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THE EVOLUTION OF CONSCIOUSNESS AND GOD'S ACTION IN THE WORLD

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This study, based on the works of Teilhard de Chardin, Karl Rahner, Karl Schmitz-Moormann, and George Ellis, analyzes how consciousness has followed an evolutionary process that has made possible the appearance of human beings in the Creation. It also seeks to reflect on how the action of God has affected this process, i.e., in what concrete way God undertakes action in the world.

Introduction

To find the meaning of their own reality in the context of the universe has always been one of the great challenges for human beings. What Pierre Teilhard de Chardin called *the human paradox* is still relevant over half a century later: however much science advances (in fact, we already know with complete security that we are biochemically comparable to other living beings), there continues to be a dimension of our reality that disconcerts us, one that we are unable to define adequately. For this reason, throughout our history we have repeatedly asked ourselves where this aspect that makes us different and unique resides. Or, to put it another way, what is it that distinguishes us from other animals?

To offer a satisfactory reply to this question would certainly be very complicated. However, a rough first approach yields something interesting. As far as we know, and talking in very general terms, animals observe their environment carefully, and then make an evaluation on the basis of the data received through their sensory mechanisms. If an animal finds the environment favorable, it takes advantage of it according to its needs. If the environment is unfavorable, the animal abandons it and looks for another space. Instead, human beings observe their environ-

ment carefully...and are struck with awe. Their complex nervous system offers a large amount of very precise data. But the key does not appear to lie here, for we know that some animals possess very sophisticated and efficient mechanisms, such as the sonar of bats and blue whales, which we do not naturally possess. Perhaps the key does not lie here, but in our capacity for awe. Why is this capacity so important? Because it leads us directly to what is a complete innovation on the evolutionary ladder: *reflection*.

It could be said that the capacity for reflection comes from a dimension that is inherent to human beings, but it would be difficult to determine where this capacity comes from, on what it is based. A series of questions arise at this point, which will be developed more thoroughly throughout this paper.

The next section explores how Teilhard associates this capacity for reflection to the concept of consciousness. He manages to integrate in a highly elegant way Christianity and evolutionary theories, whose respective principles could *a priori* be viewed as antagonistic. In addition, this section looks at Karl Rahner's approach to the problem of causality in evolution and, more concretely, at the moment of humanization.

The following section shows how Karl Schmitz-Moormann, following on closely

from Teilhard's arguments, approaches the evolution of consciousness as one of the factors that enable us to understand the universe in evolution as the result of the creative action of God. Here a fundamental question arises: If it is the creative nature of God that has enabled us to become human beings, in what concrete way has God intervened in the process? Or, which adds up to the same thing, How does God act in the world?

In analyzing the different ways in which God could intervene, the final section proposes, with George Ellis, a series of answers to this question, with the tenets of modern science always in mind.

“Man came silently into the world.”¹

In effect, the appearance of human beings occurred as the result of a process, humanization, which developed very gradually. Many scientists and theologians have devoted their efforts to analyzing this process. The work of only two of them will be examined here, both of recognized prestige: Pierre Teilhard de Chardin and Karl Rahner.

Teilhard de Chardin: humanization and the Omega Point

Between 1938 and 1940 Teilhard wrote what would be his most renowned work, *Le phénomène humain*, published posthumously. His intention, which brought him into serious conflict with the ecclesiastical authorities of the time, was to explain that, far from attacking religious values, his evolutionary interpretation showed the way along which the Creator had led human beings to what they are and what they would be in the future.

Teilhard begins this work with a journey through the elements that make up the universe: the appearance of the first molecules—*pre-life*; of the first living

forms—*life*; and finally, the birth of thought. From this point, he focuses on finding the direction followed by evolution, since at the time he was writing, most of the scientific community already accepted the validity of evolutionary theories, and much interest centered on finding out whether this process was *directed* or not, i.e., whether a concrete guidance existed.

