THE QUANTUM PARADIGM AND CHALLENGING THE OBJECTIVITY ASSUMPTION

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ABSTRACT: Most interpretations of quantum theory fail to provide a fundamental, complete, self-consistent account of nature describing physical reality itself, as opposed to merely yielding predictions about results of experiments and observations. A paradigm providing a self-consistent foundation for quantum theory and a description of the reality it refers to, generalized to a worldview, is a Quantum Paradigm, where 'paradigm' is defined as structure of experiential reality. We assert that the fundamental obstruction in the quest for a quantum paradigm is the assumption of objectivity. The subject-object distinction, drawn within experience, has within the natural sciences degenerated into a dichotomy—an absolute split into separate realms—with scientists adopting the classical paradigm where the object pole of experience ("objective reality") can be studied independently from the subject pole ("the experiencer"), with a presupposition that this procedure yields a fundamental description of nature. In fact, the subjective is often eliminated altogether as a fundamental category, and reduced to an epiphenomenon of objective processes. We claim this objectivity assumption precludes a full comprehension and a paradox-free formulation of quantum theory. By challenging this presupposition, i.e. leaving the question open, a coherent understanding of quantum nature falls naturally into place, providing appropriate foundation for quantum theory and an associated world-view. The resulting Quantum Paradigm is "realist" in the sense that it provides a description of what is actually happening: namely the arena of all happening is Mind or Consciousness—from which mind and matter, subject and object, individual and collective, and time and space co-dependently arise. The subject matter of quantum theory then becomes the fundamental mind-function of distinction ("measurement"), resulting in information and its statistical correlations. The message of quantum mechanics is surprising: the basic components of objects—the particles, electrons, quarks, etc.—cannot be thought of as 'self-existent'. The reality that they, and hence all objects, are components of is 'empirical reality', of experience. *"The universe begins to look more like a great thought than a great machine."—James Jeans* Anomalous phenomena such as ESP and psychokinesis, collective consciousness, and synchronicity that are considered impossible in the context of the classical paradigm, fit naturally in, and can in turn provide evidence for the Quantum Paradigm. Spirituality and science are shown to be complementary approaches referring to the same reality, Mind, while each discipline retains its integrity. The Quantum Paradigm can be intellectually comprehended, as well as embodied: one can live in quantum reality. A good metaphor for this is "life as a dream": with no "real" objects as distinguished from experienced objects. Experience is "empty" of self-nature in the Buddhist sense, with everything interconnected and co-dependently arising. Experiencing the world by "embodying the Quantum Paradigm" is transformative, healing, and an antidote to alienation resulting from embodying the classical paradigm. Embodying the Quantum Paradigm and living in the Oneness of all creation can help humanity—increasingly lost in the materialism and individualism reinforced by our embodiment of the classical paradigm—and restore intimate connection and harmony with Spirit, Nature and fellow humans; we need such a transformation to survive and thrive in our technological society.

KEYWORDS: Quantum theory; Quantum Paradigm; Objectivity

> "We aren't going to have peace on Earth until we recognize this basic fact of the interrelated structure of all reality."
>
> —Martin Luther King Jr.

WHY WE NEED A QUANTUM PARADIGM

After a century, Quantum Theory remains an enigma: a uniquely successful predictive formalism in search of an intuitively clear, comprehensible, logically sound and self-consistent interpretation, with a concomitant philosophy and worldview—a quantum paradigm.

The original (Bohr) Copenhagen interpretation quantum theory was avowedly pragmatic: it merely allowed calculation of the probability of any possible outcome of any possible measurement on any specified micro-system, but provided no clue as to what was actually going on, as to what existed. Every attempt to locally model or picture such a micro-system in space and time—such that the model would behave in the way quantum theory predicts and experiment confirms—has failed. Bell's theorem and related developments have merely put the last nail in the coffin of such attempts to create a visualizable realistic model for quantum behavior, by proving its futility.

