropic physical system, a "blinking" universe defined by us, is "open" (from a physics standpoint) in between the blinks.

Thus, when the blinking now's or conscious instants are considered as operating in an open system, some of the *conclusions* derived from current physics may deserve another look. For example, the energy relationships represented by current physical law, may also be understood as the processing of energy sources (kicks) derived from the zero-point energy field. This type of energy was proposed to create the property of inertia within physicality, as described in depth by Haisch [**Haisch, 2006**]. The present blink concept also invites more thought to be given to the Dirac Energy Equation [**Dirac, 1930**] that was derived as an extension of the wave equation as embedded within the primary characterization of the quantum world.

The present theory also includes the possibility that physicality retains access to prior blink states, a view initially held by Dirac as the negative energy states of his equations [**Vannini, 2004**]. This view has also been supported by William Tiller [**Tiller, 2009]** and others. This possibility would also be consistent with the recent conclusion of a group at the Perimeter Institute for Theoretical Physics in Canada [**Boyle 2018**], regarding a theory of an anti-matter universe as a mirror image in a CPT symmetry-compliant-nature of the physical universe. The negative energy solution of the Dirac energy equation is also the basis for how Quantum Field Theory characterizes antiparticles and the whole idea of anti-particle/particle annihilation [**Feynman 1949: Russell, 2002: Meijer 2012, 2019**].

Returning to the schemes in **Fig.1 and Fig.3**, it is implied that the creation of "collective now's" provides a continuous flow of information into the entire universe. This may not only be due to the knowledge produced on our own planet (as now reflected in the ever-growing databank of Internet, [**Meijer,2015; 2018]**)), but also by the presumed intelligence on millions, if not billions, of other planets as represented by other (advanced) civilizations in the cosmos, [**Meijer, 2012**] Implicit in the harmonic processes of formation of collective "blinks of now", is the emergence of entanglement, in concert with the creation of spacetime itself. Also, the hypothesized universal consciousness, potentially related to the zero-point energy field, can be seen as actualized by the earlier mentioned back reaction of quantum information flow. If we go along with the ER=EPR conjecture on the formation of space-time through entanglement **(Van Raamsdonk,2010; Susskind,2013)**, this flow of entangled information may be instrumental in the ever-growing expansion of the Universe in an accelerating mode. It may have been even crucial in the hyper-inflation of space after the very start of the universe, since the highly ordered initial information at that time was unfolded in a sudden but somehow fine-tuned entropic burst.

The present ongoing expansion of spacetime has been ascribed to the repulsive dark energy force representing the physical expression of the assumed cosmological constant. In addition, the cumulating information in the universe can also be conceived as the steady buildup of energy in an entangled state. The recent concept of **Verlinde, 2016,** who earlier proposed that dark energy/matter could have an informational holographic background, would be very much in line with this contention. Therefore, we submit that the basic process of wave guided blink formation and thus the creation of novel information on the Planck scale, does not only lead to the integration of the connective force of entanglement, but also to the *implicit expansion of spacetime* itself, including its informational content as registered in the zero-point energy/dark energy field, (**Fig, 1**).

Elementary cycles theory (ECT) of [**Dolce, 2017**]**,** postulates that every elementary "particle" of nature is characterized by persistent space-time periodicity, that is intrinsically determined by their mass. This principle follows directly from wave/particle and matter/anti-matter relations in both quantum mechanics

and relativity. In ECT the Planck energy spectrum is interpreted as a harmonic like spectrum of a mass-less periodic modalities of fundamental time periodicity *T* (quantized energy: $En = nh\omega = nh/T$, discretized angular frequencies: nω, and time periodicity $T = h/E$), and every part can be regarded as an ultra-fast cyclic universe. Massive elementary particles are thus seen as the basic reference clocks of Nature that can mutually interact, leading to local retarded wave modulations. Such waves, according to Dolce, can, in fact, be interpreted as superpositions of spherical harmonics. It is claimed that ECT also accommodates electromagnetism, quantization of monopoles and describes anti-matter as negative vibrational modes, as well as explains superconductive properties. It seems also compatible with 4 spatial dimensions, derivatization of AdS/CFT and ER=EPR conjectures as well as geometrodynamics of bounderies as a justification of Holography [see also **Meijer et al., 2020d**}. We generally agree with this type of time-ordering trough scale invariant interaction of such elementary clocks to the flow of unidirectional time as treated above at page 5, a model that was also put forward in the relational emergent time flow of Rovelli et al. [**Rovelli, 2010**].

