In this paper, I argue that the wrong notion of the “world” (I called it the “unicorn-world”) has to be replaced by the “epistemologically different worlds” (EDWs). Working in the unicorn-world in the last century, the physicists have tried to solve some pseudo-problems of quantum mechanics like non-locality and entanglement with pseudo-alternatives like multiverse approach and decoherence. EDWs perspective clarifies many notions from quantum theory, in particular, and physics, in general.

I. The unicorn-world vs. the epistemologically different worlds

There are some key elements that have framed human thinking from the beginning, the human subject, the world (or universe) and the perceptual-conceptual frameworks through which the subject observes-conceives the world. Directly correlated to these key elements there are three concepts of unity which have played a major role in science and philosophy, the unity of self (consciousness), the unity of the world, and the unity of knowledge and of science. As I showed in Vacariu (2005) the assumption of the unity of the world or uni-verse represents a major error in human thinking and this error has generated many pseudo-problems in philosophy and science. This supposed unity of the world is the postulation of a one single ontological world in which everything has been placed (by ‘everything’ I mean all entities, such as Gods, angels, minds and bodies, planets, tables and micro-particles). Metaphorically, I called this unique world or ‘uni-verse’ the ‘unicorn-world’ to emphasize its mythological-religious roots. We can identify this thinking paradigm, the unicorn-world, within the majority of myths, theological doctrines, philosophical approaches, scientific

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269 This section draws upon VACARIU (2005) in which I offered further detail about the EDWs perspective. In that article I showed that the mind-body (brain) problem is a pseudo-problem that is a consequence of adherence to the unicorn-world. Thus the mind and the brain/body belong to internal entities), the conditions of observation, and the observed objects.
theories, etc. Philosophers and scientists have tried to find the foundation of this unicorn-world in which human beings have their own place. The ontological unicorn-world paradigm has led us to an epistemological unity, the unity of knowledge (and science). In philosophy, positivistic theories have attempted to explain the unity of science, for example, just as materialist theories have attempted to assert the unity or identity of mind and brain. In science, certain physicists try to discover the theory of everything. Consequently fundamental pseudo-notions like ‘ontology’, ‘epistemology’, the ‘relationship’ between micro and macroparticles, ‘essence of things’, ‘(ultimate) reality’, ‘the world’, or ‘(scientific) realism vs. anti-realism’, ‘fundamental level’, ‘elementary particles’, ‘theory of everything’, ‘bootstrap’, ‘hyperspace’, etc. have dominated the philosophy and science precisely because of the unicorn-world paradigm of thinking.

Now, I introduce the EDWs perspective (or the perspective of the observer) that as the major role of replacing the unicorn-world with EDWs. The main idea is that the same subject (that presupposes the first unity) using different conditions of observation (that rejects the second unity) can observe epistemologically different (ED) objects that belong to EDWs (that rejects the last unity). I introduce here the first four principles from Vacariu (2005) (but I avoid the arguments from that article in support of them):

(P1) Under different conditions of observation, the human subject observes epistemologically different worlds of the world (thing)-in-itself.

(P2) As human attention is a serial process, the human subject cannot simultaneously observe epistemologically different worlds.

(P3) The set of judgements that describe the phenomena of each epistemological world must follow the rule of conceptual containment that is given by the conditions and limitations within the concepts of the judgements. These conditions and limitations are governed by the properties of (internal or external) tools of observation.

(P4) In physical terms, the part-counterpart relation (that is the brain-body relation) corresponds to human subjectivity or human experience.