Rejecting any kind of sterile anthropocentrism, Teilhard first tries to find an order within the immense complexity of living beings in their entirety. Clearly, there are many features that can be examined in a serious study, but Teilhard searches for that particular characteristic that confers greater coherence on living beings in their entirety. After appreciating how steady growth and deepening of consciousness occurs in organisms, he reaches the conclusion that what signals the direction of evolution is the differentiation of the nervous system.

Of course, since the differentiation of an organ is potentially a factor of superiority, an interesting point presents itself: although specialization paralyzes, talking in evolutionary terms, and over-specialization can even cause the extinction of a species, it is clear that in the case of primates, everything has been kept in a plastic state,

Teilhard was led to conclude that the capacity of perception and analysis of reality that the nervous system possesses (what he calls “psychism”) evolves steadily until reaching consciousness, the indispensable condition for an event with spectacular consequences: the step of reflection.

while activity has been directed to the brain. That is to say, while anatomy has changed relatively little, the nervous system has over-specialized to an important extent. And this is the interesting point: we know

that our species shares with gorillas 98.3% of our genetic information, which gives us quite similar body structures and nervous systems. Yet, in the area of brain function, we find a giant leap. With this observation (although, of course, he didn't know this specific genetic data), Teilhard was led to conclude that the capacity for perception and analysis of reality that the nervous system possesses (what he calls "psychism") evolves steadily until reaching *consciousness*, the indispensable condition for an event with spectacular consequences: *the step of reflection*.

Finding an exact definition for this concept is not easy, but Teilhard understands reflection as: "le pouvoir acquis par une conscience de se replier sur soi, et de prendre possession d'elle même...: non plus seulement connaître, —mais se connaître; non plus seulement savoir, mais savoir que l'on sait."² The concern now is exactly how the above-mentioned giant leap occurs, for this is in reality *the birth of thought* and forms a "discontinuity within the continuity" of the evolutionary process. Intuitively we might think this step must have occurred "just once," but conceptually this idea can be very shocking because it suggests a certain sense of "rupture." In the case of the development of an individual (from birth to adulthood), this rupture would not have the slightest relevance. But in phyletic embryogenesis, each stage is represented by a different being. The problem of discontinuity cannot be avoided in that, as the step of reflection is a very radical change, we cannot imagine an intermediate individual. The solution proposed by Teilhard is based on the thought that the transition occurred between two individuals, since "...en toute et pure rigueur scientifique, rien ne nous empêche

de supposer que l'intelligence a pu (ou même dû) être aussi peu perceptible extérieurement, à ses origines phylétiques, qu'elle l'est encore, pour nos yeux, en chaque nouveau-né, au stade ontogénique."³

Once the transformation has occurred (putting to one side the way we understand this step), the truth is that the structure of life is modified irreversibly: the human being is freed from a circle within which the animal is imprisoned and in which it appears to have no other function than that of perpetuating its species. Thus, the humanization of the whole group leads to a personalizing of the individual. Teilhard uses the term "humanization" to refer to the leap from instinct to thought, which the individual realizes, and in a broader sense, to the steady spiritualization of the human group. But this "awakening" is not only a critical point reached and overcome; it represents a transformation that affects the entire planet. If psychogenesis (which took place through the concentration of thought and its projection forwards) had led to the human being, it now dissolves and is absorbed by a still higher function: the birth and full unfolding of the Spirit. *Noogenesis*.

With this, a new layer above the biosphere is developed over the whole planet, the

Teilhard uses the term "humanization" to refer to the leap from instinct to thought, which the individual realizes, and in a broader sense, to the steady spiritualization of the human group. But this "awakening" represents a transformation that affects the entire planet.

so-called *Noosphere*. It is a layer that tends towards centralization and in which, "[p]arce qu'il contient et engendre la Conscience, l'Espace-Temps est nécessairement de nature convergente."⁴ As such, the different layers

advance and converge at the Omega Point, which fuses them and unifies them totally.

