THE GLOBAL CONVERGENCE HYPOTHESIS

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Abstract. If there is a Purpose for the Universe, then it will, in principle, affect the initial conditions and the fundamental constants of the physical laws. The data will converge globally towards the Purpose. The Global Convergence Hypothesis has to survive two alternatives. The first one is the possibility that conscious life occurred from blind chance. The second one is the Multiverse possibility: stating that there are so many alternative Universes, that it is very likely that conscious beings occurred in some of them. If the Global Convergence Hypothesis will be indistinguishable from the Multiverse hypothesis, then it will follow that the Purpose is the emergence of conscious life.

I want to know God's thoughts; the rest are details.

A. Einstein

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1. Is there a purpose for the Universe?

This question is usually a starting point for philosophical or religious debates. I am interested if this inquiry can be formulated as a scientific question, and what possible answers we can get, at least in principle. According to our present scientific knowledge, I think that the answer is not clear. During the development of Science, more and more phenomena, which initially were explained by God's will, received more materialistic explanations. We no longer consider that the weather, the rain, the lightning and thunder are the direct tools with which the Gods operate. The biological and psychological phenomena become more and more explained by matter. If we consider that there is a war between religion and materialism, it seems that the latter conquered more and more

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areas previously owned by the former. On the other hand, Science has not provided us a final answer.

In this article, I will try to put the problem of a purpose of the Universe in a scientific matter, but I want to acknowledge my own limitations first. Please never forget that what I will say is simply a proposal, a hypothesis. My human status forced me to a limited knowledge and understanding, much limited than my own curiosity. I will ask kindly the persons who believe that they already know the answer, not to judge me too hard. This article is not intended to refute, or to sustain, any religion. This article is not intended to sustain, or to refute, the atheistic view. Its only purpose is to address the question well, and to develop some consequences. Some religious persons may think that I should present as scientific their own beliefs, while some atheistic persons may believe that the religion is a closed subject. I prefer to start from the premise that this subject is not clarified yet. Whether I may have or not a personal opinion about the subject, I consider this opinion not relevant as a scientific argument. I will try to focus the argument only on the scientific evidence. If there exist already proofs for one side or the other, I am not aware of their existence. I will ignore some so-called proofs, because they are too irrelevant for the main subject. For example, I will ignore the arguments claiming that there must be a God, because there is a prime cause, or a prime mover, because even the atheists accept that there may be first causes, and this does not lead them into believing. Inferring from the existence of a prime cause to the existence of an omnipotent and omniscient being is simply incorrect. Other examples are the morality, and the free-will, again the atheist do not reject them, but they still don't accept God. Conversely, I will not consider arguments against God, often raised by atheists, like the existence of religious wars, or why does God allow sufferance, because the religions have answers for them. Therefore, I will adopt an agnostic position: "I am too limited to provide a proof for one side or the other".

Some believers consider that the Apostle Thomas, when he doubts, committed a great sin. On the other hand, when Thomas doubted, he acted like a scientist. There is nothing wrong with this: if there is a proof, we should search it without preconceived ideas. Scientists usually avoid referring to God, which they consider a hypothesis, because they want to find simpler explanations. Explaining things by God's will require then an explanation of God, and this is more difficult. They want to find explanations not because they want to defy God, they just want to understand. Some of them even believe in God, but they try not to mix their personal beliefs with what they can prove. Some religious persons consider that Science should account for God. If this is so, then they should provide good reasons for scientists to accept their hypotheses as scientific, by explaining things that cannot be explained in a simpler way. Science tries to explain things with the minimum amount of beliefs. The beliefs in Science are well isolated and concentrated in Principles and Axioms. The best theory is considered the one providing the best explanations of the facts, with fewest assumptions. And the theory must provide accurate and testable predictions. This is why God has not found yet His place in Science. But, I repeat, this will not stop a scientist, as a person, to believe in God, only to claim that religion is science. One way to bring God in the equation is to show that there are phenomena in the Universe that reveal a purpose. This is a very difficult task.

2. Convergence and intention

2.1. Local convergence

In [1], I discuss the possibility of free-will, in a world described by mathematical laws. Usually, the mathematical equations describing the physical evolutions are deterministic at the fundamental level, and are considered incompatible with the free-will. On the other hand, Quantum Mechanics is viewed as indeterministic, and this feature was considered as being not only compatible with the free-will, but sometimes as guaranteeing it. In the article [2] I constructed a Smooth Quantum Mechanics, a theory which does not use the discontinuities as explanations for the wavefunction collapse. Although this theory is deterministic, it is no less compatible with the free-will than the indeterministic version of Quantum Mechanics. On the other hand, if the human mind is governed by mathematical laws, and if it is something like an algorithm (although maybe more general than a Turing machine), then there seem not to be room for free-will. The determinism seems to force the decisions, and the randomness seems to force them being random, but neither of these is freedom. I proposed in [1] that the only remaining possibility for the free-will, in such a world, is to consider that the initial conditions are such that they anticipate the decision we will made. It is like we decide, and the matter already evolved such that our decision is taken. This hypothesis can be tested, and the test may reject the free-will hypothesis, or it may confirm it. The experiment is very difficult to do, and I cannot give prognostics about the outcome. What I can do is to hope that someday we will be able to perform it. A positive result will show that our minds are somehow above the usual spacetime causality. Such a result can be interpreted, at least metaphorical, as if we are in fact not computer algorithms running on a matter hardware, but something outside the spacetime, like a computer game player inputing data to the algorithms representing us in the material world, by the means of the initial conditions.

