

# The Quantum-Mechanical Frame of Reference

## Part 3: The New Enlightenment

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Abstract: As shown in Part 1, quantum mechanics defines the dynamics of two quasi-autonomous domains. The linear dynamics operates solely in the objective physical world of the standard worldview, while the collapse dynamics operates solely on the inside-view world of the individual, a class-of-worlds-as-a-world. This resolves the issue of collapse, demonstrating it is an ontologically real phenomenon for the individual on the inside view, despite having no correlate in the objective physical reality. Phenomena impossible in the objective physical reality of the standard view occur naturally in the world superposition. Because the determinacy of the effective physical environment is defined solely by the record of observations, the addition of each observation alters the physical frame of reference: effectively, on the inside view, the collapse dynamics operates. Everett's (1957) formulation is profoundly validated.

For better or worse, the implied phenomena are isomorphic to certain myths and legends. Confirmation bias means observations are modified to fit expectations, but in this context such alteration changes which version of physical reality becomes real for the individual. In effect a different version of the consistent history is realised. This is here termed interactive destiny. Mitra (2008) explains the quantum mechanics of such a process. Additionally, the third-logical-type phenomenon of the moving frame of reference described in Part 2 means the immortality described by Moravec (1998) applies without question; and due to interactive destiny, karma effectively operates also, meaning successive lives are defined by the history to date. Thus there is a potent morality inherent.

However fantastical, there is an extraordinary prize to be gained from engaging with the new paradigm. The inherent morality resolves major global problems. The human race is showing an increasing propensity for global self-destruction, and the only known remedy, as proposed by King (2006), has proven totally unattainable. The new paradigm, however, produces exactly the requirements he defines, and the issues are resolved.

# 1 Introduction

In the light of modern physics, the nature of physical reality seems obvious: a decoherent, quasi-classical world. However, the paradoxes accompanying this assumption are severe and seem intractable. As demonstrated in QBism (Fuchs et al., 2013), these are simply resolved when an altogether different type of domain is inferred: determinate solely where observed. As shown in Part 1, the ontology of such a world is inherent when the protagonist of the observation dynamics is taken to be the state of the memory in Everett's formulation, rather than the physical observer. The physical reality encountered by such an entity is the superimposed sum of all worlds in which this structure of information is instantiated: a 'world superposition'.

The term observer is here reserved for the physical entity that makes observations, as defined by Everett (1957, p. 457): in humans the body-mind. The term individual is used to refer to the state of the memory, which he defines as the record of observations. As described in Part 1, in human observers the integrated synthesis of the record of observations forms the perceptual reality, the representation of the world observed. This is a three-dimensional field of information, mentally projected onto the physical environment, here the 'world hologram'. Tegmark (1998, p. 23) calls this the 'inside view' of the universe, as quoted in Part 1.

The world hologram is present in a large number of quasi-classical worlds, and the effective physical environment of this entity is thus their superimposed sum, here the world superposition. It is literally a many-worlds reality. This domain is a 'class-of-worlds-as-a-world', a second-logical-type phenomenon, a completely different type of thing to the quasi-classical world

This world operates exactly as QBism describes: it is by definition indeterminate except where observed, as demonstrated in Part 1. Thus the determinacy of the resulting world is defined by the world hologram; and *effectively*, on the inside view, collapse does occur, as each observation is made. It is the properties of *this* type of world that are revealed in quantum physics experiments.

As described in QBism, this type of world is personal, meaning idiosyncratic to the individual. The further implications are yet more surreal. In a world defined solely by the record of observations made, deliberate alteration of the record results in change of the effective physical environment, as demonstrated by Mitra (2008). This is not possible for a human individual due to the nature of the memory, but a related phenomenon is in constant operation. Confirmation bias means that observations are altered before being experienced and added to memory; and in this type of world the individual is thereby defined as existing in the version of the world in which the reality of the altered observation is defined in the consistent history of the world.

The ramifications are considerable, and of immediate relevance to everyday life. Given the above, certain traditional mythical concepts are found to have a scientific basis in the new physics. In particular, as described in Section 2, expectations act as

strange attractors in the many-worlds reality. Since expectations induce confirmation bias which gives rise to change of the probabilistic destiny, producing a positive feedback system, mental processes are critical in a manner almost unimaginable.

Furthermore, as described in Section 6, a direct result is an inherent morality. Happily, as described in Section 7, this provides the solution to the ills of humankind put forward by King:

Any durable solution to [humanity's] external and internal problems can only come from evolution beyond the egoism that motivates every individual. (2006, p. 22)

Precisely this effect is produced. In a personal world the effects of actions in the world will always be borne out on the originator eventually in one form or another. In other words, as shown in Section 3, karma effectively operates. There is, however, no deity here or judgemental principle. As held in mainstream Buddhist thinking, the phenomena are simply and solely the mechanics of the universe in action. Given this as a real phenomenon, egoism is revealed as inherently self-defeating.

Certainly, there is precious little evidence for this to be seen in the world. However, another great myth is shown to be true also. As shown in Part 2, the experiencing consciousness is necessarily a property of the universe, as held by Planck (1931) and Schrödinger (1956) among others. In this case the immortality described by Moravec is a certainty. When we die:

We lose our ties to physical reality, but, in the space of all possible worlds, that cannot be the end. Our consciousness continues to exist in some of those, and we will always find ourselves in worlds where we exist and never in ones where we don't. (1998)

The personal world spans lifetime after lifetime. However, it is essentially a closed system in logical terms which means that the whole of the karma takes effect in the transition to the next lifetime, as described in Section 6. In this light the only sane life position is enlightened self-interest. The only right actions are those that are not to the detriment of others. A moral structure akin to that of traditional religions is therefore inherent in the way the world operates, but there is no dogma.