I now introduce more details about the fifth principle (P5). Partially following Kant and Bohr, 4 I consider that the notion of existence can be defined only from an epistemological viewpoint. The subject, using one set of observational conditions observers one EW. According to (P3), each set of observational conditions is constitutive in ‘observing’ its corresponding EW. For the observer, due to the conditions of observation, each epistemological world has its own entities, structures, processes, laws, etc. We can establish only the correspondences between entities and laws of two epistemological worlds. The objective reality is given by principle (P3) that entails the observational conditions. It would be completely wrong to understand EDWs as
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It is not about levels or aspects but about EDWs! Therefore, we can extend the notion of the observer to all entities, each entity ‘observes’ other entities, i.e., it interacts with other entities that have the same structure. An entity exists only if it has certain limits of interaction with other entities; an entity cannot interact with the entities that have different structure and belong to an EDW. Each entity interacts with (‘observes’) the class of entities within the same EW. Why do we need to postulate the existence of such entities that belong to EDWs? My approach can be regarded as an extrapolated transcendental idealism, not only human beings but also each entity interacts/observes with entities from the same EW. Moreover, I transcend ‘multiple worlds’ or parallel universes in an ontological-epistemological sense, even if I extend the perspective of the observer to all entities (from an extended transcendentalist view). The meaning of ‘epistemologically different worlds’ is crucial for the entire approach. As I adopted the specified anti-metaphysical point of view, I have somehow to bring together both epistemology and ontology in the same expression, or even to transcend them by proposing the concept of ‘hyperworld’ or ‘hyperverse’. We can now introduce the last principle, the principle of objective reality,

(P5) Each epistemologically different world has the same objective reality. To get rid of reason (b) from introduction for producing the unicorn-world error, we need to re-define the notion of ontology, it is about an epistemological ontology and this is the reason for the expression ‘epistemologically different worlds’.

2. The EDWs perspective and some notions from quantum mechanics

I think that the EDWs perspective could be a better alternative for explaining Bohr’s complementarity and superposition, entanglement, nonlocality and nonseparability. The Copenhagen standpoint on the measurement problem makes the same error, assuming the existence of the unicorn-world. In this interpretation, at one moment using one tool of observation a subject can observe the wave. When she changes the measurement apparatus for observing an electron, the wave function collapses at a certain location. The measurement apparatus produces this collapse. Bohr always emphasized that before the measurement of the position of an electron, it is meaningless to ask where that electron is. For Bohr, “the electron simply does not have a definitive position before the measurement is taken.” (Greene 2004, p. 94) The error in this conception is that three objects are postulated in the same unicorn-world – the wave that collapses, the electron (microscopic object) and the measuring instrument (macroscopic object). To avoid this paradox, Bohr’s stratagem was to negate the existence of the particle until that particle is observed, at which
moment the wave function collapses into the electron at a certain location. Bohr’s approach represents one extreme position. The other extreme position for the quantum measurement problem is the many-worlds approach (Everett, De Witt, Deutsch, etc. – see below). Between these extremes there are other approaches, but all these theories assume the existence of the unicorn-world. I analyze some recent papers written by some physicists on the some problematic notions of quantum mechanics. I am directly interested in analyzing how scientists constructed their alternatives as they tried to solve “quantum mysteries” within the unicorn-world paradigm.

The EDWs perspective offers a simple explanation of the infamous property of non-locality. For instance, let us take the example of measuring the spin or polarization of two particles that both belong to EW1. These particles that initially represent one system are later separated. According to the Copenhagen interpretation, the spin of particle 1 has no value until it is measured. Before measurement, there is a superposition of various states of that particle produced by the “unitary” evolution of the wave function that corresponds to that particle. The act of observing produces the collapse of the wave function and the observer sees the particle in one definite classical state. The measurement of the spin of the first particle is completely wrong to assign the property of non-locality to the relation between objects that belong to EW1. All we can say is that the wave corresponds to the system of particles. Both Einstein et al and those supporting the Copenhagen interpretation were mistaken because they introduced epistemological properties (that belong only to EDWs) into the unicorn-world. Thus, the so-called “hidden variables” and non-locality or non-separability introduced to “save the phenomena” of the unicorn-world are empty concepts! Only the unicorn-world and a one-to-many relationship have forced us to even consider von Neumann’s idea of classical logic’s revision (a pseudo-alternative among others) for understanding Bohr’s complementarity. (See Friedman 2001, pp. 122-3) le (let us say, “up” state) that produced a collapse of the wave function has an instantaneous effect on the spin of the second particle (“down” state). Under the Copenhagen interpretation, this instantaneous effect represents action-at-a-distance or faster than light transmission that, according to Einstein’s special theory of relativity, is not possible. Einstein and his colleagues claimed that quantum mechanics is incomplete because it does not take into account certain “hidden It is

