

## **THE EVOLUTIVE MIND DEBATE**

### **Proceedings**

IGNACIO SILVA: I am not sure if you are familiar with the last book of Massimo Piattelli-Palmarini what Darwin got wrong, and there are a couple of points that interestingly clearly converge with some of Teilhard's positions or suggestions. One is the one which already Fodor made explicit a couple of years ago in an extended review with the title *Why Pigs Have No Wings*, and was the idea that we should accept that evolution is channelled, it is not proceeding just by a natural selection, and that is clearly convergence with the idea of canalising. You said that channelling seems to be perhaps more appropriate, but I'm not sure whether it's the same thing.

Second is the idea of theology, but it's interesting that in the book of Fodor, this idea that – how to say – the understatement of all the theory of natural selection is that we should accept some theology on all this process, puts in big trouble all the evolutionist, the standard evolutionist theory. But the question is whether theology can be admitted in some way without being necessarily theological, or whether this admission of a latent or implicit theology jeopardises all the evolutionist theory, as Jerry Fodor seems to criticise.

We devote a long review by Neil Spurway in the next issue of our bulletin, *Satnews*, which will be distributed, but Neil seems to be very, very angry against Fodor and Piattelli, because of this perspective, or this deconstruction of the theory of evolution, but I'm not sure, I'm not completely sure who is right and who is wrong in this recent discussion. What is your opinion?

LUDOVICO GALLEN: Well, the opinion about the book of Fodor and Piattelli-Palmarini is quick. They were lucky to be published by Falcinelli, who is one of the best publishers in Italy. My book is published by very local editors. I am trying to defend it. But in my opinion, my book clarifies all the points of Piattelli-Palmarini and Fodor. I make a distinction between evolution as a result of an historical investigation. You know what I say usually, because in Italy, I said this everywhere, which is proven as it is proven, the existence of the Roman Empire, so we are quite sure on the evolution of historical events.

Then there is a free discussion about theory. We need the free discussion about theories, because science is going on, thanks to the confrontation of theories. If all of us agree with natural selection, there is no game, but there is no progress. So, I think we need pluralists, but we need a purism which is founded on at least some evidence. Then, at the end we said okay, the Goodwin idea of our organisation is good, but it's not useful. I propose that also another interpretation. Evolution is the evolution of complexity of life, we need a different way of epistemology. We need to think about the local falsification, which doesn't mean that all the theory is not useful, but in that specific event, is not useful.

So for instance, you have enough of a selection in the *Biston betularia* moth, in the Galapagos finches, and so you have a lot of examples where natural selection is working. Okay, but it doesn't mean that every event in evolution is explained by natural selection. This is an attempt to present other different positions, and there is also a small chapter about how to build a terrace in biological evolution because it is necessary also to look at this theoretical works. But Piattelli-Palmarini is selling his book all over Italy. Without a programme, I am travelling with a lot of difficulties in presenting the book. This is the last

programme, taking into consideration that theology is not only a problem of experimental science, but it is also in some way a philosophical aspect, but that philosophical aspect which is necessary in building theories.

LLUIS OVIEDO: Excuse me, the point of Fodor is that his theory presupposes, the evolution standard theory, presupposes theology, it's not a good scientific theory.

LUDOVICO GALLEN: Well, this is the big question because you see Bonnaught, there is no theology in Bonnaught, but in Bonnaught, he said that this is the result of this investigation based on objectivity, scientific objective, which is not true. It is based on existential philosophy. The passage is not clarified by Bonnaught when he said that we are the result of the lucky number of the lottery of the universe. This is a passage which is not based on scientific objectivity, like people saying that we are the result of a theology mechanist. But I am very clear in the book, I am sorry, but everything is written there. It is all in Italian and there is a Spanish version.

LLUIS OVIEDO: Are you trying to say to say that theology implies bad science?

LUDOVICO GALLEN: There is, in the building of a scientific theory, I refer to Lakatos. Also, a metaphysical part intended, I am not a philosopher, very, very roughly, a psychologist, metaphysical, which are not only based on observation and experiment, but on the general idea of the scientist, and in the construction of the theory, there is also part, which is where is theology, where is the poor chains and so on. You build the theory, but then you must come from the theory with the result of experiment and observation. This aspect is a necessity to make the construction, but then the construction must be tested with the instrument of the experimental science. But part of the theory is also constructed.