Here it is proposed the new paradigm should be swiftly adopted if the human race is to survive the numerous self-induced global catastrophic risks we are facing. While the general assumption is that these will somehow be managed, the evidence from cosmology strongly suggests the human race will not survive for much longer. According to Whitmire (2017), given the reference class of all extant technological species in this galaxy, and its emptiness, humans are highly likely to become extinct shortly. The makings of Armageddon in all too many ways are certainly clear to see. The new paradigm resolves the issue in our favour, uniquely if Whitmire is correct. The self-induced global catastrophic risks are resolved by the evolution beyond egoism produced by a full understanding of the implications of the science.

## 2 Interactive Destiny

As shown by Mitra (2008), in a world defined solely by observations, the deletion of an observation causes the individual to exist in a different version of the quasi-classical world, a different 'sector of the multiverse'. In other words, this is a parallel version of physical reality, one in which the observed events did not take place. He gives the case where an individual observes a planet-destroying asteroid inbound, but then deletes the observation, and thus exists in a different version of the world, one in which such imminent catastrophe is of ordinary, very low probability.

Such specific memory erasure is not possible in the human neural system with its holistic and redundant nature, but a related phenomenon is at work. Expectations give rise to confirmation bias (Lord et al., 1979), resulting in observations being filtered and edited before being added to the record of observations. In the many-worlds reality, with the determinacy defined solely by the record of observations, this means the individual becomes defined as existing in a different version of the world than would have been the case if the observation had not been modified.<sup>1</sup> In other words, bias on observations results in bias on the trajectory of the time evolution of the quantum state of the effective physical environment of the individual. Bizarrely, as a result of the bias, the individual lives in a version of the world where the biased observation represents the events of the decoherent history of this physical world. In technical terms, the trajectory in the quantum concept of time, described in Part 2, is altered.

Since the bias is induced to fulfil expectation, and the observation is modified to give confirmation, this version of the world is one in which some kind of confirmation of the expectation has just been given. As a result, given the Bayesian definition of the many-worlds reality, as described in Part 1, the expectations are more likely to be experienced as being fulfilled in the future. Expectation is also reinforced, increasing the likelihood of further confirmation bias. Thus expectations act as strange attractors in the system.

## 3 Information

Naturally, this phenomenon is deeply at odds with our natural intuitions about the world in the current paradigm. Here it is essential to note that the world hologram is an information system, and the effective operation of the collapse dynamics is purely an information process. This follows directly from the quantum concept of time described in Part 2. As Deutsch (1997, ch. 11) explains, this defines the static array of all possible states of the physical world.<sup>2</sup> As Barbour (1994, abs) states, the wave equation gives

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1 Naturally, however, discovery of having made a mistake is also a future possibility.

2 Deutsch (1997, p. 278) attributes the origins of the quantum concept of time to DeWitt, and the formalisation to Don Page and William Wothers in 1983.

the probabilities for each possible static relative configuration of the complete world. Deutsch dubs these snapshots. As explained in Part 2, Everett's (1957) formulation describes the actual process that corresponds to the movement of the frame of reference from one snapshot to the next: this is effected by the addition of the current observation to the record of observations. Clearly this is an information process. This explains the great mystery of collapse of the wave function.

As is increasingly acknowledged, there can be no collapse of the wave function in the physical reality defined by the linear dynamics. That is the core of the measurement problem. Nonetheless, it seems ludicrous to assume that the internal process Everett defines in any way affects physical reality. Naturally, it does not, but in effect, i.e. on the inside view, this is exactly what happens. As described in Part 2, the moving frame of reference passes from one snapshot to the next. The net result is an information process: the addition of the observation to the world hologram. This produces exactly the dynamics defined by Everett: there is the *appearance* of collapse, in physical reality, as each observation is added to the record of observations. This is how change of the quantum state is effectively enacted in the static physical universe.

The net result is therefore logically analogous to information processing in a solid state system, but the result is the effective updating of the determinacy of the effective physical environment of the individual, such that the observed events are determinately the case. In this context, modification of the critical data in the system will inevitably alter the unfolding dynamic pathway of the collapse dynamics. Not, however, by changing anything in the objective physical world: the physical reality does not change. What is changed is which path the moving frame of reference is likely to take through the branching possibilities of the space of all possible worlds.

The system that operates the collapse dynamics is analogous to a universal DVD in which all possible frames – snapshots - are defined. The transition from one snapshot to the next is defined by the change required to produce the next one, a process logically identical to the inter-frame compression of ordinary movies. In the effective change of frame of reference from one snapshot to the next, the change is the addition of a new observation. This naturally changes the physical state of the system, effectively, because this is the addition of a new correlation with the physical environment.

In this type of system, alteration of the observation is altering the transition that results in the next snapshot. The vital learning is that the individual is not entirely irrelevant to which version of events is likely to be experienced as taking place in the world at large. Effectively, and *only* effectively, a degree of influence is available here. By visualising objectives and desired outcomes, expectations are induced.<sup>3</sup> Thus strange attractors are produced in the world of the inside view.