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270 There are various approaches to the quantum measurements problem but the main approaches are the Copenhagen interpretation (with Bohr, the leader), the many-worlds approach (Everett, Deutch, etc.), Bohm’s approach, and Girardi, Rimini & Weber’s approach. (See PUTNAM, 2005; GREENE, 2004) Trying to save the phenomena (the empirical measurements), different researchers introduced Ptolemaic epicycles in constructing various alternatives to the quantum mechanical-world, but working within the unicorn-world their approaches are wrong. We know from the history of human thinking that human imagination has played a powerful role in creating ardent arguments for fanciful Ptolemaic epicycles.
pletely wrong to assign the property of non-locality to the relation between objects that belong to EW1. All we can say is that the wave corresponds to the system of particles. Both Einstein et al and those supporting the Copenhagen interpretation were mistaken because they introduced epistemological properties (that belong only to EDWs) into the unicorn-world. Thus, the so-called “hidden variables” and non-locality or non-separability introduced to “save the phenomena” of the unicorn-world are empty concepts! Only the unicorn-world and a one-to-many relationship have forced us to even consider von Neumann’s idea of classical logic’s revision (a pseudo-alternative among others) for understanding Bohr’s complementarity (see Friedman, 2001, pp. 122-3) variables” of reality. On the other side, Bell’s inequality assumes Einstein’s condition of locality as true. The experiments that involve the measurement of correlated photons (their polarization is detected) show that Bell’s inequality is violated. The consequence of these experiments is that the system of those two particles has a non-locality property. According to the EDWs perspective, those two particles are in EW1 (the micro- or quantum-EW). I strongly emphasize here that the space of this EW is the whole of cosmic space! In this space, micro-particles interact/“observe” other micro-particles and nothing else. In EW1, the property of the non-locality of those two particles does not exist. The “non-locality” (that is in fact the continuity) is a property of a wave that belongs to EW2. Again, I strongly underline that the space of this EW2 is also the whole of cosmic space! The difference between two EDWs is given not by their spatio-temporal frameworks (that is the same with different metrics for all EDWs except the mind-EW) but by their entities and the interactions among them.

It is completely wrong to assign the property of non-locality to the relation between objects that belong to EW1. All we can say is that the wave corresponds to the system of particles. Both Einstein et al and those supporting the Copenhagen interpretation were mistaken because they introduced epistemological properties (that belong only to EDWs) into the unicorn-world. Thus, the so-called “hidden variables” and non-locality or non-separability introduced to “save the phenomena” of the unicorn-world are empty concepts! Only the unicorn-world and a one-to-many relationship have forced us to even consider von Neumann’s idea of classical logic’s revision (a pseudo-alternative among others) for understanding Bohr’s complementarity. (See Friedman, 2001, pp. 122-3.) In their famous paper, Einstein, Podolsky and Rosen concluded that quantum mechanics is an “incomplete” description of reality. In mixing two EDWs, nothing can be “complete”.