Turning now from the human phenomenon to the *Christian phenomenon*, one finds that Christianity contains an extremely simple and, to some degree, daring answer to the world: "Au centre, (...) l'affirmation intransigeante d'un Dieu personnel: Dieu-Providence, menant l'Universe avec sollicitude, et Dieu-Révéléateur, se communiquant à l'Homme sur le plan et par les voies de l'intelligence."⁵ The creation of the world supposes for God unifying it with Godself (in line with Greek thought, which identifies "being" with "being one"). Thus, the universe culminates in a synthesis of centers

(understood as beings now capable of reflection) in a Union in which God is the Center of the Centers. This is precisely the Omega Point. However, this convergent universe is not born of the fusion and confusion of the elemental centers which it accumulates, but is pre-existing and transcendent, in accord with its collective and stabilizing function. For Teilhard this "unity with God" of the reflective centers is not achieved through an identification (God being converted into everything), but through the distinguishing and communicating action of love (*God as the All in all*).

Karl Rahner: humanization as "self-surpassing"

Finding an adequate "definition" for the concept of human being is a challenge that has long been discussed and still remains open. Even so, both philosophies and religions have assumed a dualist conception of human being, by which it is divided into body (subjected to the degradation and temporality of matter) and soul (eternal and united to a celestial or divine field). Should the brain be introduced into this dualist perspective, it is usually understood either as an organ

that unites the body and the soul or as a complementary element to the mind (in which case brain and mind are indissociable).

As Karl Rahner remarks in his study, "Die humanization als theologische Frage" (which appears, together with a study by Paul Overhage, in the book *Das Problem der Hominisation*), this splitting of human nature is not legitimate. For Rahner, the

But the truth is that the existence of certain realities about which we possess genuine knowledge, such as faith, life, or consciousness itself, cannot be denied just because we cannot define them correctly.

evolution of the body (or of the material dimension) represents the origin of the birth of the soul, i.e., matter and spirit maintain a relationship and are two different aspects which are concretized in one same reality. The problem now is how this material reality can evolve toward something that essentially transcends it. The answer lies, as will be seen, in the phenomenon of *self-surpassing*.

In order to reach this concept, the question of how God intervenes in the world must first be tackled. In the Rahnerian schema (and these ideas are alluded to here in a highly simplified way), the activity that God undertakes can be either *transcendental* or *categorical*. In the first, God is the foundation of all reality in its being and acting, but this activity can never be the object of our own experience. The categorical kind of action, however, implies a direct and sensate intervention into the reality of our world.

The Roman Catholic tradition affirms the immediate creation of the soul along with the evolution of the body, so avoiding a fundamental problem, that of the reality of human beings. However, this tradition could

lead one to have recourse to a categorical type of action by God in order to argue for humanization. But then a series of difficulties arises, since it would be “forcing” an irruption of God into the environment of second causes, and it would also be a scientific scandal.

At this point Rahner poses the following question: Is it necessary to conceive of the creation of the soul as the result of a categorical action of God? His reply is negative, as this creation is sufficiently explained by humanizing transcendental action. One aspect of this is “self-surpassing,” by which realizing oneself is really transcending oneself, since the agent, starting from something lower, produces something new, which then surpasses the agent. But the above-mentioned matter-spirit interrelationship should be borne in mind, by which it is by no means impossible that evolution of matter leads to the spirit.

Therefore, I conclude with Rahner that the “creation of the soul” is basically self-surpassing realization, and that this creation must not be understood as the product of a categorical divine action, but as an action of a transcendental kind. This is conceived not just as an “accompaniment” to the world supporting its physical laws, but rather as the basis of the process of self-surpassing.

The Creation: The Universe in Evolution

In his book, *Theology of Creation in an Evolutionary World*, Karl Schmitz-Moormann offers an interpretation of the universe which follows very closely Teilhard’s arguments. However, Schmitz-Moormann’s intention is not to expound his thought, but to put forward a theological view of Creation that includes the evolutionary process in which the universe is immersed. Instead of starting in the beginning (as do the Bible, cosmology, etc.) Schmitz-Moormann prefers to begin with what he thinks is the key to understanding the universe: human beings. He bases his analysis of the evolutionary process that

human beings have experienced on three parameters: consciousness, information, and freedom.

