A closed-loop self-organizing system for cosmological and biological evolution

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Abstract: The chances for life to originate spontaneously appear so small that it can mathematically be dismissed as never happened. The purpose of this note is to put forward a cyclic universe model that can solve this problem, along with other questions about biological evolution. The proposed cosmological model is based on exploratory ideas, and so it may not always agree with conventional wisdom. Yet the principles involved seem to explain biological evolution better than those of present-day theories. In this setting, the universe follows an infinite cycle of recurring events, while evolution takes place with each consecutive cycle. By such means, the chances for life to originate spontaneously become a near certainty, and complex systems emerge via the path of least resistance. This unique system also explains how major groups of animals rapidly appeared in the Cambrian explosion, and why so much history about evolution is missing from the fossil records. © *2010 Physics Essays Publication*. [DOI: 10.4006/1.3467677]

Résumé: La probabilité que la vie ait une origine spontanée semble être si petite qu'elle peut être écartée mathématiquement comme jamais arrivée. Le but de cette note est de proposer un modèle d'univers cyclique qui peut résoudre ce problème, ainsi que d'autres questions concernant l'évolution biologique. Le modèle cosmologique proposé est basé sur des idées exploratoires, et donc il ne peut pas toujours être d'accord avec les connaissances communes. Quand même, les principes impliqués semblent expliquer l'évolution biologique mieux que les théories actuelles. Dans ce cadre l'univers suit un cycle infini d'événements récurrents, tandis que l'évolution a lieu en chaque cycle consécutif. Par ces moyens, la probabilité que la vie ait une origine spontanée approche la certitude et des systèmes complexes apparaissent par le chemin de résistance minime. Ce système unique explique également comment les grands groupes d'animaux sont apparus rapidement pendent l'explosion cambrienne, et pourquoi beaucoup d'histoire sur l'évolution manque dans les témoignages fossiles.

Key words: Cyclic Universe; Emergence; Entropy; Path of Least Resistance.

I. INTRODUCTION

Big Bang theory is an effort to explain the origin of the universe, but still nobody knows what preceded the Big Bang or what even caused it. The trouble is that at the moment of the Big Bang, there is a singularity of zero volume and infinite energy. This is normally interpreted as the end of physics as we know it, in this case the end of general relativity theory. The ultimate fate of the universe is uncertain as well. The universe appears to be expanding at an increasing rate. The force behind this phenomenon is presumed to be dark energy, but this energy is strictly hypothetical. The possibility exists that gravity might yet dominate the universe, and it will someday pull everything back together with a Big Crunch.

Indeed our understanding of the universe is full of questions, and yet the truth of it all could play an important role in the origin and evolution of life. To show how this might be so, a cyclic universe model based on exploratory ideas is proposed for explaining biological evolution. The universe undergoes an infinite cycle of expansion and contraction, and the Big Bang is replaced with a Big Bounce. A singularity like that described in Big Bang theory does not occur, and all information from one Big Bounce to the next is preserved.

II. EVOLUTION OF A CYCLIC UNIVERSE

One oscillation of a cyclic universe, or the time from one Big Bounce to the next, can be called a world of its own. The continuous cycle of many worlds then represents the universe as a whole. The causal principle says that every event has a cause, and the same cause must always have the same effect. And so if the primary cause and original conditions for every Big Bounce are always the same, then the effects of each Big Bounce are identical as well. This would mean Earth is recreated by each Big Bounce via the same chain of cause and effects. Yet the quantum world appears uncertain, and the causal principle may not always hold true. In any case, random events bring change from one world to the next, while any change to the present world will ultimately affect the next Big Bounce. As a result, those same events are reproduced by the next Big Bounce through a continuous chain of cause and effects. In other words, a record of each world is carried over to the following world with yet more

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random change along the way. This ongoing process gave endless opportunities for life to originate and much more time for complex systems to evolve.

Entropy in a self-organizing system will decrease in localized areas by transferring such entropy to surrounding areas. And so if the universe is truly a closed system, then there are only local increases and decreases in entropy, and the level of entropy throughout the entire system remains constant. These effects are then carried over and reproduced by the following Big Bounce so as to accumulate throughout the course of many worlds.

The link between emergence and self-organization is not clearly understood. The big question is how do complex systems arise out of a multiplicity of relatively simple interactions? Any change brought about by evolution may indeed be random, but if its driving force seeks the path of least resistance, then the path of each consecutive world becomes easier to follow. Thus, the energy of each world can bring about more change in addition to that of the previous world. By such means, this evolutionary system becomes more efficient, while the density of order in localized areas becomes higher. This building process gives rise to complex systems over the course of many worlds. Yet we do not see all the incremental steps of evolution from previous worlds, and so this makes the evolutionary process difficult to follow.

III. CONCLUSION

In the long history of a cyclic universe, the chances for life to originate spontaneously become increasingly higher. The probabilities for life to originate are like those of throwing a handful of dice in trying to roll all sixes.[1] The odds are very low on the first try, but they become greater as the dice are rolled again and again. Yet the chance of rolling all sixes becomes a near certainty if each six rolled is left standing, and only the remaining dice are tossed with each consecutive roll. Evolutionists believe that life originated from an ocean of organic soup. The soup contained all the necessary building blocks for life. Still, life may not have existed for a vast number of worlds. It started only by chance at some point in time, but even then it may not have reproduced or survived. It may have taken the course of not only one world but many worlds for life to adapt to Earth's environment.

According to Darwin's theory, evolution is the product of random mutations while the best results for survival are decided by natural selection. But if energy seeks the path of least resistance, then these random mutations are not without direction—they are guided by the path of least resistance. Resistance to life comes with Earth's environment, and so a path of less resistance usually means greater compatibility. For this reason, life adapts to Earth's environment over the course of many worlds, but still the best results for survival are decided by natural selection. Nevertheless, forces follow the same path from one world to the next unless one just happens to occur with less resistance. As a result, each world is nearly a carbon copy of the previous world, and life is recreated via the same chain of cause and effects. Whereas, each world serves as a blue print for the following world, and life is recreated as if by intelligence.

Most major groups of animals seem to have rapidly appeared to what is called the Cambrian explosion. But in a cyclic universe, this sort of explosion may have occurred in very small incremental steps over the course of many worlds. However, intermediate forms of life are no longer part of the cycle—they are lost to worlds gone by. This process would explain why so much history about biological evolution is missing from the fossil records. What is more, small incremental steps in evolution would agree with Darwin's theory much better than a rapid evolutionary explosion.

In a cyclic universe, we are reborn to each world via the same chain of cause and effects. The matter of one's body may not be exactly the same from one world to the next, but this would not change the body as a whole. The matter of one's body continuously changes through normal metabolic processes, and yet this does not change who we are. The capacity for most any child to learn language is in itself quite amazing. Some individuals also have special talents that seem to exist at birth. In a cyclic universe, this might really be so. We could be hard-wired to know such things because we are reborn to each world with detailed information from the past. This would also explain why some individuals can seemingly predict the future. In reality, they might just recall the past which ultimately becomes the present. And so is this world a miraculous one-time event? Or do we live in a cyclic universe with a pre-existing plan?

[1]M. K. Emery, Proceedings of the Natural Philosophy Alliance **3**, 24 (2006).