So what does quantum theory tell us about the nature of the world? If the classical paradigm and the classical experiential reality it gives rise to, fails to work outside a very prescribed realm, then what takes its place? What is the quantum paradigm, and the experiential quantum reality it can initiate, when embodied? What is the "ontology" (or its generalization) of the quantum paradigm? How does it relate to our experience?

To now all of a sudden meekly submit to the difficulties we have encountered in interpreting quantum theory, and sweep these essential questions under the rug by escaping into a positivist or instrumentalist position (as certain proponents of the Copenhagen interpretation have done), claiming that science is, and should have been all along, merely about predicting observational patterns; or even worse, to ignore the problem altogether and adopt a shut-up-and-calculate stance, does not satisfy us as natural philosophers.

We will show a more satisfactory approach, by simply adopting an empirical attitude (which recognizes that all theory primarily serves the purpose of making sense of experience), and assuming the validity, for any experimenter, of quantum theory as formulated in 1926—i.e. with collapse of the wave-function of a system upon its measurement by the experimenter, and unitary evolution of the system's wave-function, with no collapse, at all other times. That rejection of ad hoc departures from quantum theory, such as all real-collapse interpretations, as well as all no-collapse interpretations, already eliminates most—but not all—interpretations of quantum theory. The justification for this criterion for accepting an interpretation is the simplicity and beauty of quantum theory, as well as its universal applicability and the precise confirmation of all its statistical predictions to date. To modify quantum theory with ad hoc complications that modify its predictions without compelling experimental reasons, just in order to resolve the measurement problem makes no sense, given that the measurement problem and other related problems can be resolved without such modification.

In fact, we will outline how, starting from a simple observation about the nature of experience which leads us to refrain from presupposing objectivity, we are led compellingly, step by step, to a Quantum Paradigm which:

- resolves internal contradictions implied by the measurement problem and related paradoxes;
- provides an understanding of the nature of the reality that quantum theory refers to;
- helps us understand why experience-consciousness must constitute the fundamental aspect of quantum reality; and
- presents a fundamental challenge to the presupposition of randomness in conventional quantum theory—thereby providing a scientific framework for understanding anomalous phenomena and the associated departures from the predictions of conventional quantum theory.

THE NATURE OF PARADIGMS

A paradigm is a structure of experiential reality acting in the arena of the mind that tends to structure perception and conception. Paradigms come in hierarchies. A *fundamental* paradigm structures one's whole experience, leaving nothing exempt.

Assumptions, attachment, and identification are basic functions that the mind operates with to create its reality. Assumptions play a large role in determining the paradigm of which they are part. Challenging assumptions and replacing them with more workable ones has been demonstrated to play an essential role in the progress of science, and scientific revolutions. [Kuhn]

Presuppositions are implicit assumptions that are especially difficult to challenge because they seem obvious, and mostly even go unrecognized as assumptions. Even when presuppositions are explicitly recognized as such, they are usually presumed to be part of the way things "really are." The more fundamental a presupposition is, the more difficult it tends to be to challenge.

There is no absolute, paradigm-independent way to define the truth or falseness of a fundamental paradigm. Instead, paradigms work more or less well according to their own definitions and criteria of "working". Any proposition is defined by and has meaning within its particular paradigm, and so its truth-value, if any, depends on the paradigm it is formulated in. The same proposition or concept, expressed in the context of two different paradigms can thus have paradigm-dependent meanings, which may introduce misunderstandings in inter-paradigmatic communication. This is often expressed by saying that the meaning of concepts and propositions is contextual.

True inter-paradigmatic communication requires the ability to temporarily suspend one's paradigm while listening deeply and in a sustained fashion, in order to comprehend the others. Such listening requires great patience, tolerance, and open-mindedness.

Paradigms are called commensurable if they can be translated into one another. Many paradigms, including fundamental paradigms, cannot be translated into one another, and are thus incommensurable. In particular, the Quantum Paradigm (QP) is not commensurable with the Classical Paradigm (CP). In such a case, the second paradigm cannot simply be explained in terms of the first. Nor can it be considered to be a modification or enhancement of the first. A move from one to another paradigm is a discontinuous shift, a transformation.