CHRIS WILTSHER: I want to move it out into a more general thing, because one of the things that I have noticed in recent years is that teleology is being used in two different ways. Even if you move it away from the theological world, there are suggestions of teleology from the very origin of the cosmos. But there are also a lot of suggestions, and the second meaning of teleology comes out in the way in which many discussions nowadays in, certainly in biology, I think also in zoology, use teleological language in making their statement.

So they are talking about we must move towards the development of consciousness, the greater complexity and so on. That is teleological language. Now what I wonder is whether that language is being used consciously, that is people intend, there is a teleological expression there, or it's being unconsciously because that's the only language we've got. But that would make a big difference to the question of whether teleology is important for science or not, and we have a number of people here, I'd like to know if the same thing is happening for example in discussion of the brain. Is it all being expressed in teleological language, and is that intentional, because this makes a big difference to the whole of the discussion of the evolving mind.

LUDOVICO GALLEN: Yes, this problem is very well clarified by the letters between Green, the author of *The Death of Adam*, and Theodosius Dobzhansky, which were published by Michael Rosen, philosophy and biology, because Green said that the evolutionist, that the modern synthesis, both Dobzhansky and Julian Huxley use a language which is not the language of the old positivistic traditional which made modern science. Dobzhansky's answer was that it was not possible to present the result of evolution without using these words. So, moving towards a complexity and adaptation and so on, they were very, very

difficult to be defined in terms of pure positivistic science, but anyway were necessary for the vocabulary of the evolutionist. So, this is the problem of this very peculiar science, which is evolution.

CARLOS JOSÉ CASTRODEZA: I think it is very important to clarify what you have said because Richard Lewontin, probably the best theoretician of evolution alive, reviews Fodor's book in the *New York Review of Books*, and he agrees completely with Fodor and colleagues because Lewontin is a very, very sharp critic of the adaptationist programme.

In fact, with Steven J Gould, as you all know, he has written very much against natural selection as a global theory. In fact, Gould asked Lewontin exactly the same problem as Darwin had at first. Darwin at first considered the theory of Leopold von Buch, who was studying the flora and the fauna of the Canary Islands, and said the different animals and plants in the different islands have evolved just by random drift.

Darwin considered this theory, and when Darwin's theory of natural selection was criticised from every angle, at the end of his, by the fifth edition, he considered the ideas of Maurice Wagner. Maurice Wagner was also, what we will call nowadays, a neutralist in the sense that natural selection would be, at the most, a process which achieved the finishing touches in the process, so that the evolutionary process not only has not any semblance of theology, in any case Ernst Mayr calls teleonomy, teleonomy is to theology what astronomy is to astrology, what teleology is to teleonomy, which is a new way of seeing the teleological matter.

So, in this sense I think that the theory of natural selection, or natural selection of mechanisms is frankly on the decline, declining side, and not in favour of any teleological idea, but in favour of random drift because when for instance the palaeontology route has made a computer simulation without taking into account natural selection, he obtains a plurality of forms that could be interpreted like if there would be natural selection. You know, he obtains complexity, he obtains exactly the same picture we see, like the process interpreted, as you also know, by Motoo Kimura, the Japanese neutralist, and in fact, as you have said very well, the premise are not objective, are subjective.

So we have at the moment three naturalistic schools of evolution, which would be the selectionist represented by Agella, one of the disciples of Dobzhansky, the neutralist position where Lewontin is one of the main characters, and directionalist position, represented by Stuart Kauffman, which has appeared in our discussions several times.

LUDOVICO GALLEN: Yes, and also Conway Morris, in the directionalities, and I discussed this for some time with Conway Morris in Rome also, the idea that perhaps directionalities could be better explained inside the general theory of the biosphere, which I add to this one as another theory to explain evolution.

MODERATOR: But the evolution, if you talk about evolution, depends very much on the environment involving it. If you think about the evolution of the mind and you would say the Buddhist monks were a higher level, they are now supposed to get the most children in our society, and those who get the most children, may not be the pinnacle of intelligence or mindness. So, maybe the society or the environment is not really favouring an improvement, but rather a kind of degeneration.

LUDOVICO GALLEN: It is difficult, in my opinion it is difficult to bring that terminology of biology and the natural selection to human society, because it is not, I think anymore, human evolution, it is cultural revolution, which is quite different. I don't know what happens to the children of a monk, because in our tradition the children of monks call the father, uncle. So, it's not so easy to recognise who are the two children.