From an EWDs perspective, we can explain the “non-locality” of the microparticles. The “non-locality” of two electrons corresponds in fact to the “rigidity” of a wave. The rigidity means the indivisibility of the wave (that belong to the EW2) and the fact that the wave is not composed of (but
corresponds to) various microparticles (that belong to the EW1). The movement of an electron corresponds to the movement of the wave. In the EW1, action upon one electron does not act simultaneously on the other electron, because in any EW there is no signal that passes the speed of light. But acting on an electron, we act on the corresponding waves, even if we do not observe this process. Only the “rigidity” (indivisibility) of the wave (that belongs to EW2) means that the signal takes place simultaneously at both particles! However, I strongly emphasize that the EDWs are not “parallel worlds” or “many-worlds” or “multiverse” (quantum mechanics or hyperspace). The idea of the hyperverse is completely different to these notions from theoretical physics. The entanglement between two separated particles corresponds to the \textit{individuality, or unity} or “rigidity” of the wave.

With the existence of EDWs, we can clarify or reject these “mysteries” and (thought) experiments from quantum mechanics.

\textbf{(1) Young’s experiment and Wheelers’ delayed-choice experiment (1980)}

We have to remember that before, during and after our measurements of the whole experiment what there is is the hyperverse and not the unicorn-world. In the hyperverse, there are always waves and particles. Wave and particle are in EDWs. Our observation depends on our tool of observation from that moment. We can now understand the interference pattern of waves “produced” by electrons. Within the unicorn-world, we could not understand why we observe interference on a screen if we fire electrons. In fact, even if we fire electrons (that belong to one EW) to the double-slit apparatus in Young’s two-slit experiment, the screen measures the interference of two waves (that belong to another EW). However, when one slit is closed, the screen measures only the electrons but not the wave. In this case, the very troubling question in quantum mechanics of the last century, “Does this electron know whether the other slit is open or closed?” is a pseudo-question. In fact, the wave passes through both “slits” and the electron through only one “slit”. There is only a correspondence between the wave and the electron.

Following Wheeler, Davies emphasizes the role of the experimenter (observer) in determining the nature of quantum reality in Young’s experiment. Usually the physicists ask when did nature ‘decide’ to opt for wave or particle? “Nature” does not decide only because we are the observers and “nature”, i.e., the unicorn-world, does not exist! Although available for the majority of physicists, Davies’ inquiry is possible only within the unicorn-world. Someone can talk about the “decision of nature” only when nature is the unicorn-world!

The main idea of Wheelers’ delayed-choice experiment is that the past depends on the future (Greene, 2004, p. 186). In the split-beam experiment a
phantom detector is inserted immediately after the beam splitter (p. 187). When the new detector is switched off the photons produce interference patterns on a photographic screen. When the new detector is switched on, it indicates which path each photon travels. “Such ‘which-path’ information, as it’s called, compels the photon to act like a particle, so the wavelike interference pattern is no longer generated.” (pp. 187-8) If the distance between the beam splitter and the new detector is much larger, “the new weirdness comes from the fact that the which-path measurement takes place long after the photon had to ‘decide’ at the beam splitter whether to act as a wave and travel both paths or to act as a particle and travel only one” (Greene, 2004, p. 188). The “anomaly” seems to be that the which-path measurement influences the past, i.e., the status of whatever entity passed through the beam splitter. Again, within the unicorn-world, we can find many anomalies! It is quite natural to consider that the wave and the particle cannot both be at the same place at the same time. In fact, the photon does not “decide” its situation before passing the slit at all! Depending on our conditions of measurement, we can observe either the wave or the particle that exists in the EDWs before our observations take place.

The proponents of the multiverse introduced the notion of “parallel universes”. Deutsch believes that single-particle interference experiments illustrate that the multiverse (i.e., parallel universes) exists (Deutsch, 1997, p. 96). To explain Young’s experiment, Deutsch introduces the distinction between “tangible or real” and “shadow” photons\(^{271}\) that exist in parallel universes. These “shadow” photons are “affected by tangible particles only through interference phenomena” (p. 405). In what sense? In the split-beam experiment, before the single photon enters the interferometer, the photon and its “shadow” travel the same path, so the universes are identical. However, after the tangible photon passes through a special mirror, the “initially identical universes become differentiated” (p. 205). Then each photon (one tangible and one shadow from parallel universes) bounces off the next ordinary mirror and finally both photons simultaneously reach the semi-silvered mirror. So, “... the detection of interference between any two universes requires an interaction to take place between all the particles whose position and other attributes are not identical in the two universes” (p. 49).