Paradigm awareness is the awareness of one's own operating paradigm, which includes our own assumptions, and the mode of working of one's own mind. It is an essential skill our world will have to develop to achieve mutual understanding, and accommodation between seemingly conflicting opposites. Paradigm awareness is necessary to prepare for the peculiar challenge that shifting from the CP to the QP represents.

THE CONUNDRUM OF QUANTUM THEORY

Quantum theory faces a conundrum involving three major flaws: internal inconsistencies; no description of reality; and no inclusion of consciousness. When we view all three of these problems together we begin to realize the full scope of the problem of understanding quantum theory that we face.

Multiple, very diverse attempts to present "interpretations of quantum theory" over the past century have failed to make sense of quantum theory (QT) as descriptive of an objective physical reality with a coherent, consistent conceptual foundation capable of resolving inconsistencies and paradoxes. [Wheeler][Einstein][Selleri] Internal inconsistencies inherent in quantum theory (e.g. regarding the role of the classical world), paradoxes such as the measurement and "Wigner's friend" problems [Wigner] and non-locality without possibility of non-local signaling, can't be resolved in any satisfactory way with some classical presuppositions intact. This lack of resolution creates great unease in the quantum foundationist community, since there is no consensus nor ultimate form of quantum theory in which these matters are resolved. [Laloë]

As the founders of quantum theory recognized, QT deals with knowledge (information) about a system, and not with the system itself—in stark contrast to classical physics. And yet experience itself and consciousness (of which experience is a structure), has not been regarded as an integral aspect of quantum theory, which explicitly deals with observables of physical systems. Copenhagen quantum theory (QT) doesn't describe a quantum reality; instead it provides an instrumentalist account involving statistical correlations of measurements, without ever being able to consistently define what a measurement is *within the theory itself*. Neither instrumentalism nor positivism provides an acceptable basis for a fundamental theory of nature. Dirac, Heisenberg, Popper, and Russell either opposed the instrumentalist concept of "truth" in general, or its conventional post-World War II version in particular. [Prugovečki]

Despite growing evidence for the occurrence of anomalous phenomena, such as precognition or psychokinesis (PK), such matters are considered illicit by conventional quantum theory. A whole range of observable phenomena related to consciousness finds no satisfactory explanation in conventional quantum physics. Additional types of well-documented anomalous phenomena include: psi, collective consciousness, synchronicity, out-of-body experiences, and seeming survival after death. [Jahn]

And last but not least, consciousness is fundamental to quantum theory, yet has been systematically excluded from it since the 1950s [Marin]. Consciousness has thus remained an "outsider," providing us with the misleading impression that quantum physics can be understood without it. The situation since Schrödinger stated his concern that *'the world of science has become so horribly objective as to leave no room for the mind'* in 1944 has hardly improved. [Schrödinger]

EINSTEIN CHALLENGED A SINGLE ASSUMPTION, AND RELATIVITY FELL INTO PLACE

Our current impasse in the proper understanding of QT is as stubborn and basic as the one physicists confronted at the beginning of the 20th century, when viewing such seeming paradoxes as presented by the Michelson-Morley experiment. What was necessary to resolve that impasse was to identify and challenge the core presupposition preventing a physical interpretation of the Lorentz transformations. The core presupposition challenged at that time was the absolute nature of simultaneity—and Einstein's challenge of that presupposition led to envisioning special relativity and resolving that particular conundrum. While the Lorentz transformations didn't change, their interpretation transformed. [Swenson]

Our current situation with regard to our understanding of QT is similar. We propose that there is one core, seemingly true presupposition standing in the way of a proper understanding and interpretation of QT. The fundamental presupposition that has prevented decisive progress in the quest for a quantum paradigm is the most stubborn holdover from the CP: *the unquestioning assumption of objectivity.*

By saying we "measure the position of an electron," we presuppose the existence of electrons. Our very language traps us in that view. The electron, as quantum theory teaches us, may not have a well-defined position at all, except at measurement, but the notion that there *is* an electron whose position we have just measured remains unquestioned. We may be confused as to what that electron is, because it defies any space-time description, for example having a defined position only when we measure it. But we *are* certain it exists—as we are also certain that so does its position, or momentum, or spin that we are measuring at that moment. This assumption is the source of the quantum conundrum. It singlehandedly prevents a true understanding of what quantum theory tells us about the nature of reality. But if we question this assumption, what is going on?