The problem is so, anyway, in my opinion we need also on this topic to study better the general rules of nature. For instance, a species, the risk for a species is the demographic explosion. You know that the demographic explosion is one of the first steps towards extinction, so after the period of growing of numerical human kind, from a numerical point of view, that now we have to stop, to find some ways to stop. This is the main point. So it is not a problem of the best, or not the best, biogenetics is very, very problematic.

There was a terrific discussion just after the natural selection between Darwin and Jackson Mivart about genetics and Wallace also, is a part which is not very well known, but a strong discussion in the English milieu about this. But now I think that it is not a problem of genetics. It is a problem of demographic stability. We have to find a way to reach the demographic stability. Again we are back to the stability of the biosphere.

MODERATOR: And diversity.

LUDOVICO GALLEN: And diversity.

MANUEL BÉJAR: So it's an incentive?

GIORGIO INNOCENTI: Yes, I'm not sure. I have the feeling that we are sort of believing, or feeling, that there is something missing in the theory of evolution, and of course I don't believe interjectory, which lead to man. On this diagram you can make as many trajectories as there are outputs, so obviously it's arbitrary to choose one rather than another one. In my opinion, what is a rather perhaps important fact is that the placental mammals and the marsupials had given rise to very similar morphological types, and that clearly indicates there is some kind of mechanism which is channelling evolution, and in a, rather I would say, amazingly narrow way.

There are so-called theories of facilitated variation which take care of several aspects of the, actually of the organisation of that mammals which can perhaps explain this. But in my feeling, or perhaps because of my experience, one of the big channels is actually development. There is no way that a variation will come out to the full, to a functional phenotype, which is violating very simple developmental constraints. There is no way that you can get a foetus whose head is bigger than the vagina of its mother.

There is no way that you can get an angel, because you need wings and arms coming out of a body plan which only can have one or the other, and so on and so forth. But there may be other mechanisms which are channelled and they give direction, because this seems to be, you know, I'm not very deep as you in the theory of evolution, but this seems to me to be the big puzzle. How can it be that we have all the molecular manipulation of genes which are being produced these don't. You don't get any phenotype which makes sense, right? While in evolution they do make sense. They came out somehow, so they must have been channelled.

JAVIER MONSERRAT: It is still a question about Teilhard. I am speaking about Teilhard as a scientist, not as a philosopher or theologian, and the question would be did Teilhard de Chardin have an autonomous understanding of the evolutionary process, or not? I am speaking about this because all you know many things about this discussion in the United States about the intelligent design.

For example Dembski, the most important, the most relevant theologians and also Christians, philosophers, said in connection, in relationship with this discussion, that we as Christians, we should recognise that God is creator of the world, and also, if God is creator, he has made creation with a certain design, but God has created the world autonomous. The question would be: how would the scientific description of evolution

in Teilhard be? Could it be autonomous in this sense. In other words, how would Teilhard speak about the today's position of the intelligent design, for example?

LUDOVICO GALLEN: I cannot say what Teilhard will say today.

JAVIER MONSERRAT: But I am speaking about what he would think about this autonomy of the evolutionary process.

LUDOVICO GALLEN: Yes, of course. For the autonomy, I tried to investigate this aspect. In my opinion, and I said this a few minutes ago, no theory in science is perfectly autonomous in its very beginning. There is in every moment at the beginning also some kind of inspiration. Also in Darwin for instance, many aspects of gradualism are not exactly confirmed immediately by the observation. There is some time before the theories are liberated by the start point at the beginning.

I said that for me, at the very beginning of the investigation of parallelise moving towards liberalisation in Teilhard, there was the idea of a general moving towards because in some way, there was some kind of necessity of the thinking creature in the economy of the universe. There was, if you like, the aspect of non-autonomy at the very beginning, but then when he made the definition of the geobiology as the science of the biosphere and the science necessary to study the general law of evolution, this is now the autonomous perspective of Teilhard towards evolution.

You know that Galileo wrote that God, affirmed that God, wrote the law of physics with the language of mathematics. So, there was again an idea of God in the works of Galileo. The start point is this, but then at the end of the process, I think to be able to affirm that the final results are autonomous, the theory of the biosphere and geobiology are an autonomous contribution of Teilhard to the theory of evolution.

What about intelligent design? I think that the intelligent design is very far from Catholic theology. You know Cardinal Newman said very clearly that he preferred an atheist in spite of a believer in a God who designed in a perfect matter the wing of a coleopter. So, it was not in Catholic traditional, intelligent design. It was more on the side of Platonic vision, but it was abandoned. So, I don't think it was on the side of the intelligent design. Perhaps with the aid of this general movement, but not of the solution of problems by a direct inventor of the more or less intelligent engineer.