I want to emphasize that we have to avoid confusing EDWs with parallel universes. To explain the split-beam experiment, we do not need any “shadow” particles belonging to parallel universes. We can see that Deutsch (and other physicists who follow Everett) are working within the unicorn-world even if they “create” many worlds or parallel universes. For Deutsch, these parallel universes exist at the same time in the unicorn-world. As we saw above, we

\(^{271}\) Deutsch considers that all the other micro-particles (electrons, neutrons, etc.) have “shadow” micro-particles that exist in parallel universes.
explained this experiment considering that the wave and the particle belong to EDWs not to parallel universes.

**2 (2) Schrödinger’s cat, decoherence and the multiverse approach**

Bohr believed that the laws of the micro-cosmos and the macro-cosmos are different because the sizes of their entities are different.\(^{272}\) (Greene, 2004, p. 2003) In this context, Greene’s question is “Where exactly is this border?” Placing both kinds of micro and macro-particles within the same world, you cannot answer to this question. However, decoherence is the “bridge between the quantum physics of the small and the classical of the not-small by suppressing interference – that is, by diminishing sharply the core difference between quantum and classical probabilities” (Greene, 2004, p. 209). The initiator of decoherence is Zeh (1970) followed by Joos, Zurek, etc. Before our observation, there is a superposition of various states for a particle (let us say, the spin of a particle is “up” and “down” simultaneously). So there is a quantum uncertainty regarding the spin of that particle.

Tegmark and Wheeler explain how “the quantum gets classical”. (Tegmark and Wheeler, 2001, p. 73) In their example I replace the quantum card with a microparticle, its spin being either “up” or “down”. Quantum uncertainty is given by the superposition of the position of two states (“up” and “down”) of a particle and their corresponding wave. Schrödinger’s equation predicts this coherent superposition that is mathematically illustrated by a density matrix. The wave function of the particle corresponds to a density matrix with four peaks (two peaks indicate 50% probability of the particle to be either “up” or “down”, the other two peaks indicate the interference of these two states). In this state, “[t]he quantum state is still coherent” (Tegmark and Wheeler, 2001, p. 73). According to Tegmark and Wheeler, quantum uncertainty is different from the uncertainty of classical probability, for instance a coin toss. The density matrix of a coin toss has only the first two peaks that represent the fact that the coin is either “tails” or “heads”, but we have not looked at it yet. There are no peaks for the interference process. The tiniest interaction with the environment transforms the coherent density matrix into the “classical” density matrix with only two peaks that represent either “tails” or “heads”. The interference pattern of those two states (“up” or “down”) or the “coherent” state accomplishes decoherence. “The Schrödinger equation controls the entire process.” (p. 73) The standard interpretation is that the measurement process means an interaction between the observer and the observed particle. At this moment, the person cannot perceive this superposition because the interference pattern accomplishes decoherence. The things that we encounter in

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*\(^{272}\) I change “Bohr’s view that quantum mechanics and classical physics are complementary aspects of nature” (DYSON, 2004, p. 76) into the claim that quantum mechanics and classical physics are descriptions of the EDWs just because “nature” does not exist!*
our daily life are not isolated but they interact with other entities. For example, the book that I read now is struck by photons and air molecules. Those micro-particles disturb the “coherence” of the big objects’ wavefunction and thus interference effects are not possible (Greene, 2004, p. 210). “Once environmental decoherence blurs a wavefunction, the exotic nature of quantum probabilities melts into the more familiar probabilities of day-to-day.” (p. 210)

Because of decoherence, Schrödinger’s cat cannot be both dead and live! However, Greene and other physicists are not content with this alternative, their question being “how one outcome ‘wins’ and where the many other possibilities ‘go’ when that actually happens” (Greene, 2004, p. 212). Since the debate between Newton and Leibniz, the question “What really exists, the particle or the wave?” has not received a decisive answer. And this situation has been quite normal because of the unicorn-world framework.