All the aforementioned shortcomings of conventional understandings of QT can be seen to stem from interpreting all measurements/observations as being "measurements of an external, independently existing object."

CHALLENGING THE OBJECTIVITY ASSUMPTION MEANS ASSUMING *LESS*

Challenging an assumption means examining it, questioning it, looking through it, and re-considering one's current paradigm while simultaneously examining the new paradigm. It's crucial to note that challenging a claim doesn't mean denying it, but rather leaving the issue open for consideration. So, when we challenge the objectivity assumption, we are assuming *less*, rather than assuming something more, or something different. In this sense, our challenge of the objectivity assumption is unobjectionable.

When the presupposition of Objectivity is challenged, a coherent understanding of quantum nature falls naturally into place, providing appropriate foundation for quantum theory along with an associated worldview: the Quantum Paradigm.

SUBJECT-OBJECT DISTINCTION AND CARTESIAN DICHOTOMY

Scientists adopted the subject-object distinction, originally merely a polarization of the wholeness of experience introduced in Western thinking by Descartes, and in Eastern thinking by the Vedas and Buddhism, and distorted it into a dichotomy between two separate realms. The subject-object distinction polarizes ordinary human experience into a perceiving subject aspect and a perceived object aspect. In scientific practice, this distinction has degenerated into a dichotomy—a total split.

Scientists adopted the Classical Paradigm (CP) in which an assumption is made that the object pole of experience can be studied independently from the subject-object pole. Scientists often go farther than that, and reduce the subject to an epiphenomenon of objective processes, thereby effectively eliminating it from actual consideration. Current natural science, particularly physics, is built on that foundation—thus seeing itself as dealing only with the objective. The subjective is seen as a separate but co-equal domain (in the best case), but usually devalued either as epiphenomenal and reducible to the objective, or as "emergent" from the objective. Such an objective physics works only approximately, and only in a very limited domain.

DISTINCTIONS AND MEASUREMENTS

In his visionary original work, *Laws of Form*, Spencer Brown established mathematical laws of distinctions. Brown describes how distinctions and measurements are basic functions allowing us to distinguish amongst a given set by certain criteria. A measurement is thus a distinction. [Brown]

We challenge the objectivity presupposition by *not* presupposing the classical subject-object dichotomy. Not presupposing does not mean presupposing the opposite:

it means leaving the question open. We thereby presuppose *less* than objective physics does. The resulting physics deals with distinctions ("measurements") and their dynamic connections. There is no presumption that these distinctions in any sense refer to objects in an "external, objective reality," existing in space and time, but is open to the assumption that it might exist. When framed this way, there is not necessarily the expectation that "distinctions/measurements" are in an objective reality.

We communicate about our experience with words, mathematical concepts, and symbols—where symbols stand for ***distinctions***. Making distinctions in experience is a fundamental capacity of the mind. Labeling a situation in terms of all or a subset of the output of distinctions and their relationships we have applied to it, is called a ***description*** of the experienced situation. In this way we reduce the practically infinite, and ineffably rich experience itself to a finite description that we can think about, study, and communicate. The outputs of the distinctions are called ***information*** about the situation, with each distinction constituting one bit of information. What is inevitably lost in this process are qualities (qualia) and their essence as an intrinsic element of consciousness—their Dasein of presence; in this sense all descriptions, and theories built upon them are reductionist in principle.