Consciousness in the universe

In search of the direction which the evolutionary process follows, Schmitz-Moormann introduces union and consciousness as the first parameters of the universe that have to be integrated into a coherent description of evolution (just as Teilhard also did), since by acquiring and developing this consciousness—becoming conscious—the universe sets out on the road toward God. Once more the problem arises of giving a definition to this concept; but the truth is that the existence of certain realities about which we possess genuine knowledge, such as faith, life or consciousness itself, cannot be denied just because we cannot define them correctly. A second problem is that we see that the evolutionary process is dominated by the temporal dimension, and yet we believe in a God whose nature is eternal. The fact is that the concept of eternity is intellectually inaccessible to us and leads us to a negative theology (we can only talk of eternity in negative terms). Even though we are incapable of resolving this paradox, what we do see is that God starts from the creation of time to create also the dimension of becoming. This seems to be the only dimension with authentic sense in the universe, since through time humanity evolves and advances in its relationship with God.

The evolution of information

The second parameter proposed by Schmitz-Moormann to determine the direction of the evolutionary process is *information*, and, just as occurred with the first parameter, the level of information appears to become more blurred as we go back on the evolutionary scale. At the level of atoms, there is no distinction between the information these elements contain and their structure. This situation changes radically when life appears: the molecules that make up organisms become “carriers” of information,

in which there is a clear distinction between molecular structure and the information it contains. As evolution progresses, the independence of information from its carrier grows steadily (through its storage, codification, and communication).

Apparently, evolution grants to information a clear transcendence over material structure. This may be seen as a first step from materiality to spirituality, affirming that the spiritual dimension is the dimension that gives most meaning to the universe. For Schmitz-Moormann, it should not be a problem for Christians to see the work of the Cre-

It is important to remember that Vatican II referred to the world “which Christians believe was founded and conserved by the love [ex amore] of the Creator,” so underlining the definitive importance of love as the principle on which the world was created—ex amore, in contrast to the ex nihilo traditionally put forward.

ator in this evolution guided and directed by information. This enables all creatures to become steadily more like God and so partake of God's spiritual fullness (which for Teilhard is the road human beings follow toward the *Omega Point*).

Looking at the universe from this point of view, one can appreciate that this ascent of spiritual reality to higher and higher levels only concerns a small part of the universe, a certain part of which is composed of background radiation (without structures of material particles). The part of the universe that has molecular structure is very small. Most of it, although it has atomic structure, is composed of stars which do not have (and will not have) the conditions that life requires if it is to develop. This situation should lead to the question of whether behind this reality (which in cosmological terms means a

very small quantity of matter-energy) any defined purpose exists.

The evolution of freedom and the kenosis of God in the creation

Schmitz-Moormann's answer to this huge expenditure of matter-energy invested in creation is freedom. As such, he introduces it as a third parameter, along with consciousness and information, to consider in the evolutionary process. The alternative would be that the universe is rigidly determined by a series of natural laws sustained continually by an immutable and impersonal God. But this would be a perspective in which freedom

would have no space, and moral responsibility would make no sense. Although the determinist focus does not convince Schmitz-Moormann, neither does the “indeterminist” focus.⁶

However, an idyllic conception of the universe should be avoided, since the universe, precisely because it is not subjected to the determinism mentioned above (i.e., because freedom is one

of its fundamental parameters), is open to imperfection: Nature is not a peaceful meadow where gazelles and lions rest together, but a complex network of trophic chains where the law is that the strongest prevails, “red in tooth and claw.” It is true that our world evolves, but each new adaptation supposes the loss of an enormous number of lives along the road: pain, suffering, disease, death—in short, evil—are present at each new step of evolution. And in the case of human beings, one should add moral evil.

Of course, a world exempt from evil would have to be completely determinist, so that freedom would not exist either. And freedom is precisely the necessary condition for the birth of our capacity to *love*: loving our sisters and brothers and loving God. For Schmitz-Moormann, God's intention was not to create a perfect universe, but to make

room for a world in which people have the capacity to love God freely, which is the only way in which love is possible.