MODERATOR: But this intelligent design idea is part of a new Christian vision or something like that. It has something to do with Christianity. It's not an atheist idea, as far as I know.

LUDOVICO GALLEN: I sometimes say that this is an answer to what I call the stupid design idea. So, everything is changed, there is nothing, and then you have all these beautiful links. So if there is a total causality at the beginning, why then you have this discussion? This is a stupid design, but it is a mistake, both are mistakes.

IGNACIO SILVA: In terms of just a very simple explanation, clarification on intelligent design and traditional theology, the intelligent design people today argue for direct intervention of what they call indivisible complexities. For example, the flagellum in some bacilli and things like that. They think those cannot be explained by evolution, and therefore God has to instantaneously create the mechanism. Certainly there have been studies which put this away, evolution studies that put this away.

On another note, even though, as very well Ludovico said, he has never been within Catholic tradition, in the Protestant and Anglican tradition, we have Paley a couple of centuries ago, but I wouldn't even put Paley within intelligent design people. It was a

completely different thing. So we have to be very careful when we speak of intelligent design or creationism movements in the States, and now in the Muslim world and also in Australia, because although they want to claim being scientific and as well theological, they lack a serious philosophy of science, I would argue. So, I choose that clarification. We have to be very careful when we speak of intelligent design and Christian teleology. They are certainly not the same, and there are many, many theologians and Christian philosophers who, like Ludovico, are showing Teilhard de Chardin, a proper scientist with evolution theory, and trying to put that together with Christian faith and doctrines of creation.

LLUIS OVIEDO: There is at the moment in the Christian teleology a kind of tension between two poles, we could say. One is represented by the movement which makes a head to Polkinghorne, and the famous book published more than ten years ago, *The Work of Love*, which was a collective book in which there was Moltmann as well, and several theologians. In this book, the main idea is the idea of autonomy, of the created world.

This idea has been subscribed by John Holt at the same time, and it states that *The Work of Love* is precisely to create a work which is autonomous, because love cannot be conceived when your partner is not free, not autonomous. So there is no love when there is a too strong dependency. Love requires freedom and autonomy.

But of course these are the kind of ideas which solve a problem and poses another one or two or three more. The problem it poses is that if we state this autonomy, then what can we do about providence, about relationships and partnership between God and the world, which are the limits of this autonomy, how can we conceive in theological and philosophy of religion terms the interaction between the Divine and the Creation, and so on and so on and so on.

So my opinion, I think that the standard is now moving in the direction of this greater autonomy of the created world, and is a sign of God's love. But then the other question, intelligent design, I think that the standard Catholic teleology didn't support or didn't receive too much, or I don't know, explicit endorsements by Catholic theologians of this idea, which is rather not promoted by theologians, but Richard Bay and Dembski, they are not theologians nor philosophers. I think they are biologists, but in the line of evangelical, I think.

But I am not sure that the question of intelligent design can be dismissed in a quick way, in a fast way, from a theological and philosophical point of view. It is deeply connected with the question of teleology, and I can confess to be honest that I have not at the moment clear ideas or a clear solution about all this business.

IGNACIO SILVA: On this last point, certainly the phrase intelligent design says a lot theologically. I just want to make the point that the groups which now call themselves ID, like the Discovery Institute, they are using this phrase to indicate what I said before, that there is direction intervention here and now to produce this product, and then nature moves on.

CHRIS WILTSHER: I think that's a very important clarification. All Christian teleology begins with the idea of a creator. If you've got the idea of a creator, you can go in the direction that Paley went in the 19<sup>th</sup> Century, and have a God who is a creator but sort of stands well away and just lets everything go, or you can move in a direction which somebody like Phil Hefner would take to say that creation is continuing now. We don't understand how, but he talks for example of created creators, human beings, as those who are created but are also creative, working with God to create.

But all that implies is that there is some kind of design going on however, whether it's strong or not. The intelligent design discussion in the United States, and it is mainly in the United States, is a claim that that design is very, very focussed with God intervening for very specific purposes, always related to human beings, and that is the stumbling block for a lot of Christian teleology, that a lot of Christian teleology can't go into that narrow way. What we have to remember is that the current thought of intelligent design has its roots in the discussions at the end of the 19<sup>th</sup> Century and the early part of the 20<sup>th</sup> Century where some people who call themselves Christian – I choose my words very carefully – some people who called themselves Christian, said that the only way you can understand a creation is an instantaneous creation.