A ***measurement*** is a formalized distinction that has to fulfill certain criteria in order to qualify. But *any* distinction we make in experience, such as making the statement, *"this is a car,"* is a distinction. Thus, information essentially resides in consciousness, and represents a symbolic representation of a set of distinctions that are consciously or unconsciously made in experience. Treating information as a mathematical abstraction is legitimate for certain purposes. But to forget that information is an element of experience, and partakes of its nature as a structured form of consciousness and awareness is a *fatal* mistake when attempting to penetrate the enigma of quantum theory.

RELATIONALITY, AND THE RESOLUTION OF THE MEASUREMENT PROBLEM ENABLED BY NOT PRESUPPOSING OBJECTIVITY

We now proceed to outline how not presupposing the subject-object dichotomy, but leaving it open, contributes to resolving the measurement problem. Quantum theory, when we take into account that it pertains to all phenomena, and apply it to ostensibly classical systems such as the measuring instruments and the bodies of observers themselves, treating these quantum mechanically—is plagued with a lack of self-consistency, manifesting in paradoxes such the measurement problem and the "Wigner's friend" problem. Essentially, the measurement problem consists of a seeming paradox:

> When an observer - measurement-apparatus system makes a measurement on a quantum system, then by the rules of quantum theory, the state vector of the quantum system undergoes a discontinuous "collapse". But when the measuring apparatus and the quantum system to be measured are instead considered as one larger quantum system—say as observed by a second observer—then according to quantum theory, no collapse occurs until the second observer observes the apparatus. The systems just become entangled, and more specifically, correlated. [Rovelli]

So a second observer O' observing an observer O -with-apparatus A observing the system S will, according to quantum theory, not observe any collapse (until O' observes the system O-A-S, even when O-A is ostensibly measuring S, and is therefore, according to O, collapsing. To resolve this seeming paradox, and make all these predictions of quantum theory applied to the two observers O and O' respectively consistent requires that any wave function of a system S be defined relative to the observer. Each observer has their own data (measurements) and their corresponding, different wave function. There is no universal or absolute wave function of a system, only one relative to each observer. When two observers communicate with one another and/or observe one another, that is of course a quantum measurement, too. The whole schema is consistent, and gives the usual QT predictions for any observer making any measurement. It resolves the bane of quantum theory, namely the measurement problem and the "Wigner's friend problem.

This is relational quantum theory, as originally developed by Carlo Rovelli in a beautiful paper, and it follows logically from quantum theory proper if we assume the validity of quantum theory, including the collapse postulate upon measurement, for all physical systems. [Rovelli] This implies a unitary evolution of system S's wave function relative to O, except when a measurement of S is made by O. The wave function of S relative to another observer O' who is not making a measurement of S at that time does not collapse. There are thus no exceptions to the unitary development of the wave function of S relative to O (except when O makes a measurement of S). In particular, there are no collapses (other than upon a measurement) due to gravitational interaction (Penrose), to conscious events other than O's measurement event itself (von Neumann - Stapp), to spontaneous collapses (GRW), or to interaction with macroscopic measurement devices (Bohr Copenhagen). All these latter approaches represent problematic ad hoc departures from quantum theory. On the other hand, there *is* a definite outcome of experiments, formally expressed as a relational collapse of the wave function, and that makes the many-worlds and many-minds interpretations problematic, and contrived (which is not itself an argument against a multiverse).

If we follow this logic and accept the relational nature of quantum theory, then relationality can be understood as a generalization of Einstein's relativity, namely from its original application to space and time measurements, to every kind of measurement. All measurement data and the wave functions constructed from that are now to be considered as relative (relational).

