

## A SYMBIOTIC MODEL OF THE UNIVERSE: ADDITIONAL POINTS

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### THE ROLE OF DARK MATTER:

Six times more common than ordinary matter, dark matter has proven virtually impossible to detect because it does not interact with ordinary matter or with itself. Ordinary matter actualizes potentialities via interactions promoted by forces of the universe (gravity, electromagnetic force, weak nuclear force, and strong nuclear force). Dark matter only demonstrates gravitational attraction, but when this force increases dark matter contact there are no interactions because it simply does not interact with itself or with ordinary matter. Given that dark matter does not interact at all it cannot actualize potentialities.

One of the interesting aspects of ordinary matter based on the theory is that it can only exist in the present, with the present characterized by the conversion of future potentialities to past actualizations. If it exists in the past then actualizations will be altered, an event that cannot occur given that they are completed. Nor can ordinary matter exist in the future because potentialities would be actualized immediately eliminating the future and making it all the present. Although it might well be possible for matter to only exist in the razor edge of the present, it would seem more reasonable for there to be a macro matter-energy scaffolding that can exist throughout space-time. Dark matter appears to play this role. Given that there are no interactions and hence no actualizations of potentialities, neither past actualizations or future potentialities are effected by its existence. Hence, dark matter can exist throughout space-time, in the past, present, and future. Perhaps in some fashion ordinary matter is derived from this dark matter scaffolding or is supported by it, with the limitation that it can only exist in the present to actualize potentialities.

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### A CONCEPTUAL PROOF THAT TIME DISTINCTIONS ARE REAL:

It has been suggested by Barbour that time does not exist, and hence there are no time distinctions. To defend this perspective the workings of at least the human mind must be explained, given that there is a universal perception of past, present, and future, with the past already having occurred, the present happening, and the future not yet occurring. The pervasiveness of this universal perception of time appears to be based on the brain evolving to reflect these time distinctions. One of the key functions of the unconscious mind is to generate future potentialities and

assign probabilities to them in order to action plan. For example, when approaching a watering hole the unconscious mind generates potential occurrences, such as satisfying thirst, being attacked by a crocodile, or conflict with an animal trying to obtain water. Past-based memories assist in assigning probabilities to these future potentialities, and conscious awareness of relevant sensory data in the present modifies this unconscious information processing. As an example, past experience seeing an animal attacked by a crocodile, combined with conscious awareness of ripples on the surface, increases the probability assigned to the potentiality of a crocodile attacking, thereby modifying the original plan to approach the water hole. Action planning shifts to avoidance if water is not needed right then, or extreme caution.

Obvious adaptive benefits accrue from the brain being organized to distinguish past, present, and future, with the unconscious mind assigning probability estimates to future potentialities for the purpose of action planning, and the conscious mind modifying these plans based on an awareness of current sensory data. In the case of humans, higher intelligence and conscious thought adds another layer to this process; consciously we can analyze a situation using past knowledge and current information to ascertain how likely a future scenario is. If the price of gold is at a certain level this month, based on past trends and current world affairs what will the value likely be next month? Of course there is no certain answer as the future is only potentialities varying in probability.

The brain has evolved based on past, present, and future time distinctions. Natural selection is a real process, something that no legitimate scientist doubts. If the brain has evolved largely based on time distinctions, and natural selection is a real process, then time distinctions must be real! One might counter that the perception counts more than the reality, and hence it is a useful way of processing information but does not reflect reality. However, survival and evolutionary fitness are very real processes with very real consequences. Traits evolve in response to real selection pressures and not to perceptions. The evolution of the brain based on time distinctions indicates that they are a reality, impacting significantly on evolutionary fitness. As an additional point, probability estimates of future potentialities are only useful if there are future potentialities. If there are no time distinctions there are no future potentialities, and no adaptive advantage to probability estimates. A common conception of time distinctions holds that both the past and future, like the present, are being played out continuously. Hence, if a time machine takes you to the past or future you can see these events unfold and even participate. No such past or future exists! The past consists only of a quantum-based record of actualized potentialities, and the future only potentialities generated by the quantum world. The playing out of events involving macro matter-energy interactions and actualizations of potentialities occurs strictly in the present.

Relevant to the issue of the mind and time distinctions, Barbour conceives of memory and information processing as fixed entities lacking any component of time. In reality, both involve significant time distinctions. Memories, rather than being set

images of the past, are actually creative impressions undergoing ongoing modification. If a memory is not replayed over time it degrades. Replaying memories results in their modification so there are always distortions from the original. Information processing is also time dependent. For example, there exists a fear circuit that processes sensory-based information through the thalamus to the amygdala in microseconds, without any processing by the higher cortical centers. This fear circuit has evolved to provide immediate responsiveness to threatening circumstances. While information with any threatening import is being processed in this fashion, the thalamus also starts sending the information to the higher cortical centers for more elaborate but slower processing. The products of this higher cortical information processing influence at a slightly later time activity derived from the fear circuit. For example, you turn a corner and encounter an attack dog. Immediately (microseconds) you go into fight/flight/freeze mode based on the fast fear circuit processing. A second later you relax as higher cortical processes dampens the fear response, based on these processes revealing that the wagging tail and body posture show this to be a friendly dog who likes people. Hence, time distinctions are very much present with information processing.