A number of modern myths about being able to arrive in a desired version of the world, involving events one could not possibly have induced by ordinary means, are

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<sup>3</sup> As has been confirmed in medical research, "... positive verbal suggestion and imagery successfully induced positive expectations" (Peerdeman et al, 2015).

potentially given credence. Equally, strong attention to negative, potential, world scenarios is revealed as deeply counterproductive. Contemplating worst-case outcomes is liable to generate strange attractors that would result in such outcomes being more likely to be encountered in reality. Since worrying about negative futures is a powerful trait in standard human psychology, awareness of this principle can lead to better experiences in life through changing mental habituation.<sup>4</sup>

In this context, one would also expect to see a phenomenon in operation which would enact the principle known as karma. Observations of the actions the individual performs tend to become increasingly powerful unconscious expectations, generating strange attractors, and thus leading toward versions of the world in which actions of this nature are increasingly likely to be encountered. No mysterious agencies are involved. It is just that in effect, in the personal world, expectations, conscious or otherwise, produce strange attractors that bias the version of events likely to be encountered.

## 4 Consciousness Continues

As shown in Part 1, the solution of the great paradoxes of quantum theory lies in second-logical-type phenomena. In Part 2 it is shown that the paradoxical phenomena of special relativity, the passage of time and the Now, are simply explained by a universal, third-logical-type phenomenon, the moving frame of reference. Clearly, the experiencing conscious supervenes on the moving frame of reference, and it is here taken to be the subjective attribute of this universal phenomenon. As Weyl states:

The objective world simply is, it does not *happen*. Only to the gaze of my consciousness, crawling up the life-line of my body, does the world fleetingly come to life. (1949, p. 116)

This understanding has a further highly significant implication. Given that this consciousness is a property of the unitary system, as described in Part 2, the individual is effectively immortal. As stated by Moravec, quoted above, in the universe of all possible worlds there is inevitably a version of the world in which there is a logical continuation of the individual's experience of reality. So the experience of death in this world leads straight on to the experience of life in the next world. It is a nice idea, but in the absence of an explanatory principle for *continuity* in consciousness it seems tenuous. Just because worlds exist in which the experience of the individual is duplicated, it seems a major leap to imagine that one of these will actually be experienced after death. Why should the experience of a different world follow on from the last experience in this one, however similar the experiences might be?

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<sup>4</sup> Naturally this does not mean never taking thought for the future, but simply not dwelling on what might go wrong, the classic problem of chronic worrying. It is a prescription for revising mental habituation rather than radical change of life management.

However, given that the experiencing consciousness is a universal function, contextual to physical reality, this follows automatically.

Applying Moravec's dictum to the world of Weyl's statement, as the gaze of consciousness arrives at the end of life line of the body, it simply passes to another life-line somewhere in the space of all possible worlds. The moving frame of reference is to the moments of the life-line as the virtual frame-gate of the hypothetical universal DVD is to the frames of the movie in sequence. When one chapter of the movie ends, the projector seamlessly begins the next one.

The whole conjecture follows logically from applying the concept of the moving frame of reference to the quantum concept of time. As described above, given the moving frame of reference required to bring the dynamics of physics to life, Everett's solution is clearly the explanation of the paradox of the measurement problem. There is the appearance of collapse as the moving frame of reference of consciousness passes from one snapshot to the next. Furthermore, as stated by Deutsch (1997, p. 278), it is fundamental to the quantum concept of time that other times are just special cases of other worlds. Technically, therefore, the jump from one snapshot to the next, resulting in the appearance of a small increment in the changing of a specific world, is no different in kind to the jump from one version of the world to a different one in the space of all possible worlds, here the 'Moravec jump'. Thus in experience there is the transition from one life-line to another.

In both cases the effect is simply that of making a specific observation, which alters the world hologram, and thus the quantum-mechanical frame of reference, the quantum state of the effective physical environment of the individual.

In this case Moravec's concept must be correct. Given that the progression through snapshots is a real phenomenon, as is constantly experienced, when the only possible next snapshot is in a different worldline, that is what is encountered. The sequence in experience automatically jumps to a different life-line in the space of all possible worlds. Thus, given consciousness of this nature, death cannot be the end of conscious experiencing: the experience of life always continues. Again, certain principles of traditional religions are supported, but without the dogma.

## 5 Life After Death

The thought experiment makes more sense when arrival in a different worldline is given a feasible explanation. As Deutsch states, we will soon have the technology to make complete, functional human bodies:

Illness and old age are going to be cured soon – certainly within the next few lifetimes ... by creating backups of the states of brains, which could be uploaded into new, blank brains in identical bodies if a person should die. (2011, p. 455)

Whatever happens to our particular version of life on Earth, this must inevitably happen somewhere in the space of all possible worlds. Individuals are 're-sleeved' as it is called in the Netflix drama *Altered Carbon*. Equally, the technology must eventually be used to create completely new people, new bodies complete with minds and characters initialized at random. In this case there is a version of this event in which the record of observations is identical to that of a dying individual in a different worldline. Since the initialisation is random, in the space of all possible worlds there has to be a version of this event that applies for every possible conscious individual.<sup>5</sup>

A great myth is elucidated here. The world hologram provides a logical and scientific definition of the soul. The world hologram is effectively continuous not only in the transtemporal sequence of moments in everyday life, but also from one lifetime to the next. In the Moravec jump there is full continuity. As with the transtemporal identity passing from snapshot to snapshot in ordinary life, in the Moravec jump the world hologram is identically the same from snapshot to snapshot apart from one new observation made: otherwise it would not be this individual in the new situation.

Given that the world hologram is the whole individual on the inside view, this is true immortality. As described in Part 1, the world hologram defines and subsumes the functional identity. It is the sole determinant not only of all of the character, viz. values, beliefs and expectations, but also the algorithms for decisions, and the attributes of programs for rendering this world hologram. Thus the individual waking up in the new body is the whole person on the inside view. A longstanding myth with apparently mysterious and even religious overtones is found to have a simple technical basis: the soul is simply the world hologram.

