

# The Theory of Evolution in the Writings of Joseph Ratzinger

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**Abstract.** In this article, I analyse the texts in which Joseph Ratzinger deals with biological evolution, particularly in the context of the compatibility between faith in creation and acceptance of the theory of evolution. His first writings on the topic, until 1979, contain the most elaborate and deepest theological and philosophical insights, with a defence of the compatibility between faith in creation and the theory of evolution when the boundaries of their respective explanatory frameworks are respected. At the beginning of the 1980s, still at the philosophical level, Ratzinger engages with the work some atheist scientists who try to portray evolution as a “first philosophy”. The 1999 lecture at the Sorbonne University marks the beginning of a period in which he criticizes some technical aspects of the theory of evolution, a position that seems to have been prompted by contacts with anti-evolution German intellectuals in the previous years. After the 2006 meeting of the *Schulerkreis* in Castel Gandolfo, in which his criticism of evolution reaches its climax, his references to the topic were few and he returned to the philosophical ideas expressed in his earlier writings, stressing that the intrinsic rationality and inner logic of the cosmos point to a creating Reason.

**Keywords:** Joseph Ratzinger; Theory of evolution; faith in creation.

## Introduction

In 1989 cardinal Ratzinger addressed a meeting of bishops from several European Bishops' Conferences. Among other issues concerning catholic faith in Europe, he mentioned the surprising fact that the doctrine of Creation had been partly abandoned, with negative consequences on the view of Nature as a blind impersonal object that cannot be listened to, because it tells us nothing. Accordingly, he stressed the need to restore the message about God the Creator to its proper place in catholic preaching, something that would require new developments of the doctrine about Creation. This, he said, was an urgent task for theology.

Ratzinger had indeed been interested in theology of Creation since his days as professor of dogmatic theology at the University of Münster, and his contributions to the topic continued throughout his life. His views on theology of Creation, the role of rationality and the creative Logos, as well as his philosophical-theological views on the dialogical and relational-dynamic aspects of Creation, including his exegesis of Genesis, have been reviewed elsewhere (see for instance Blanco 2010, Rodríguez Mas 2013, Blanco 2014) and they are not the subject of the present work.

This article is concerned specifically with Ratzinger's view of the scientific theory of evolution, a question that to the best of my knowledge has not yet been addressed. In order to study this issue, I have compiled all the texts in which Ratzinger mentions the scientific theory of evolution, usually in the context of its relationship with faith in Creation. I then present these texts in chronological order and carry out a critical analysis in an attempt to reconstruct his views on the subject throughout the years.

### 1. From 1964 to 1969

#### 1.1. The Münster notes, 1964

In 1964 Joseph Ratzinger dictated a course on Theology of Creation at Münster, the notes of which have been preserved at some libraries and annotated by Sanz in three articles published in 2014. In the last one, dealing with

“some debated issues”, there are specific references to evolution, particularly in part IV about “Creation and Evolution” (Sanz 2014, 476).

In one remarkable passage, Ratzinger states that opposition to evolutionary thinking does not come from Christian ideas, but from the enclosure in the matter-form scheme and the essentialism that it implies<sup>1</sup>. In fact, Ratzinger believes that a Christian principle such as “Being as Becoming” appears more clearly expressed in evolution than in the traditional matter-form scheme<sup>2</sup>. Forms are fixed, so essentialism cannot properly deal with being as becoming; in a static essentialism, becoming is understood as a deficiency<sup>3</sup>.

However, if faith in creation is far from a theory of fixed forms, Ratzinger also stresses that creation and evolution refer to two related but distinct levels. Creation deals with the issue of why is there anything at all, the difference between nothing and something; evolution tries to explain how *Being* behaves and becomes, the difference between something and something else<sup>4</sup>. As we will see below, this idea is almost literally repeated in future writings.

In summary, when Ratzinger mentions “evolution” in the context of the Christian belief in creation, he proposes a total complementarity provided

<sup>1</sup> [...] es lässt sich zeigen, dass ein großer Teil des Widerstandes gegen die Evolutionsfrage gar nicht aus eigentlich christlichen Motiven hervorgegangen ist, sondern aus der Verhaftung an das Materie-Form-Schema und seinen Essentialismus (p. 74 of the original Notes as quoted in Sanz 2014).