#### References:

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## SINGULARITIES:

Singularities occur when all values (e.g. mass, density) reach infinity. One possible option in line with my theory is that given infinite mass as in a black hole the displacement of space-time by macro matter-energy might be infinite, in essence causing the former to withdraw from the latter, thereby resulting in localized non-existence. At the Big Bang the entrance of space-time into the quantum matter-energy nugget could likewise result in either total displacement of space-time or the driving apart of matter-energy, given the infinite density of matter-energy and it acquiring existence: Space-time enters the quantum matter-energy nugget and provides existence to the latter. Once macro matter-energy “exists” in this infinite density state, it will exert an infinite displacement effect on space-time due to their direct incompatibility and closeness, even with the quantum world as an interface. A highly unstable situation arises either forcing matter-energy out of the infinitely compressed state (inflation), or necessitating the withdrawal of space-time (a return to non-existence). The space aspect of space-time facilitates inflation. Perhaps it is the case that when space-time attempts to enter a quantum matter-energy nugget the process fails on occasion with space-time withdrawing.

## INFORMATION & LOW ENTROPY:

According to my theory when a potentiality generated by the quantum world is actualized by macro matter-energy interactions, low entropy is applied and embodied in quantum information regarding the occurrence, based on information itself representing a highly ordered low entropy event. Low entropy aligns with high potentiality and when a potentiality is actualized low entropy is applied. Take for example a gas chamber with a certain type of gas partitioned to one side. This scenario represents a low entropy, high potentiality state. When the partition is removed, the gas spreads interacting with molecules on the other side, actualizing potentialities and applying low entropy in the process. The high potentiality, low entropy state prior to the partition being removed, might be said to provide information as well. This is true but only in so far as it describes interactions and actualized potentialities, such as how the molecules of the given gas interact with each other when partitioned to one side. The potential interactions that might occur when the partition is removed are not yet actualized, and hence any associated low entropy does not enter into the information available.

The quantum state of superposed waves representing potentialities only varying in probability does not constitute information per se. If it is considered to be information the quality is very different from that derived from actualized potentialities, and might be best described as potential information. In the normal course of events we seem to make this distinction. For example, we do not consider predictions about a sports match to be comparable to the actual score upon completion of the game. Predictions are qualitatively inferior to information regarding the actual score. Any potentialities actualized and low entropy applied in

preparing the predictions, such as the mental effort and speech by the announcer, are embodied in the information, but this does not apply to the potentialities themselves.

In the theory I distinguish between the quantum world and the macro matter-energy world, mentioning that they are both matter-energy although with distinctions. In the so-called macro matter-energy world real life interactions occur in the present, actualizing potentialities represented by superposed waves provided by the quantum world. At a quantum level the potentiality actualized is distinguished either by collapse of the wave representing that potentiality, collapse of all others leaving that one standing so to speak, or all potentialities being funnel into the one actualized. Either way the potentiality actualized is distinguished in the quantum information record, and this record embodies the low entropy applied. The applied low entropy might in turn help sustain the quantum actualization record. Although highly speculative, it is proposed that space-time absorbs or benefits from the low entropy embodied in the quantum actualization record, similar in a fashion to how biological organisms benefit from low entropy. With space-time the benefit might involve sustenance of some type for itself and/or an entity existing beyond the universe. This scenario is viable given that low entropy represents higher quality energy, although when derived from the quantum actualization record the high quality energy will be of a different form than in the macro matter-energy world. Due to the direct incompatibility of space-time and macro matter-energy, the low entropy must be embodied in the quantum information record for space-time to benefit from it.

Macro matter-energy information entities are different in that they are themselves subject to entropy changes: The information undergoes spontaneous change from low to high entropy represented by degradation of the signal. For example, cellular phone signals diminish in strength and clarity the further they are transmitted. Low entropy sources are required to boost the signal such as occurs at transmission towers. The key point being that while the quantum-based actualization record persists embodying low entropy applied in actualizing potentialities, macro matter-energy information entities are subject to entropy change from low to high, and therefore cannot permanently embody the low entropy applied. To some degree macro matter-energy information entities can embody low entropy based on information itself representing a highly ordered low entropy state. However, spontaneous conversion to high entropy necessitates an ongoing infusion of low entropy to sustain these entities, ensuring that they will not persist indefinitely. Another way of looking at the matter is that in the macro matter-energy world entropy always applies with conversion from low to high entropy; the high entropy in a sense remains in the macro matter-energy world, whereas the low entropy applied is embodied in the quantum-based actualization record.

Regarding interactions and actualization of potentialities, uniqueness of entities plays a major role. Fundamental particles all being identical to others of its

kind appear not to change any interaction. Hence, they can move throughout space-time without altering any actualized event or potentiality. Conceivably, there could be one electron zipping back and forth throughout time and space fulfilling the electron role. When an entity is distinct it can change an interaction and actualize alternative potentialities. If it goes to the past some actualized event will be altered, and this cannot occur because the event has already transpired. If the entity proceeds to the future then potentialities will be actualized, and the future will collapse into the present where potentialities are being actualized.

Unlike the quantum world the macro matter energy world, or at least the ordinary variant (not dark matter), is fleeting only existing in the razor edge of the present. It might seem odd that we only exist in the present, but no past you is repeating actions that have already transpired nor future you engaging in actions that have not yet occurred. Actualized potentialities in the present collapse the corresponding superposed wave in the quantum world, with the applied low entropy embodied in the information content of the permanent quantum-based actualization record. Some particles that might or might not be described as part of the quantum world can interact in the macro matter-energy world and influence potentialities. These particles will have unique features that can alter interactions and the potentialities actualized. This overlap of the quantum and macro matter-energy world reflects how both are matter-energy, and how there is a continuous aspect at some deep level.