## 6 Inherent Morality

In this light there is a powerful inherent morality. If the science is telling us that karma is effectively a real phenomenon, living at the expense of others is directly counter to the individual's own best interests. Clearly, this is hardly supported by observation, there being no shortage of examples of people who do terrible things to others with apparent impunity. In the Moravec jump, however, the whole karma would take effect all at once. Awareness of this destiny creates a very different sense of the future, producing the kind of sense of responsibility once induced by religions.

In the space of all possible worlds, every possible variation of a world in which a dying individual might experience reawakening must exist. In the absence of any other criteria, which world will be experienced must presumably be the one with the most

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<sup>5</sup> Naturally, the standard concept of quantum immortality also operates: at any moment where death was a possibility, there would be a non-terminal next moment also, and since this is all there is to experience, this is what gets experienced. However, as survival becomes increasingly improbable, presumably exponentially, a point is reached where the Moravec jump is more likely.

precise fit with the world hologram. Going by Bayesian probabilities, the more similar the principles and tendencies in a given world are to the world hologram of the individual, the more likely that world is to be experienced next at the point of death. This would mean all the tendencies in reality defined by the world hologram, the karma, would be expressed in the way this world works, and the kinds of things that are likely to happen to this person. Another great myth, of going to heaven or hell in the next life, based on how the individual treats others in this one, has a foundation in an entirely natural and scientific phenomenon.

This demonstrates there are deep and direct benefits to a humanitarian way of life inherent in the structure of reality. In this light, not to live in accordance with this principle would be self-destructive madness in the long term if not the short. Enlightened self-interest, as opposed to raw egoism, is the only rational life position. This, however, has none of the connotations of moral absolutism, an objective standard handed down from on high. "Do as you would be done by" is simply the practical approach to generating strange attractors that benefit the individual in every way. The opposite type of action is constantly compromising the tendencies in the personal world toward disaster.

In the current paradigm, enlightened self-interest, serving one's own interests by benefiting others, seems to be just an ideal way to organise a cohesive culture. In the personal, many-worlds reality, however, this is also how to operate a scientific principle in the holistic maintenance and benefit of the world of this individual. This is karmic health and safety.

On this view, life is the potentially endless time-evolution of the holographic field of information defining the world. This is the soul, also called the higher self as described in the Appendix. In the new paradigm, benevolence is highly affordable because there is all the time in the world. The game of life is a considerably greater in scope than has been appreciated, and this realisation makes a mockery of overly mundane concerns and inconsiderate, isolationist pursuits.

## 7 Quantum Mysticism

It may seem deeply suspect that the most enduring mythical concepts of our great traditions are neatly explained as valid scientific principles expressed in classical language. However, since natural science has been one of the great abiding preoccupations of human civilisations, it should not seem too extraordinary that certain principles of deep significance to all individuals should have been discovered by what would now be regarded as alternative methods.

The great difficulty is that the myths are generally understood to address imaginary beings and principles, phenomena that clearly have no reality in the physical world. This, however, is the whole point. These are phenomena that operate in the context of

the information processes that exist only at the second-logical-type level of the system. The bizarre revelation is that on the inside view these phenomena are not only real but effectively causal.

Granted, it is tempting to dismiss out of hand attempts to find some kind of science in the myths. Dawkins splendidly lampoons dippy oversimplifications:

Quantum mechanics, that brilliantly successful flagship theory of modern science, is deeply mysterious and hard to understand. Eastern mystics have always been deeply mysterious and hard to understand. Therefore, Eastern mystics must have been talking about quantum theory all along. (1999)

The pseudo-logic is amusing, but the statement is peculiarly close to the truth. In retrospect the reason is obvious why the new paradigm, the worldview defined by the new physics, is deeply mysterious and hard to understand. It requires the missing lexicon: logical types as ontologically fundamental. Equally, great mystics have always been deeply mysterious and hard to understand because they are addressing attributes of the paradigm we can now define in terms of new physics, without *that* lexicon.<sup>6</sup>

An epoch later we have the science that underlies the intuitions of our ancestors. The implications are nonetheless bizarre. As is obvious, the physical defines the field of information that instantiates the world hologram. Nonetheless, and at a different level of logical type, this field of information defines the determinacy of the physical world of the individual, the class-of-worlds-as-a-world. This is the meaning of the fundamental revelation in quantum theory: there are two, quasi-autonomous domains, in which the two different dynamics of quantum mechanics operate.

Naturally, on the objective outside view, it is the physical reality that defines the information it instantiates, the inside view. *On* the inside view, however, this structure of information defines the determinacy of the physical world. As a result, on the inside view, the record of observations defines the effective physical environment; and information processes in the perceptual reality of the individual are causal on the effective physical environment of this individual.

The extraordinary implication is that the individual defines the determinacy of the world encountered, the many-worlds reality. This is the conceptual revolution. As stated by the modern-day sage Krishnamurti:

You and the world are not two different entities. You 'are' the world, not as an ideal, but actually. (Lutyens, 1983, p. 74)

As the holographic field of information defining the determinacy of the world encountered, this is effectively the case. This seems absurd because it seems so obvious that the world is separate from the individual self. The missing piece of the puzzle here is the unconscious. The self-concept avatar figure at the centre is the familiar self-iden-

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<sup>6</sup> As described in the Appendix, the Gnostics did have the three logical types: Tertullian's doctrine of three fundamental natures, matter, soul and spirit (West, 2009).

tity, and the rest of the world hologram is the personal unconscious. The self-concept avatar figure defines the determinacy of the body-mind, and the rest of the world hologram defines the rest of the world. The world hologram is the complete identity.