The price to be paid for this freedom is the huge amount of pain found in creation. This is why it is hard to understand that God, who is love, can allow all this suffering and all this evil. Schmitz-Moormann thinks that this difficulty, rather than being a sign of human compassion, is a sign that we human beings undervalue the high price that God pays for our freedom: God's kenosis. Out of love for us, God suffers with our pain—suffers, yet accepts it, so that we can live and love freely. And not only this, but God pays for it the highest price: the incarnation, life, passion, and death on the cross of God's own son, accepting vulnerability in all this.

God, creator ex amore

Creation, as Teilhard had already noted, finds in evolution the path to draw nearer and nearer to God. It is not that God exercises power to direct the process, but that the Holy Spirit is sent to work in the creation: God calls the world to an increasingly full union, but without obliging its "elements" to unite. In the field of human relationships, we call this way of accepting others and offering oneself without imposition, love.

In effect, God loves us with infinite patience, so much so as to accept a wait of thousands of millions of years (since the beginning of the universe) until God's call (what Schmitz-Moormann calls "God's loving creative call") finds a response in humankind.

It is important to remember, in this respect, that in its day Vatican Council II, in its *Pastoral Constitution on the Church in the World*, referred to the world "which Christians believe was founded and conserved by the love of the Creator" ("mundum, quem christifideles credunt ex amore Creatoris conditum et conservatum"),⁷ so underlining

the definitive importance of love as the principle on which the world was created—*ex amore*, in contrast to the *ex nihilo* which had traditionally been put forward.

The Action of God in the World

Thus, evolution may be seen to be, in brief, the tool used by God to bring about His creation *ex amore*. This postulate can be expressed scientifically in a very elegant

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way, as Ellis does in his article "The Theology of the Anthropic Principle."⁸ As proposed by physicists John Barrow and Frank Tipler, the Anthropic Principle posits the existence of a series of very well harmonized constants that permit (in its so-called "weak form") or even require ("strong form") biological evolution to give rise to human beings.⁹ However, the *Christian Anthropic Principle* as proposed by Ellis, demands, in addition to these so precisely adjusted constants, a series of conditions that allow the result of evolution to be persons capable of answering God lovingly (since theologically, by the very fact of the Creation being *ex amore*, a creation lacking people with this capacity would not make sense). These conditions¹⁰ are five in number:

1. *Legality.* Constant physical laws that make people's moral responsibility possible have to exist since, thanks to this constancy, which governs the activity of natural phenomena, people are capable of realizing in the world the consequences of their actions.

2. *Human freedom.* This has to be permitted in spite of these constant physical

laws. This condition includes the possibility that the individual (through moral evil or sin) does not reciprocate the divine initiative.

3. *Impartiality.* The fact that physical laws are universal guarantees that the person can believe or not believe in God (in effect, experience shows us that rain falls just the same on the former as well as on the latter).

4. *Hidden nature of God.* This is not imposed on human beings, but they can reach God through a certain knowledge of a natural kind.

5. *Possibility of divine revelation.* Despite a hidden nature, God can show Godself by, for example, interventions in the brain (a clear exponent of this possibility of divine revelation being found in the figure of the hagiographer).

In another article of his, "Ordinary and Extraordinary Divine Action,"¹¹ Ellis analyzes the way in which divine action can occur (analysis which, as shall be seen, follows a course that runs parallel to Rahner's hypothesis). In the first place, Ellis describes the *ordinary* divine actions (which is much the same as what Rahner calls transcendental action¹²), which are the result solely of physical laws (in which divine action plays a secondary role, apart from its primary action in establishing these laws).

In these laws Ellis includes the creation and maintenance of the universe (which comprises the establishment of physical laws and the complementary boundary conditions these require); the sustaining of the general living systems; evolution, including that of humans; and, lastly, "the enabling of the functioning of the brain and mind [foundations of consciousness and free will]."¹³

How divine action occurs in the world can already be explained in this way; but in Ellis' schema, new interventions of God are needed—*extraordinary* divine actions. Although these are not necessary for humanization as such, they are necessary for the possibility of the existence of beings that

could reciprocate the love of God (precisely the beings referred to by the Christian Anthropic Principle). These extraordinary divine actions possess a revelatory character (they express the intention of God) and cannot occur as a result of the laws of logic and physics (they act on an already existing universe: this kind of action is equivalent to categorical action in the Rahnerian schema).