According to 't Hooft (**t' Hooft, 2018**), it is assumed that a theory describing our world starts with postulating the existence of sub-systems that, in a first approximation, evolve independently, and then are assumed to interact. It is suspected that our world can be understood by starting from a pre-quantized classical or "ontological" system. If time can be assumed to be discrete, the Hamiltonian eigenvalues would turn out to be periodic (cyclic). The author stipulates the time reversibility in the equations of natural law and quantum physics but refutes potential retro-causality. This is remarkable, since he is not only the very father of the holographic principle, but does not appreciate the fact that the Klein-Gordon energy/mass equation has both a positive and negative solutions. The latter implies that anti-matter travels from a future to past time direction. The presence of anti-matter is in line with the CPT (charge parity time) mirror-image of the universe (**Meijer et al.,2020 d).** Of note, both the theories of t'Hooft and Dolce, in fact favor a quasi-classical and quantum ontological interpretation of quantum physics, as in a primary form earlier suggested by David Bohm [**Bohm and Hiliey,1983, Bohm and Peat 2008**]

We suggested earlier that the fractal brain resembles a personal universe [**Meijer, 2014**] and that consciousness in the universe may be scale-invariant [**Meijer and Geesink, 2017**]. The latter does not imply a distinct *material* fractality in the cosmos, but rather self-similarity in the flux of information. Yet, a striking resemblance of neuronal networks and the cosmic web structures was suggested by ([**Vazza and Feletti, 2017**]:

-The observable universe contains 100 billion galaxies, while the human brain contains about the same number of neurons and non-neuronal cells.

- Visually, a computer simulation of the cosmic web and a cross-section of brain tissue have a similar structure of filaments (neurofilaments or condensed ordinary and dark matter) embedded with bodies (cells or galaxies). The cosmic web consists of all the stars, gas and dark matter in the universe.

- Both networks have similar power spectrum analyses: this measures the fluctuations of a structure, or as the researchers describe: *"it tells us how many high-frequency and low-frequency notes make the peculiar spatial melody of each image."*

- The cosmic web and human brain have a similar complexity. This is estimated by measuring the size of the smallest computer program that could predict the behavior of a network. In other words, "the entire life experience of a person can also be encoded into the distribution of galaxies in our universe," write the researchers.

This seems also in line with the possibility to conceive the universe as a neural network [**Vanchurin, 2020**].

Regarding Photons

According to the Special Theory of Relativity (STR) and in line with our blinking Standard Reference Frame, photons do not "speed" from one place in the physical world to another across the particular space-time interval. We submit that all change occurring in the physical world, is likely represented by photon wave/particles, reflecting an activity within the duration between the blink transition. That conclusion is also held by astrophysicist Bernard Haisch, [**Haisch, 2006**] in the form of the zero "time" of current physics.

As treated before, entanglement can also be better understood in the integral processing of blink states, in which all physicality becomes fundamentally wave entangled. In the inherent non-local conditions, conscious moments may also be referred to as being observational to each other. This in a process of transactional fitting with past and future states, as has been proposed by Cramer [**Cramer, 1988**]. As treated above, blinks as conscious moments could thereby form an entangled information network that can even explain the formation of spacetime itself according to the ER=EPR conjecture as earlier proposed [**Susskind, 2013, van Raamsdonk, 2010]**. The m*acro-entanglement* that is fundamental to our premise appears to have been confirmed, or at least suggested, by recent experiments of Simon Groblacher and colleagues [**Groblacher, 2018**], reporting quantum entanglement with 10 billion atoms. Within our concept, photons and/or phonons may be considered as instrumental in the "physical kick" between blinks to represent the connector variable "energy"

Interpreting the role of energy, represented in a "kick" from the quantum vacuum, also avoids the issue raised by Feynman [**Feynman,1964**] who was referring to this subject when he said, "It is important to realize that in physics today, we have no knowledge of what energy is. We do not have a picture that energy comes in little blobs of a definite amount". A blink "kick" as represented and understood in the above hypothesis, provides an ontological nature for energy instead of being a purely mathematical variable in historically evolved equations.

General Conclusions

Again, our interpretation of quantum indeterminacy is not incompatible with generally accepted physics equations describing observable and measurable physical change. It does however represent a major change to our interpretation of aspects of quantum mechanics. Importantly, the present premise provides a non-random, non-statistical, representation of physical cause and effect as well as an alternative to the measurement problem. It also offers a further characterization of Bohm's "active information" process. [**Hiley et al, 2005**], as to the explicative unfolding of physicality. In addition, it presents a direction for further understanding the "hard problem in consciousness" as framed by Chalmers, and a basis for resolving many issues presented within philosophy and physics, concerning the perception of time and space. Our premise suggests in particular how specific information within the interconnected nonlocal information sources may be selected to affect change "throughout space and time". The present premise thereby supplements a wide variety of related theories [**Bohm et al, 1987: Davies 1993: Haisch, 2006: Jahn and Dunne 2012: Pereira, 2003: Meijer, 2019, 2020**]. Additionally, time- *independent* "information creation and processing", such as proposed for ESP in general, and documented in the many near-death life panorama's, in addition to steadily growing evidence for the phenomenon of apparent reincarnation, are either supported or not necessarily prohibited by our concept.

Primas [**Primas, 2002**] earlier reported on an undivided and timeless primordial reality, conceptually very much in line with our premise. Breaking of symmetry in such a reality resulted in separated domains that represent our known mental and material worlds. Yet, these two aspects of reality, according to Primas, should still be seen as complementary in a supposed time entanglement.

It is yet to be established whether the present interpretation of fundamental aspects of quantum physics will provide some novel scientific visions. We hope that our premise of a guided resolution of indeterminacy will encourage new thoughts, and may catalyze visions of a greater reality that provides implicit meaning to our very existence.

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