From the relationality of quantum theory, we also clearly recognize the epistemic, non-ontic nature of the wave function. There is no absolute wave function, valid for any observer, which would seem to be a prerequisite for an ontic wave function. The relational wave function is a construct specific to an observer, encoding information on a quantum system S available to the observer O at that time. The (relational) wave function of system S relative to an observer O "collapses" when and only when O takes note of the information gathered through the measurement; no other observer can collapse O's wave function, unless he or his apparatus has been observed by O, which is itself an quantum interaction. Since sensory perception (pattern-recognition) is a form of measurement, one can generalize that any observation (distinction) counts as a measurement. So what does this relational collapse "mean"? As Fuchs in his description of Qbism shows [Fuchs], it is simply a replacement of the previous wave function, which has to be substituted by a new one that now also encodes the new information gained by the measurement. So the "collapse" is better called a substitution, due to new information becoming available to O through the measurement.

But what is the nature of the "observer", and the observation? We have seen that the measurement apparatus, even when we include the body of the observer in with it, taken as quantum system, interacting with the to-be-measured quantum system, does not complete a measurement , that is does not establish a determinist value for the measured observable [Mermin]. But Rovelli presupposes and explicitly states that any quantum system can measure any other quantum system, so for him any physical system counts as an observer. This is not consistent with the indeterminate nature of quantum systems. As we saw, two such quantum systems upon interaction simply become entangled, they don't (discontinuously) collapse. The only candidate for the "observer" is a conscious mind, gaining the information through the measurement. The discrete measurement "event" (collapse) which selects a definite outcome of the measurement cannot be due to the physical system A-S), which evolves unitarily and supports no "events". So the measurement can only be the registration, within experience, of the actual outcome, which is a discrete event. In the classical paradigm, where consciousness and experience are of necessity epiphenomenal or emergent, such a conclusion, which assigns an independent and significant role in Quantum theory to consciousness qua information would be illegitimate, and we would have obtained a paradox.

But now we remember that we agreed to leave the question of the subject-object dichotomy open rather than presuppose it, implying that for each wave function representing an "object" of an experience/measurement we need to keep track of the subject of that experience, implying that for each object we also reference (index) the subject—although we had not yet explicitly emphasized that. So we now see that the subject-index is compulsory if we wish to resolve the measurement problem, which implies that we must change the status of the subject-object dichotomy from an "open issue" to "falsified". Objectivity in the most general sense, namely that one can consider an object as independent from being perceived, is falsified.

QUANTUM PARADIGM AND CLASSICAL PARADIGM RELATE DIFFERENTLY

The subjects of quantum theory—specifically the information they provide—are thus, empirically speaking, distinctions (measurements); quantum theory then yields statistical correlations between sets of this information.

We can, to some extent, consciously choose distinctions we want to apply to a situation—we can empirically decide which measurement we make. But in conventional quantum theory, we cannot usually choose the outcome of the measurement, which orthodox quantum theory attributes to “Nature.” [Stapp]

The Classical Paradigm also works directly with distinctions, but where we model distinctions as being properties of *real* (objectively existing) objects, and we get correct results from such models. We therefore tend to regard classical physics as describing an objective world, and distinctions as being real properties of real objects. From the perspective of the QP, this representation of the objectivity presupposition is described as reification: creating an object, where before there was only a pattern of experience.

In the case of QT, such an interpretation in terms of a local relativistic model involving objectively existing entities such as particles, waves, and fields can be shown to not be possible. Therefore we are required to interpret the theory explicitly as relating to distinctions, and *not* as properties of real objects. This shows that our original challenging of the presupposition of subject-object dichotomy and of the additional presupposition that a scientific description of experience only requires a scientific explanation of the objective actually is borne out. We can now state that the assumption of objectivity is falsified, and not merely, as we originally proposed, suspended. So distinctions must be regarded as having both a subject and an object pole.

Information is not objective, nor is it about objects: information intrinsically resides in consciousness. We may get away with ignoring that fact for some purposes, as many information theorists do when discussing quantum information.

In conclusion, quantum theory is a theory about experience, not a theory about "a world and its objects" "we" are experiencing. The assumption of a self-existent world (as opposed to a world we abstract from experience) is not compatible with QT. In other words, it can't be deduced that QT is a theory about the structure of experience itself.