In this light another longstanding myth finds an underlying technical explanation in the new physics: the Hermetic concept of As Above, So Below. Given that the determinacy of the many-worlds reality is defined by the correlations recorded, and that this structure of information is the identity of the individual, the original Hermetic text is technically correct in scientific terms:

That which is Below corresponds to that which is Above, and that which is Above corresponds to that which is Below (Scully, 2003, p. 321)

As Everett states, it is the correlations established by observations that defines the determinacy of the effective physical environment, the relative state.

Taking the physical world encountered by the individual to be a class-of-worlds-as-a-world, a second-logical-type phenomenon, provides the physical ontology of this seemingly upside-down idea. With respect to this type of world the Hermetic idea is valid, whereas with respect to the objective quasi-classical world it is of course nonsensical. This, however, is the type of world encountered by all conscious individuals.

## 8 Racial Survival

The new paradigm not only enhances the lives of individuals but also greatly improves the prospects of the human race as a whole. The global culture is facing a number of self-induced global catastrophic risks, and they are not being well managed. As Holdren (Friedman, 2008, p. 160) states, business as usual is likely racial suicide, like being in a car with bad brakes driving toward the edge of a cliff in the fog. Prudence requires that we try to stop the car. Nonetheless we hurtle on. A new solution is urgently needed. A cultural norm of enlightened self-interest would solve the problem, and may well be the only viable solution. As stated by King (ibid) we have to evolve beyond the natural egoism of human nature.

Clearly a degree of egoism has been an essential component in the historic success of the human species, but it has been balanced by the strong sense of community fundamental to human psychology. However, the atomisation of the culture, along with the ever-increasing reach of single individuals with no countervailing control, or even effective feedback, has led humanity to race toward the cliff edge in a number of fields. Thus the potential for self-induced cataclysmic events is constantly being escalated.

To date it has seemed there was no solution to the untrammelled egoism unleashed in the modern world. As King goes on to say:

All religions have, in their purest aspirations, attempted to induce such a change, with very little success. (ibid)

Adoption of the new paradigm, however, provides the new perspective that otherwise seems so far-fetched. As an immortal entity, and effectively causal in the way reality goes, both without the option, enlightened self-interest is the only sane approach to life. This is of course exactly the kind of transformation King is talking about. This is the moral code that has been encouraged by religions, but without the dogma. This provides the moral foundation of human culture that clearly has little uptake in the running of the modern world.

In effect human nature is transformed. In fact human individuals are still egoistic, but the egoism operates on a much wider agenda: the known world. At the outset, this simply sways decision-making away from the most injurious outcomes. In time a comprehensive sense of the real nature of self is acquired, and a direct appreciation of how the personal many-worlds reality operates. In this light the identity broadens and deepens, as does the appreciation of life in all its aspects. This provides the logical rationale of the path laid down by the great spiritual leaders throughout history. Taken up as cultural norm this revitalises the human race. The general outlook is quite different, while the organisations of practical living remain much the same.

This offers an evolution of human nature that will ensure a new racial intelligence. A new age of humankind is born, and it has a very much greater chance of survival. As Whitmire (2017) demonstrates, the emptiness of our galaxy strongly suggests that the human race will go extinct soon. Statistically there should be many civilisations in the galaxy, given the abundance of planets capable of supporting life: “NASA estimates 1 billion ‘Earths’ in our galaxy alone” (Achenbach, 2015). Other estimates are much higher: “Astronomers estimate 100 billion habitable Earth-like planets in the Milky Way” (Anthony, 2013). Given such numbers, and the apparent inevitability of life evolving from the simplest beginnings, the obvious conclusion is that intelligent life must from time to time evolve in the galaxy. If the time for this to take place on planet Earth is taken as a median, there should be great numbers of evolved intelligent races. Thus the complete absence of any evidence of evolved intelligent races must presumably imply they all self-destruct on acquiring high technology.

Certainly the elements of such self-destruction are clear to see in the local instance. The seeds of various kinds of self-induced Armageddon are all too evident. Judging by human history, the good of the collective inevitably takes second place to the drives of egoism as civilisation becomes atomised, leading to ever-increasing global catastrophic risks as advanced technology takes off. It would seem that the new paradigm is a unique key to the survival of the human race. To win the galactic jackpot, the extraordinary necessity of enlightened self-interest needs to be generally understood as the only rational basis for a truly successful life.

## 9 Conclusion

As has been described in the three parts, the missing piece of the puzzle that has given all the trouble is the nature of the protagonist of the dynamics of the new physics. As defined in Everett, this is not the physical observer, but the state of the memory, defined as the record of observations: the product of access consciousness, the sapience. This is experienced by the phenomenal consciousness that supervenes on the moving frame of reference, the sentience. The protagonist of the dynamics is the world hologram, the integrated synthesis of the record of observations. As this defines the determinacy of the world superposition, including the body-mind of the observer, the protagonist is extraordinarily significant.

It is for this reason that the effective physical environment encountered is not the same thing as the ordinary quasi-classical world of the current scientific paradigm. While the real world of objective physical reality is an ordinary decoherent quasi-classical world, the world actually encountered is the effective superposition of a great number of such worlds, the many-worlds reality. This is the quantum-mechanical frame of reference, the domain on which physics experiments are carried out, giving rise to the apparently paradoxical results.