Ellis distinguishes two kinds of extraordinary divine actions. First of all, he describes actions of a *revelatory* kind, which reveal the nature and significance of reality and provide either spiritual or moral discernment. For this revelation to occur, there must be some kind of "communication channel" that God can use to transmit information, images, and emotions to humanity, as well as what Ellis calls "preconceptual intimations of the nature of reality"¹⁴

Secondly, Ellis describes actions of an exceptional kind, the physical result of which would not otherwise have occurred: miracles. These, of course, are actions that imply the suspension of physical laws, and therefore pose an important physical problem. If, for example, the mass-energy in a determined space-time varies, the perturbation of the conservation of the mass-energy will spread to the rest of the universe.

For Ellis, the suspension of the natural order involved in miracles is a problem precisely because it is the regularity of physical laws that guarantees the freedom and moral responsibility of human beings. As such, "exceptional divine action can only take place when there are uniquely important events, which are vital for the future evolution of humanity."¹⁵ The typical example is the Resurrection of Christ, which is an anticipation of the eschatological moment, when another kind of law, different from the physical laws which govern our world, will come into operation.

Epilogue

For those of us who study the life sciences, evolution is a process that we have all stumbled over at some stage, from one

or another angle (although it can be said that there are few who know this subject in great depth). However, all of us who are Christians find the concept of God as the Creator of everything that surrounds us to be natural enough, in spite of the difficulty involved in really understanding what relationship exists between the Creator and Creation itself. What is really interesting is understanding how the concepts of "evolution" and "creation" are intertwined and, more generally, how concepts that concern both science and religion can be integrated. Undertaking this study has given me the opportunity not only to get to know the work of authors of the stature of Teilhard de Chardin, Rahner, Ellis, and Schmitz-Moormann, but also to approach the thrilling world of the current theology-science dialogue.

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Endnotes:

1. Teilhard de Chardin, English edition, p. 183.

2. *Ibid.*, p. 181.

3. *Ibid.*, p. 189.

4. *Ibid.*, p. 288.

5. *Ibid.*, p. 326.

6. Schmitz-Moormann finds that posing the principle of indeterminacy as a “piece of ground” on which the Creator has the possibility of acting is an unfortunate idea which reintroduces the “God of the gaps”. Nevertheless, most current participants in the theology-science dialogues see the relevance of the world being open to the action of God in this field of quantum indeterminacy, and even in the field of determinist chaos, which may serve to extend infinitesimal actions at a quantum level.

7. Vatican Council.

8. Ellis, “The Theology of the Anthropic Principle.”

9. Barrow and Tipler.

10. Ellis, *op. cit.*, pp. 387-391.

11. Ellis, “Ordinary and Extraordinary Divine Action.”

12. Rahner would be reluctant to pose the initial creation of the world as a transcendental action, but rather as an initiating categorical action. But Ellis considers that extraordinary actions occur in the already existing world, and investigates the possibility of the initial act of creation being considered an *ordinary* kind of action.

13. Ellis, *op. cit.*, p. 374. Ellis does not seem clear about whether this consciousness and this freedom arise from the intervention of God through quantum indeterminacy, or on a “mental field” that would unite the mind with the brain and matter, and that could be studied, in the long term, like any other kind of physical field.

14. *Ibid.*, p. 381.

15. *Ibid.*, p. 385.

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In 1998-99, and again in 1999-2000, the Institute of Fundamental Theology offered a 5-credit (50 lecture hours) course, “Theology and Science Today,” on the UAB campus. It was jointly credited with the UAB as a “free elective” in the various “Licencia” programs, including that in biology. The Institute of Fundamental Theology is not part of the UAB, but rather of the Ecclesiastical Faculty of Theology of Catalonia. (In Spain, as in France and Italy, there is no Department of Theology at State universities.) Noemí took this course, completing it with the grade of “Excellent.” Her essay is an edited version of a paper she wrote as part of the course requirements.