CHARACTERISTICS OF THE QUANTUM PARADIGM

The quantum paradigm we propose has experiences—or more precisely distinctions-as-experiences—as its subject matter. These distinctions-as-experiences turn out to be the canonical "natural" foundation, in which QT as a predictive calculational theory is embedded: we call this paradigm the "Quantum Paradigm" (QP).

This QP resolves the conundrum of severe shortcomings of conventionally interpreted quantum theory we previously identified. The QP opens up new realms to study qualitative science in addition to quantitative science, in the sense that it relates directly to synchronicity and psi, in ways beyond what was originally envisioned for quantum physics and which have a mutually supportive synergistic nature.

In the Quantum Paradigm, the arena of all happening is (One) Mind or Fundamental Awareness, within which mind and matter, subject and object, individual and collective, and time and space co-dependently arise. Although we have not elucidated that here, the next step in the elaboration of the Quantum Paradigm is a transition from the relational perspective of individual minds to the nondual One Mind cosmology. Considering the self nature of the object is not at all the same as saying that the world exists in my mind (monistic idealism); because both the "I"/"mine" in that statement and "the world," arise together within experience.

In **idealism** the self-nature of the subject is not challenged.

In **materialism** the self-nature of the object is not challenged.

In **dualism** where both subject and object have a self-nature, the nature of the relationship between them is ill-defined.

The **Quantum Paradigm** is none of these.

PSI, SYNCHRONICITY, "ANOMALOUS" EFFECTS AND THE QUANTUM PARADIGM

The Quantum Paradigm qualitatively predicts anomalous effects and the conditions that encourage them to transpire. When we verify the occurrence of anomalous phenomena (e.g. in parapsychology) without having any framework to understand them, they remain anomalous phenomena curiosities. When we have a paradigm that claims that reality is mind-like, most people may find that hard to believe, even if there is sound reasoning behind it, as there is in this case. But when we have both of these fields, a mutually supportive synergistic effect takes place with anomalous phenomena predicted by the QP, thus providing key experimental evidence for the QP—especially since no other quantum interpretations predict it. We thus expect to see examples of direct evidence demonstrating intrinsic inseparability between the physical world and consciousness. [Jahn]

The QP provides a valid explanation for anomalous phenomena, as observed in the way instantaneous signals can be sent. Psychokinetic (PK) agents appear capable of influencing a random number generator (RNG), and knowledge of the mechanism does not determine nor help success. The success factor in such experiments is that a subject or PK agent intends the end result, and the specific change or manner by which results come about is unimportant. Unlike in conventional quantum theory where it can be shown you can't send a signal faster than light, a simple EPR signal influencing a RNG in one place influencing the spin in one direction automatically produces response in a space-like region—so an instantaneous signal *can* be sent.

The QP also explains another longstanding mystery of quantum theory: non-locality, as in EPR. Since events fundamentally occur in consciousness, and not fundamentally in space and time, the non-locality displayed in EPR experiments and quantified by Bell's Theorem are now seen to correlate between seemingly unrelated events when viewed in the context of the Quantum Paradigm.

EMBODYING THE QUANTUM PARADIGM

Any paradigm can be reduced to a conceptual structure affecting experience in an intellectual, cognitive way. But a fundamental paradigm such as the Quantum Paradigm can also be *embodied*—i.e. life is experienced fully in terms of that paradigm. The mind's processes use the cognitive maneuvers inherent to the QP, follow its logic, translate sensory perceptions and events cohesively in accordance with its fundamental perceptual map so that, *"to experience is to construct, in each modality and without exception."* [Hoffman]. Embodiment of the Quantum Paradigm can thus be an experiential transformation, with enormous consequences. At that point we are *living* in quantum reality, and realize that contemplatives of all wisdom traditions have already arrived there on another path.

The relationship between an embodied paradigm and the nature of our experience could be crudely likened to a focal setting of a lens and the image it projects [Tulku]. For example, most people in our culture—including most physicists—embody the classical paradigm, at least as far as the "physical world" is concerned: they live in a classical world.