From an EDWs perspective, I strongly emphasize that the “superposition” of various states of a particle before measurement is a mistake created by extending the “superposition” of wave and particle. Putnam reminds us that Schrödinger’s equation shows us a state given by the “vector sum” or “superposition” of a vector that represents both states of a particle (in my example, “up” and “down”) mathematically expressed by an abstract space called “Hilbert space”. Because the wave and the particle belong to EDWs, there is no superposition of them and, consequently, no superposition of various states of that particle. Working within the unicorn-world, the physicists in the 1920’s created the “unobservable” superposition of two states of a particle before our observation.

In this context, we return to Young’s experiment. From my perspective, we do not have any superposition of two states of a particle. Nevertheless, there is a superposition of two waves. In Young’s experiment, the wave crosses those two slits and produces the interference of two waves. As we saw at point (1), these two waves belong to the EW2. The screen “measures” the interference of the two waves. The particle that corresponds to the wave before the two-slit screen enters only through one slit, but not both. There is no interference of two particles, since we have only one particle. There are no “shadow” particles or superposition of two states of a particle at all. The density matrix of a “coherent superposition” after the double-slits screen can represent the superposition of the two waves but not the superposition of two states of a particle. In the Copenhagen interpretation, the measurement produces the collapses of the wave function in violation of the Schrödinger equation (Tegmark and Wheeler, 2001, p. 71). In both Bohm’s and “many worlds” interpretations there is no collapse: the state evolves following the Schrödinger equation. From my perspective, there is no collapse of the wave function, either, but the wave and the particle belong to EDWs and not to parallel universes (for tangible and “shadow” particles).
Another step in defending my approach is to point out a few ideas from a recent article written by Dyson (2004). Dyson suggests that DeWitt (1992) explains the notion of decoherence in quantum cosmology very clearly: “massiveness” and not “complexity” is the key to decoherence (Dyson, 2004, p. 77). Schrödinger’s cat, as a massive object, accomplishes decoherence. From an EDWs perspective, DeWitt is evidently correct regarding “massiveness”. However, the “massiveness” is represented by macro-objects that belong to an EDW rather than microparticles and we do not have any decoherence. This massiveness shows us that we have to “ignore” (in a much stronger spirit than Einstein that is by introducing the EDWs) the microparticles even if macro-objects have organizationally different parts.

Dyson introduces four thought-experiments that support his conclusion that “quantum mechanics cannot be a complete description of nature” (Dyson, 2004, p. 74). Based on two of his thought-experiments, Dyson considers that the distinction between classical (that include microparticles) and quantum (waves) notions is reflected by the distinction between past and future (Dyson, 2004, p. 83). The past cannot be described using quantum-mechanical notions but only classical terms. He quotes Bragg: “Everything in the future is a wave, everything in the past is a particle.” (p. 83) Therefore, quantum mechanics is a small part of science that describes a part of nature. More than this, Dyson contradicts the Copenhagen interpretation which declares that the “role of the observer” causes an … abrupt “reduction of the wave-packet” so that the state of the system appears to jump discontinuously at the instant it is observed. This picture of the observer interrupting the course of natural events is unnecessary and misleading. What really happens is that the quantum-mechanical description of an event ceases to be meaningful as the observer changes the point of reference from before the event to after it. We do not need a human observer to make quantum mechanics work. All we need is a point of reference, to separate past from future, to separate what has happened from what may happen, to separate facts from probabilities (p.84).