The presence of a purpose, or of an intention, lead to a convergence of the phenomena, such that the intention is materialized. The convergence can be measured, in principle, and the free-will test is based on this possibility. The presence of an intention can be observed for example by monitoring all the physical processes taking place in the brain, and seeing if they reveal significantly more coincidences than if they were random. In the case of a human mind, I name this phenomenon *local convergence*.

2.2. Global convergence

Consider now the question whether there is a purpose of the Universe. In this case, we should look for a convergence at the level of the Universe itself. I call this *global convergence*.

By studying the Universe, it seems that, although the vast majority is hostile to life and intelligence, there is at least one "corner" which is friendly enough to develop conscious beings – our planet. Some consider naturally that, given such a large number of stars in the Universe, at least one has a planet with conditions fine tuned enough for life. Others consider this a miracle. Moreover, they say that, by varying very little some

constants in Physics, or the initial conditions of the Big Bang, this Universe would be totally hostile to life. They try to make calculations showing that the chances are very tiny for the Universe to be such friendly. These calculations are usually rejected on the basis that they are too specific – referring to carbon based life, and because some of the probabilities are highly correlated, and we should not simply multiply them. I consider that this argument, based on global convergence, is too important to simply reject it without giving it a chance, but I also consider that we cannot simply accept it in its present state. The *Global Convergence Hypothesis* is very important, and we should give it considerable attention.

In order to have the final answer correct, we should have a way to compute precisely these probabilities, and their correlations, such that the total probability be calculated properly. The correlations between them may depend upon the theory employed. For example, it is possible that a unified theory of physics may provide quantitative relations between some constants, or masses of the elementary particles. A cosmological model may provide correlations between various probabilities involved in the equation. Moreover, we should be sure about all the possible forms of life, not only the carbon based form which exists here on Earth. All these conditions are very difficult. Having a Theory of Everything, explaining the fundamental physical laws, containing an accurate cosmological model for our Universe, and all possible forms of conscious life, it is a dream which we don't know when or if will be attained.

On the other hand, maybe it is possible to have a proof based on much general assumptions. A framework for foundational questions, independent on how the particular final theory will look like, is provided in [3]. But we don't have this proof yet.

3. The Global Convergence Hypothesis – possibilities

3.1. Convergence vs. blind chance

The first step is to verify whether conscious forms of life may have occurred by pure blind chance. It is a widespread belief that the life is inevitably to occur, from atoms that combine randomly, in billions of years of such combinations, on so many planets. Moreover, relatively recent progresses in cellular automata, or in chaos theory, seem to reveal that order may emerge from blind chance. On the other hand, the supporters of the GCH, although not denying the important progresses previously referred, consider them not enough for the emergence of conscious life.

If a scientific (perhaps mathematical) proof will reveal that blind chance is enough, then we can consider that the GCH is disproved. Please note that the Local Convergence Hypothesis (the one related with the free-will) still may be true.

Some may consider that I oversimplify the things, that there may be a superior level of organization that is beyond blind chance, but is not reducible to particles interaction. If this level exists, we should see whether it emerged simply evolving from randomness, or whether it is part of the Global Convergence. I think that this decision reduces to the "convergence vs. blind chance" decision.

3.2. **Convergence vs. Multiverse**

If GCH passes the "convergence vs. blind chance" test from the previous section, then the next challenge is that of the Multiverse hypotheses. According to this kind of explanation, our Universe is so fine-tuned for conscious life because there exist in fact all possible Universes, only few of them containing the appropriate conditions, and we necessarily live in one of these. There are several hypotheses of this kind. One of these is provided by the Many Worlds Interpretation of Quantum Mechanics [4] – the idea that each measurement leads to a split of the world, according to the possible outcomes – or one of its versions. Other possibilities involve the existence of all possible mathematical structures as possible worlds [5], many possible brane worlds, a very large Universe containing ours as a large fluctuation, etc.

Wee see that, even if it can be proven that our Universe is so friendly for conscious life, that it is very improbable, there are alternative explanations to the Purpose Hypothesis. Having a large range of possible Universes explain the coincidence of the conditions as well. The Purpose Hypothesis is indeed "complicated" enough to violate Occam's razor principle, but so seem to be to postulate so many dead worlds to explain our alive Universe. Therefore, the next logical step will be to find differences in the predictions made by the two alternative explanations, and to test them. But how can we do this?