A good metaphor for the embodied Quantum Paradigm can be drawn from the realm of dreaming. When we dream without awareness that we are experiencing a dream, we implicitly interpret objects of our experience as real, in the classical sense, as we are conditioned to from waking life. But if we "wake up within a dream" (lucid dreaming) and realize that we are dreaming, we reinterpret things in a completely different way—with self and non-self, subject and object arising co-dependently within experience. Analogously, the QP says there are not two versions of something—the experienced version and the objectively existing version. There is no-thing 'behind' the experience.*"The world is given to me only once, not one existing and one perceived. Subject and object are only one."* [Schrödinger]. Buddhists and Vedic practitioners have recognized this, and refer to it as the emptiness of experience, or the non-existence of self-nature of objects (*sunyata*). [Cox]

Starting out from having been deeply conditioned in the CP, we can find the process of learning how embody the QP challenging. It requires engaging in experiential practices, with patience and perseverance. It is the equivalent of the meditative and contemplative practices to attain realization of high spiritual teachings. It requires much more than simply achieving intellectually understanding the QP.

When we embody the Quantum Paradigm, spirituality and science can thus be integrated, showing their relatedness and compatibility while leaving each discipline intact in its integrity.

Benefits of embodying the Quantum Paradigm include that it is transformative and healing; even at modest levels, it serves as an antidote to the alienation that typically follows from embodying the Classical Paradigm. The crisis and apparent breakdown that humanity and Earth's ecosystems are now experiencing is partly a consequence of the reign of the Classical Paradigm. We need to collectively undergo a transformation to survive and thrive. Because the QP is rooted in science—in fact the most fundamental science—it may influence the world more than if it were seen as spiritually grounded, given the influence science exerts over our culture's thinking.

CONCLUSION

The current impasse in properly understanding quantum theory (QT) is as pivotal, if not more so, than the crisis of physics generated by the Michelson-Morley paradox and other related issues facing physicists at the beginning of the 20th century that led to special relativity. And it can be similarly overcome by challenging one key assumption—in this case objectivity: the subject-object dichotomy.

We do not a priori preclude a subject-object dichotomy, but instead leave the question (temporarily) open. We then demonstrate that the measurement problem of unmodified Copenhagen quantum mechanics can only be resolved by relationality (a generalization of relativity in which the wave function of any system is specific to the observer of that system)—which is natural if we do not assume a subject-object dichotomy, but is precluded if we do. This closes the circle, and we can now confidently conclude that the validity and consistency of Quantum Theory demands that the subject-object distinction within experience does not entail a dichotomy, that the object pole cannot be treated on its own as independent of the subject, and that this state of affairs finds it expression in the relational nature of quantum theory. And this demonstrates that the wave function is epistemic, not ontic, while reaffirming that quantum theory is a theory of experience, not of purported objective reality. But while quantum theory is therefore not compatible with physicalism (based on objective reality), neither does it support a purely subjective reality (idealism): because subject and object, as we have seen, are "one"—intimately related and inseparable, much less reducible to one another. Physicalism obscures the subject, idealism obscures the object, and both are therefore fundamentally flawed.

It can now be seen that the aforementioned shortcomings of conventional understandings of QT stem from interpreting, just as classical physics did, all measurements/observations as "measurements of an external, independently existing object." So, for example, an "electron wave function" (a mathematical object) is implicitly interpreted as yielding the probability of any subsequent measurement of "the electron" (a purported physical object). The fact that such a purported physical object lacks the definite physical properties any physical object should have, until "it" is measured does not seem to deter us from constructing our narrative and sense of reality from "objects", even when talking about quantum theory.

The Quantum Paradigm (QP) we propose has experiences—or more precisely distinctions—as its subject matter. It operates within Consciousness. Working within this paradigm resolves the four flaws of conventionally interpreted QT (internal inconsistencies and paradoxes, no description of reality, inability to describe so-called anomalous phenomena, and a fundamental need to include consciousness), while maintaining in its entirety the formal structure.

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