So the “role of the observer” is “solely to make the distinction between past and future.” (p. 83) From an EDWs perspective, the role of the observer is not to make the distinction between past and future but the distinction between EDWs! Dyson introduces time as a single solution to avoid the ontological role of the observer. However, he has this solution because he works within the unicorn-world. In fact, the observer, changing the conditions of observation (“point of reference”), observes EDWs. In this case, Dyson’s distinction between past (facts) and future (probabilities) is useless.

I want to stress again that there can be confusion between the EDWs and many-worlds or multiverse or parallel universes from the field of quantum mechanics. The “many worlds” approach or “multiverse” or “parallel” approach
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...ated by Everett (1957), and followed by Zeh, Zurek, Deutsch (see point (1) above) and Tegmark seems to be the closest alternative to the EDWs perspective. The many-worlds interpretation was created by Everett as an alternative to the collapse of the wave function into a particle during the measurement (Copenhagen interpretation). According to Tegmark and Wheeler (2001), Schrödinger’s equation predicts that the person seeing a particle will “enter” a superposition of two possible states (p. 72). There are two parts of the total wave function (of person plus the particle) that work completely independently in two parallel worlds.

I emphasize again that many-worlds interpretation and EDWs perspective are completely different. I mention once more that the idea of the superposition of two waves and that of the pseudo-“superposition” of the wave and the particle led the physicists to the idea of the “superposition” of various states of a particle before measurement. From an EDWs perspective, because the wave and the particle belong to EDWs, there is no superposition of various states for a particle. Thus, there is a totally different relationship between the parallel universes (“many-worlds” or “multiverse”) and the EDWs. The parallel universes ontologically exist in the unicorn-world simultaneously, while EDWs epistemologically exist in the hyperverse.273 The number of parallel worlds can be huge274, the number of EDWs is very limited given by the epistemologically different interactions and the corresponding entities. Everett tried to solve the problem of superposition as a reply to that Copenhagen interpretation about the “wave function that ‘collapses’ into a definite classical outcome wherever the observation was made, with probabilities given by the wave function” (Tegmark, 2004, p. 473). For Everett, this “controversial collapse postulate was unnecessary”. (Tegmark, p. 473) In fact, quantum theory alone predicted that one classical real scene would split into the superposition of many. Interesting for EDWs perspective is Tegmark’s remark that Everett could not solve two essential questions:

1) Why we do not perceive macrosuperposition and
2) “What physical mechanism picks out approximately classical states (with each object in only one place, etc.) as special bewilderingly large Hilbert space?” (Tegmark, 2004, p. 474). Decoherence answers both questions. But as we saw above, decoherence is a false notion within the unicorn-world. The “cat” is not both dead and alive before our observation. The scientists needed such decoherence only because of the unicorn-world. They consider that the superpositions are available only for insolated systems. When such systems

273 DAVIES dedicates one chapter in his book (2006) to the multiverse alternative in quantum mechanics. He mentions some problems for this interpretation: “many scientists hate the multiverse idea”, this theory cannot be tested and it imposes the duplicate problem and the idea of the “fake universe”.

274 “I repeat, on the Many Worlds interpretation, there will be 2^30 Einstein – ‘histories – parallel worlds’; science fiction is literally right!” (PUTNAM, 2005, p. 630).
have a contact with other entities (a photo or molecules) the split in the parallel universes of those superpositions takes place. Surprisingly, Tegmark wrote that “Decoherence is now quite uncontroversial and has been experimentally measured in a wide range of circumstance.” (p. 474) Is he correct?

As a summary of my analysis from the EDWs perspective, I claim that the persistence of this “peculiar” picture of quantum mechanics for 100 years is due to the extension, within the unicorn-world, of the correct idea of a waves’ superposition to the pseudo-“superpositions” of (1) waves and particles and (2) several states of a particle. Working within the unicorn-world paradigm, scientists and philosophers have obviously been forced to create such weird notions.

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