The key point in this regard is that the experimental field, the world of the inside view, is a second-logical-type phenomenon, a completely different kind of thing to the quasi-classical world. It is in this domain, and only here, that the collapse dynamics operates. The resolution of the measurement problem is that collapse occurs in a quasi-autonomous domain, primarily defined by a field of information. The collapse dynamics operates only at this different level of logical type.

The implications for the human culture are immense because it is in *this* domain that certain principles intuited throughout the ages and enshrined in myth are real phenomena. This should not seem as outlandish as it does because it is only the operational principles represented in certain myths that are in this position. This is simply how the world actually works, and by one means or another this was intuited by our ancestors.

The benefit of the new paradigm is that it provides an effective counter to the culturally destructive imperatives of egoism, ever more unleashed from all the conventional constraints of community. If Whitmire (*ibid*) is correct, and we are alone in the galaxy because everyone inevitably blows themselves up, this is the one and only possible avenue to survival. As King (*ibid*) describes, the only durable solution to the ever perpetuating crises of humanity is the evolution beyond the egoism that motivates every individual.

The new paradigm revealed by the full implications of the new physics achieves exactly this result, and returns principles central to humanity to full rationality. It shows us that some of our most powerful and cohesive intuitions about the world, and how to treat each other, are in fact fundamental principles of the domain one inhabits.

As has been shown, there is an inherent morality in this domain, a right and wrong completely defined by the effect an action would have if applied to the protagonist: the karma. The world hologram is the soul, and effectively goes on from lifetime to lifetime as Moravec (1998) describes because the phenomenal consciousness is a meta-phenomenon. Hell and heaven are simply the categories of world resulting from egoism or enlightened self-interest respectively.

Given the exact logical form of these concepts in the dynamics of the physics, it is clear this is not in any sense going backward to superstition, but forward to fully understand the operational principles of the universe. Completing the meaning of the new science to discover the same themes as the great myths is simply confirmation that natural science has been on the right track a very long time.

The full meaning is indeed a conceptual revolution. We are beings of eternity, and we live in worlds of inherent morality. We are on our own. We are responsible, and we are empowered. No wonder classic hero myths echo the new paradigm.

This is a manifesto for understanding the greatest myths of human cultures as the presentation of fundamental scientific principles of logical type in the idioms of traditional folk lore because this will heal the human culture. The myths are classical depictions of natural phenomena completely in accord with the new physics, and recognition can only assist in resolving the deep cultural problems in which the human world is mired. Enlightened self-interest is the real self-interest because you are the world. This makes complete sense of the maxim know your self and the truth shall set you free. May we dare to know.

## Appendix

Additional issues are addressed with respect to the implications of the new paradigm. Firstly a look at why we may have a negative knee-jerk reaction.

### Dangerous Delusion

Consciousness has become the third rail of physics. From outside the field, Burkeman writes about the mystery of consciousness and its effects, noting that:

Questions like these, which straddle the border between science and philosophy, make some experts openly angry. (2015)

It seems this issue has become taboo. This implies a deeply emotive cause. Here it is proposed that this may have a well-founded rational basis in the spectre of a return to the thinking of the dark ages. As Davies states:

Many scientists who are struggling to construct a fully comprehensible

theory of the physical universe openly admit that part of the motivation is to finally get rid of God, whom they view as a dangerous and infantile delusion. (2006, p. 16)

From this perspective, the acknowledgement of a transcendental and omnipresent operational principle associated with consciousness is likely far too close for comfort to concepts of deity. There could well be a sense that even dignifying the concept with discussion might be inviting pseudoscience of a very dangerous nature. It may well be considered that dogmas of various kinds have cost the human race heavily. Even if such things hold less sway today, there is a severe and increasing discrepancy between the sophistication of modern weaponry and the intellectual and emotional maturity of those who may put it to use. Apparent validation of dogma could be seen as precisely what the human race does not need.

Deep-rooted concern no doubt has some justification. However, a return to superstition is directly contravened by the new paradigm revealed. There is no such threat here, rather the tide flows the other way, as has been described. On all counts it seems the potential for the delusion of a super-powerful being with a child-level psychology taking hold in modern science is eliminated.

### Dogma: A Self-Fulfilling Prophecy

The final point is perhaps the most difficult to fully come to terms with in this area. Any individual who has strong beliefs will inevitably discover real evidence that they are right. As described in Section 3, visualisations give rise to expectations which generate strange attractors. Thus to mentally engage with such an entity in prayer and ceremony is to initialise a strange attractor in the world hologram that makes the principles of this entity more and more real in the world encountered. To ensoul an archetype in this way is to generate a strange attractor that will sway and direct the interactive destiny operating in the reality. This would therefore be highly effective in increasing the likelihood that appropriate events would be experienced, even to the point of appearing to demonstrate evidence. Naturally, provided the deity is beneficent the results should be positive, but this is hardly guaranteed. The phenomenon is an operation of the unconscious associations with the archetype. To put it mildly, anything could happen. In reality there can no God as a person such as depicted in the Old Testament. Nonetheless, all such archetypes can be extremely powerful in the form of templates for strange attractors. Great caution would seem appropriate.

By definition God as a person is dogma, and although certain fundamental principles are borne out by the implications of the new physics, just the opposite is the case with dogma. Dogma is defined as a statement about the facts of reality that has no evidence in reality. In the real world of any given individual, however, only that which has been observed is determinate, and everything else is to some degree indeterminate. By definition, dogma is not derived from any observations, therefore, whether a specific dogma is true or not is indeterminate. Ironically, the claim that a

dogma is definitely true defines it as false.