They didn't like the big bang, they didn't like anything of that kind, and current discussion of intelligent design has its roots in that. We need to recognise where that came from, and when the people who are doing it then say this is the only Christian teleology, we have to remember that is not the case. And that is now being picked up of course in Islam, it is being picked up to some extent in Hinduism, and again, it's the same very kind, very narrow kind of thinking, which they would then claim, they go to great lengths to try and find a scientific basis for it.

Most scientists would say the basis is flawed, but we have to be very careful with these kinds of discussions, because one of the things which those who come from that particular school of thought want to do, is confuse the discussion and stop us making distinctions.

MODERATOR: But from a scientific point of view, I see this as a very anti-scientific theory, and both intelligent design and creation is against all knowledge we have about evolution and all the accumulated knowledge we have during time. So, in many ways it's talking against science, and it's funny that it becomes so popular in a time and is gaining influence in the media and everywhere in a time where science should be at its stronghold. Then suddenly comes this idea, which doesn't even have a foothold in traditional religion.

CHRIS WILTHER: But when you say it is against science, it is very selective about its science, and because it is selective, it chooses ideas which will appeal to people who know very little science, which is the world we live in. That's why it's popular. It is not scientific, but it is selective in its scientific facts, and it does raise, some of the so-called scientific creationist writings do raise some questions about the theory of evolution, which need answering.

I don't agree with their answers, but the questions are there, because the theory of evolution by natural selection is not the only game there is. So they do raise some questions, but they are very selective in their science, and that's why I would agree with you, they are anti-science because they will only accept certain things, and they rule out other things, not on scientific grounds, not on grounds of evidence, but on grounds of belief.

OSCAR PEKONEN: This is just a joke that occurred to me. I can't remember who was the scientist who reviewed his now colleagues by saying not even wrong, it was perhaps Feynman or somebody, but I would like to introduce a similar phrase, not even heretical, because many of the ideas that float around in the current science, religion, but they are so wild that they fall into this category. They are not even heretical. I mean, if you want to make an interesting contribution to Catholic thinking, you should actually aim to be at least heretic, like Teilhard de Chardin was, because that means that your ideas are being seriously considered at high places. So, this is what I have to say.

KHALIL CHAMCHAM: Just a commentary about autonomy. I think the main difficulty is to combine a correct word with autonomy, and I think to get unity, we need probably a

more accurate model of God than the classical Taoism. Just a commentary. What I say is about the sort of discrepancy between the concept of autonomy and a created world. I say that to get, to reach the unity, we probably need a more accurate model of God than the classical Taoism. This is my opinion.

**JOSÉ MARÍA GÓMEZ:** From a molecular evolution point of view, there are two important ideas introduced, the first by Francois Jacot, the idea that thinking, evolution is un – sinking. The sinking created novelties, novelties in evolution, the second idea is introduced by my colleague, James Shapiro, the scientist that discovered the transposome, the transposome are an important element to evolution or the genome. This context is the natural engineering genetics.

The genome have the possibility to alter engineering complexity, but because there are many sequences quoted in the genome to increase the complexity of the genome, for instance to creation of the duplication of the gene, the duplication of the gene is important to create new genome material toward unthinking process to create novelties to grace new transition in evolutionary transition. This process and is not final, are not teleonomy in this process. They don't know why teleonomy in this process.

**LUDOVICO GALLEN:** I can't give an answer to all this. No, no, I was only thinking we have still to think about the genome evolution and organisation, and to insert this in a general theory of evolution, for instance, gene amplification as an answer to stress. The mosquito has hundreds and hundreds of genes, copy of the gene which his able to metabolise the insecticide. This is a Lamarckian answer? I don't know, because Lamarck is... but perhaps there is a change directly asked from the environment.

So, all the problems of genetic evolution, this is a beautiful aspect. What I am thinking is that there is no DNA which is junk DNA. I am of the other idea that every section of DNA has a function inside. I don't know exactly, I am not a biologist, but this is fascinating me more than the junk DNA theory.

**JOSÉ MARÍA GÓMEZ:** The creation of the placenta needs the information encoded in virus to create a trophoblast. It needs the information to incorporate the information from a virus inside the genome.