Suppose that, someday, we will find on another planet a form of conscious life which is totally different than ours. Suppose that this form of life is so different, that it requires a set of favorable conditions that are very different than the conditions required by the life as we know. In this case, our Universe satisfies to set of constrains, which are independent, or at least the probability for being both satisfied is very small. Under these circumstances, if the existence of humans can be explained by Multiverse, and the existence of the other life form as well, to explain both by the Multiverse will be very unlikely. This will be a proof for the existence of a purpose, which contains both conscious species. This is just an idea of how we can distinguish between the two alternatives, convergence and Multiverse, we can cook up different variations. The idea is to show that there is a Purpose which is not limited to what can be explained by the Multiverse-type hypotheses.

On the other hand, maybe we will find a possibility to prove one of the Multiverse hypotheses, or at least to show that it explains better the data than the Global Convergence Hypothesis.

3.3. **The Purpose**

In the case we will discover that the Global Convergence Hypothesis is confirmed, what will this imply about God? Can we deduce from this any characteristic of God, can we justify one of the many religions presently existing? Perhaps no. The other claims of the religions will still remain outside the realm of Science, unless they will be proved as well.

On the other hand, suppose that we will find that the predictions of the Global Convergence Hypothesis are identical in all aspects with those of an alternative theory, for example based on the Multiverse. In this case, they can be considered as equivalent.

Believers will say that there is a Purpose, or at least that God choses to create the Multiverse, with all its possibilities. Atheists will say that the Multiverse hypothesis does not need God. But, what is important is that, at least at the operational level, they will be in agreement.

If the GCH and the Multiverse hypothesis will be indistinguishable, it will follow that the Purpose of the Universe will be the occurrence and development of conscious beings.

I resumed the possibilities in the figure 1.

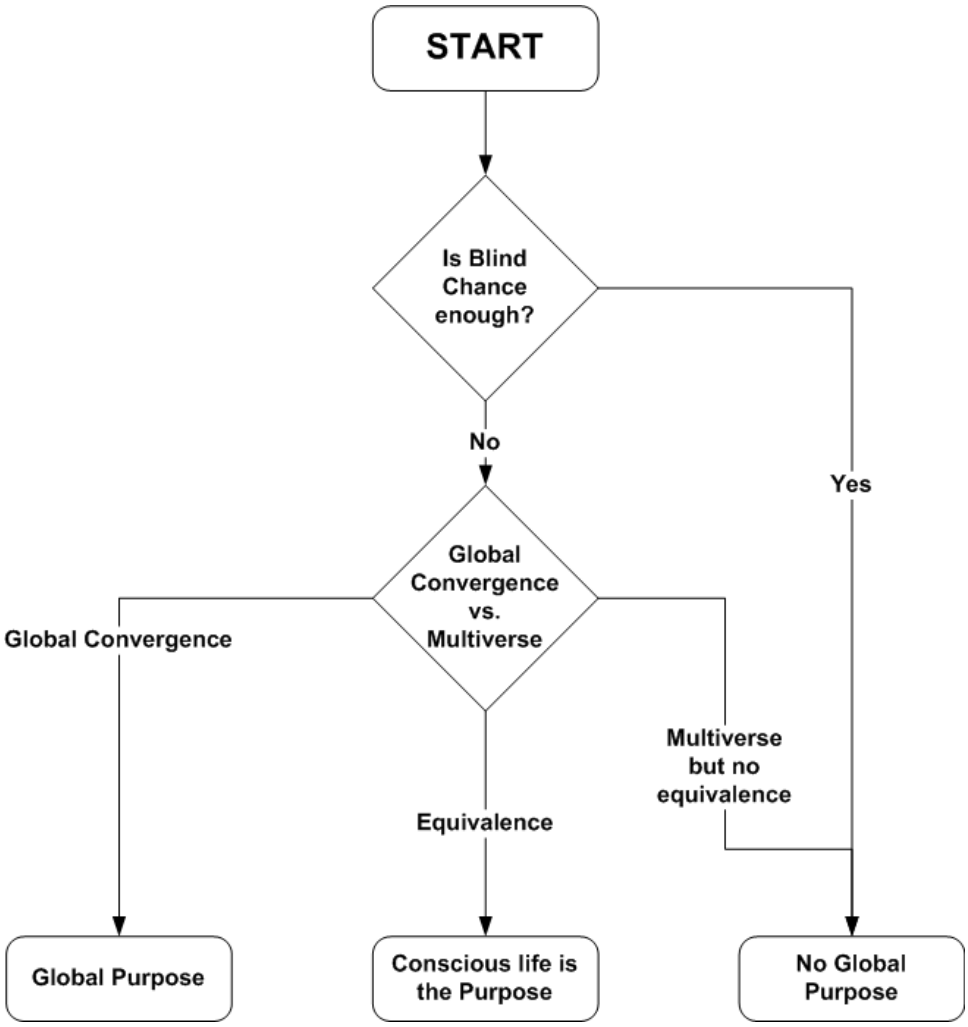

FIGURE 1. The possible answers to the question "has the Universe a Purpose?".

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