It would appear that some of the greatest difficulties the human race has faced have arisen because any dogma that is believed in completely generates a powerful strange attractor. Thus it seems to be increasingly confirmed in experience in one way or another. This does explain, at a fundamental level, our various commitments to views that do not seem correct to others. Naturally, worldviews are different, but in the personal worlds in which individuals live, every aspect of the worldview is self-reinforcing at a fundamental level: the individual who has a deep faith will encounter evidence in the real world for this belief, interactive destiny means this person's world is more likely to give rise to observations of that nature in the future.

This is, of course, a personal-world, inside-view phenomenon, and it needs to be understood as such. To look for evidence of the God one is sure of is to find it. Seek and ye shall find because by ensouling this principle it is realised: the reality of the personal many-worlds reality gravitates towards versions where the events and things implied by its existence become more and more likely, and are increasingly encountered, and are thus increasingly expected. A powerful strange attractor is formed; and that which is realised is of course real, because it is an expression of phenomena in the version of the world in which one has arrived. Thus a dogma can become a powerful self-fulfilling belief that appears to be confirmed by real events.

## The Trinity of the Whole

As with Dawkins' parable of Eastern mysticism, truths about God can be so close to the myth that miscomprehension is almost inevitable. In the light of the three levels of logical type it is clear that Holy Trinity is the mythical form of the operational levels of the unitary system.

Universe consciousness is aptly named as the Holy Spirit. It is the spirit of the whole, meaning that attribute of the whole that animates and brings to life, as it passes from moment to moment as Weyl (1949) describes. The title Holy Ghost also fits precisely: that property of the whole utterly vital and utterly present, but invisible and intangible. It is no thing at all because all things are physical. It is an utterly different type of phenomenon to physical reality. This is the primary emergent property of the universe, a meta-phenomenon. In the static block universe this is a fundamental requirement because the system *must* feature a moving frame of reference in order to actually operate in any way.

God the Father is a perfectly good name for the universe as a whole. As Bishop Spong states in *Why Christianity Must Change or Die*:

God is not a being superior to all other beings. He is the Ground of Being itself. (1998, p. 70)

This is the entirety of the whole, the static and timeless totality of existence. This expresses the first, primitive logical type: every possible moment laid out in space-

time, and every possible snapshot of the world in Hilbert space.

As the experiencing consciousness becomes identified with the world hologram of a specific individual in physical reality, it effectively becomes the consciousness of that specific individual. As Bitbol states:

... it thus adopts this point of view, self-referred to as *my* point of view  
(1990, p. 8)

This is the genesis of the conscious individual, as described in Part 2. Effectively, as the experiencing consciousness passes along the worldline of the individual, time passes and events are experienced in sequence. This is the transtemporal reality of the conscious individual, the movie of life. This is a second-logical-type phenomenon, quite different in kind again to either static existence or the universal consciousness, and thus completes the trinity of logical types of the unitary system in action.

In computing terms this is a child process of the system, brought into ongoing existence as the spirit of the whole experiences the world hologram of the individual in the physical reality. This is well named God the Son, though the status naturally applies to all conscious individuals. Conventionally, the title refers to Jesus of Nazareth, but more generally it is taken to mean the metaphysical embodiment of a divine principle, deity incarnate as a person. Since the individual is indeed an emergent property of the unitary system, this is also a good fit with the myth.<sup>7</sup>

## The Nature of the Individual

Clearly, God the Holy Spirit is not a person, and neither is God the Father. Only the transtemporal child process created by the system is a person. It is useful to note that the identity of this entity is not the same as that of the ordinary ego identity in the current paradigm. The ordinary identity is the body-mind, and as is abundantly clear, one is not in any special or privileged position with respect to the rest of physical reality. However, that is the identity on the outside view, and on the inside view the identity is quite different, and different dynamics apply. This identity is what fits with the term higher self as described in the next section.

On the outside view the identity is the obvious one, the physical body-mind, psychologically the ego. This is the observer in Everett's formulation, the physical mechanism that formulates observations and records them in memory. However, as described in Part 1, on the inside view the functional identity is not the observer but the world hologram, here the individual. As described in Part 1, in this frame of reference the body-mind is determinate only where observed, and thus defined in the world hologram, which is therefore the true identity of the individual in reality. This

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<sup>7</sup> As Jesus states quoting the Old Testament: "Ye are gods; and all of you are children of the most High." (Psalm 82:6; King James Bible (Cambridge Ed.)). Taking the most High as the highest possible level of abstraction, this is a fully modern idiom. Each individual is a specific emergent property of the entirety in action: an instance of the life of the universe.

is the protagonist in the quantum-mechanical dynamics.

The individual is a field of information. The current observation is the immediate contents of the sensorium, the virtual-reality representation of the world derived from the senses at the present moment. This is the current contents of consciousness. The rest of the world hologram is the unconscious. Altogether, the information structure of the world hologram defines the complete functional and operational identity, conscious and unconscious. All else is indeterminate.

## The Higher Self

The individual, being the world hologram, defines the determinacy of the idiosyncratic version of the world encountered as physical reality. In terms of logical type it is a God the Child Process, and the principle is of course generic. Every self-aware substructure, male or female, human or not, is of this nature. Each one is simply a world hologram, experienced by consciousness. But this identity carries momentous responsibility. As above so below, as Krishnamurti (*ibid*) states.