**JAVIER MONSERRAT:** Following with questions about autonomy, let us suppose that we speak with an atheist, we could put the question, we could put him the question – how do you explain evolution, and probably he would respond: matter has a certain ontology. We should admit that matter has an ontology, and according to this ontology, the evolution of matter has produced the laws of nature. And so, by this evolution, by this autonomous evolution, we can explain how, for example, complexity has evolved, has produced, has been produced, and also, we can explain how mind – this is the theme of this workshop – how mind has been produced also, for example, according to all these theories about quantum understanding of mind.

I would say if you see this point of view of an atheist, we can understand what means that the world is autonomous. The world is autonomous because matter from his own ontology and accordingly with the natural laws matter can produce what we can see evolution, complexity, consciousness, and also probably this going toward. But there is another question, and this is from a scientific point of view a completely correct right question. We could also answer, we could also put the question, well, but how and why the world matter has this special ontology, and why matter with this special ontology has produced by organising itself these laws of nature.



This is another question – how can we explain that this world had this very, very concrete matter and laws, and this is of course a very different question. There are people who would respond for example, I am a Christian philosopher and theologian, can we also say, and I would say well, I think that this matter in this world has been created by God, and God has put in the world this design, this kind of matter. Because of this design of this kind of matter, the world has this direction, and the man is, in the process of evolution, the man has appeared and consciousness has appeared.

This is my interpretation, but probably there are people who are trying to give another interpretation without a – let us say – divine design. For example, people who think there are a lot of universes. They defend the theory of multiverses, and they say randomly there has been produced a universe with these qualities for example. This is another example, this is the explanation, Richard Hawkins in his book, *The God Delusion*, explains these characteristics, these very special characteristics about ontology and laws of nature because he is defending a kind of – could we say – Darwinian cosmology.

But this is a problem, and this is another question. In other words, I would say we can speak about an intelligent design, a design of God, and I am defending this because I am a believer, but at the same time I am not defending that God is a God of the gaps, because I am not defending what the Catholic philosophy, the philosophers said, *kausa seyundas* [sounds like], of course, but I have the possibility to defend that for me, according to my interpretation, the world could have been designed by God in this fundamental sense, not in the sense of the God of the caps, and this is what the Intelligent Design America is saying, Dembski and Bay and all these people.

MODERATOR: This is also a very good example on which question you can ask in different contexts. It is my experience, I would go even further as a science journalist, that as a science journalist I can never ask the question to scientists, why, because that's usually not a scientific question. That's a question you ask to philosophers or religious people. You ask why to them, because the scientist cannot answer the question, why? He doesn't know.

LUDOVICO GALLEN: Yes, I do agree with you. This is another thing; we are speaking about philosophy of science. We are not doing science. Science is not Darwinian as a philosophical theory. We are speaking about philosophical conclusions. Of course I am not speaking of science.

MODERATOR: But the question, why, is of course still a very interesting question, even if the scientist cannot answer it. That's why it's a good dialogue to have between science and philosophy.

LUDOVICO GALLEN: For instance, the multiverse I thought is this, there is a lot of universe, and why are we here, because among the infinite universe this is the universe with the correct anthropological organisation. But also, this is an answer, it is not a scientific answer. We have no proof that there is another universe, no proof of an infinite universe. This is a metaphysical answer, in general philosophy, which is negating every rule for metaphysics, but to ask for a multi universe, to explain why were are here in this universe, is a metaphysical way to put the problem.

JAVIER MONSERRAT: But I think this multiverse theory is a scientific hypothesis. It is pluralist speculation now, I think.

LUDOVICO GALLEN: It is not so easy because we have now, I think we are back to the idea that constructing the theories, we have again the necessity as the start point of some philosophical, of theological inspirations, because we have no experimental proof, no

satisfying models in the multiverse hypothesis. Many is at present an answer to this question, why we are here. Perhaps tomorrow we will be able to organise an experiment, but tomorrow, and then from that moment, the science of the multi universe will be an experimental science, and autonomous science, but the start point is this connection.

When Teilhard, the maker, presentation of the Book of Simpson, Tempo and Mode of Evolution, he said, Simpson was the palaeontologist of the synthesis, and he had a strong casual model, and Teilhard wrote this is an example of the metaphysical of the radical Darwinist. So, I have a metaphysical looking for the modern reason, starting with theories about moving towards, but also, the radical Darwinist, which make the negation of a very peculiar position of humankind in the nature. The start point of a project of research, they have also a metaphysic on their ground.

So the start point has also these relationships, then they became autonomous if the scientist is working well, and I think at the end, the theory of the biosphere is a very autonomous tool proposed by Teilhard for the general theory of evolution.