Once awareness of the nature of this realm is recognised, a further major evolution of the human psyche is available: awareness of being the determinacy of the effective physical environment. This is the full expression of the identity of the individual. It is this that may without question be termed a child process of the system: this is a complete operational transtemporal reality. Awareness of such an identity gives rise to a worldview very different to that of the ordinary ego identity. This identity position is greatly empowered, and greatly responsible. This is the higher self. As stated in the conclusion, the great challenge of life is to recognise the true identity. To identify with the world in this way is not egotism but simply realism.

The responsibility of such an entity is considerable, but this is present regardless of awareness. As Krishnamurti states, what one produces in oneself is produced in one's world. This is why, for this type of entity, to seek God in the world with prayer and ceremony is to find. Ultimately, of course, this is simply the realised expression of the original seeking. The result is real in the world, but the individual, the God the Child Process, *is* the world. This is the full expression of such an entity, an awakening as the higher self.

## The Gnostic Trinity

In modern times, the concept of the Holy Trinity is that God is, inexplicably, three persons in one God. The original idea, however, seems to have been very much more generic. As West describes, Tertullian's description of the Gnostic trinity shows no connection with three consubstantial persons but instead refers to a doctrine of three natures:

What Tertullian actually describes is a Gnostic doctrine which

maintains that the universe is comprised of three fundamental substances or natures, which are identified as spirit, soul and matter (2009).

As described above, these are simply the attributes of the three different levels of logical type in the ontology of the operation of the universe.

In this light, the full identity of the conscious individual is also triune. There are three fundamentally different types of identity at the three different levels of logical type. The body, here the body-mind, is the first-logical-type identity: that which defines this individual at this moment, on the outside view. The soul, here the world hologram, is the second-logical-type identity, the inside-view frame of reference, both because it is transtemporal and because it defines the determinacy of the world superposition, the class-of-worlds-as-a-world. The spirit is the experiencing consciousness, the third-logical-type identity.

### The Third Stage of Life

In the light of the true nature of soul and spirit, the individual is not only empowered and responsible but also immortal. In this respect the timeless myths of the immortal God-man, born of human and the divine, can be seen as allegories of the great human spiritual experience.

Fully aware, the individual is still the same person of course, but simply becomes aware of the true nature of identity. The myth of enlightenment is found to be describing a simple but radical transformation of identity. Comprehending the 'me' and the 'I' as the world hologram and the consciousness, along with the implications, the individual is transfigured. It is the study and pursuit of such enlightened states that forms the third and final stage of life in many traditional cultures (Wilber et al., 1986). The modern Western culture has no such stage, which may account for the dire condition of the operational intelligence of the overall system, despite all the advantages of the modern world. This third stage of life is where the great transformation of identity potentially available to the individual may be naturally discovered and enjoyed.

Three fundamental stages of life are generally recognised, child, adult, and elderly, with different functional foci: maturation, worldly success and retirement. In modern Western culture only the first two stages are fields of self-development, intrapersonal and interpersonal, but in many of the great cultures of the world the third stage is the greatest, the transpersonal. The cornerstone of this stage is the further transmutation of identity, and the encounter with the discovery in Krishnamurti's dictum quoted above: you are the world, actually. This is the full coming of age in the human condition. As he goes on to say, this means that to change yourself is to bring about transformation of the world in which you live.

Without this perspective, the third phase of life as just stepping down from fully

active and engaged life seems like a loss and a dissolution, which is why for many it is to be strenuously avoided. Eternal layoff on a meagre budget appeals to few. Naturally, this leaves nothing to take as the primary focus of this stage of life except the continuation of standard adult pursuits, which tends to become increasingly problematic and unrewarding as capabilities fade. However, all this changes dramatically in the light of the new paradigm. This is the period of life ideal for preparing for the Moravec jump: integration, self-understanding, stepping back to take the wider view, and of course focusing strongly on the kind of world in which one would like to find oneself next. This is the development of the transpersonal identity, that which passes from world to world. The conscious individual is simply the endlessly moving frame of reference of consciousness, and this awareness brings not only responsibility and empowerment but also peace and freedom.

Wise elders may be a requirement for a stable, peaceful and productive human culture. It may be the case that a third transpersonal stage of life is in many ways the most important of all, as held in many civilisations of earlier times. In this kind of context, a further process of deeper maturation becomes a natural part of human life. Whereas the modern western world defines nothing but retirement after physical maturity, the path of wisdom, the transpersonal phase of life, becomes a well-understood and deeply respected culmination to a successful lifetime.

Much of the disarray in the modern human culture may be accounted for by the absence of a meaningful third phase of life. If this were to be a tendency in any culture achieving high technological advance, and the consequent atomisation of the people in the culture, this would be a further factor in the apparent zero survival rate of species with high technology in this galaxy.

Taken all together this means that modern human culture has been missing a vital component of a full and complete lifetime. Until now, only those highly dedicated to the mystical possibility of a very different way have been able to follow the whole of this path. This, however, is the natural task of the third phase of life: the development of the transpersonal identity and the wisdom of the elder.

Great minds in our ancestral tradition grasped operational principles of reality, presumably through sheer intuitive analysis. They did their best to communicate the implications, but transmission was unreliable to say the least. There was nothing remotely like the scientific lexicon of the new physics in which to frame the revelatory concepts, which therefore suffered from distortions as they were passed along across generations, and through translations. The most important message of all is holographic, permeating the myths and fables, and thus survives in myriad forms in the modern world. The universal calling of spirituality is an inward pursuit and an outer acceptance: simply understanding and acceptance of nature, and the discovery of the nature of identity.

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