<sup>2</sup> [...] im Evolutionismus kann ein christlicher Ansatz stärker zum Vorschein – Sein als Werden – als im überkommenen Materie-Form-Schema (p. 74 of the original Notes as quoted in Sanz 2014).

<sup>3</sup> [...] eine Welt, die einen statischen Essentialismus einschließt, in dem das Werden immer nur als eine Mangelerscheinung begriffen werden kann (p. 74 of the original Notes as quoted in Sanz 2014).

<sup>4</sup> Die Begriffe Schöpfung und Entwicklung beschreiben zwei verschiedene Ebenen, die zwar nicht beziehungslos nebeneinander stehen, noch viel weniger aber identisch sind. Schöpfung betrifft die Tatsache, dass überhaupt etwas ist, Entwicklung betrifft die Frage wie das Sein sich verhält, das schon ist, und was es ist oder wird. der fragepunkt liegt also anders. Entwicklung ist immer schon Entwicklung von etwas. Schöpfung betrifft die vorausgehende frage, dass überhaupt etwas ist. Schöpfung betrifft die Differenz zwischen nichts und etwas, Entwicklung die Differenz zwischen etwas und etwas anderem (p. 168 of the original Notes as quoted in Sanz 2014).

a clear distinction of levels is established. In his opinion, when such distinction is not properly understood then belief in creation will more likely suffer: “in the controversy between constancy and evolution (development) the idea of creation cannot be brought into play”<sup>5</sup>. I also note the use of *Entwicklung* (development) as a synonym of evolution, a practice that was frequent in German writings at the time.

## 1.2. Introduction to Christianity, 1968

Following some lectures delivered during the summer of 1967 in Tübingen, *Einführung in das Christentum* was published in 1968. For the purposes of this discussion, I will quote the English edition of 2004 (Ratzinger, 2004) and the German edition of 2000 (Ratzinger, 2000).

Evolution (as in “theory of evolution”) or the interchangeable term “development” (*Entwicklung* or sometimes *Entfaltung* in the original) is only mentioned in a few passages of this book. In one of the first chapters, Ratzinger makes the remarkable statement that “what already seems more important than the theory of evolution, which for practical purposes already lies behind us as something self-evident, is cybernetics” (Ratzinger 2004, 66). This confirms that he is not worried about the potential philosophical or theological implications of evolution as a theory of natural change, which he sees as “self-evident”.

In the section on Christology, while commenting on some ideas from Teilhard de Chardin he surmises the existence of the order of the infinitely complex “which determines the real drift of evolution” (Ratzinger 2004, 237). Later on, he speculates that the realm of biological evolutions and mutations will be left behind and “the last stage of evolution needed by the world to reach its goal would then no longer be achieved within the realm of biology but by the spirit, by freedom, by love. It would no longer be evolution but decision and gift in one” (Ratzinger 2004, 304-305).

<sup>5</sup> [...] in der Streitfrage zwischen Konstanz und Entwicklung der Schöpfungsgedanke gar nicht ins Spiel gebracht werden kann (p. 168 of the original Notes as quoted in Sanz 2014).

A few pages later he proposes a very important idea, which will be further developed in future writings:

But in this cosmic movement, as we have already seen, spirit is not just some chance by-product of development, of no importance to the whole; on the contrary, we were able to establish that, in this movement or process, matter and its evolution form the prehistory of spirit or mind<sup>6</sup> (Ratzinger 2004, 320).

It is interesting to note that in the previous quote from pages 304–305 he uses *Evolution* in both cases in the original German, whereas he uses *Entwicklung* and *Entfaltung* (both meaning “development”) in this passage. This illustrates how “evolution” (*Evolution*) and “development” (usually *Entwicklung*) are both used in his writings to denote the same concept.

In summary, evolution is mentioned in a rather general way in this book, and there is no mention of any potential conflict between evolution and faith in creation. This specific topic will be addressed in his next writing on the subject, published a few months later.

### 1.3. The Doctrine of Creation and the Theory of Evolution, 1969

*Schöpfungsglaube und Evolutionstheorie* is without doubt the most comprehensive work by Joseph Ratzinger about the relationship between the catholic teaching on creation and the theory of evolution, with a particular emphasis on human evolution. It was published in 1969, while Ratzinger was still at Tübingen, in a book edited by Hans Jürgen Schultz that compiled a series of broadcasts by *Süddeutscher Rundfunk*. The article was later included with the same title in *Dogma und Verkündigung* and also in *Credo für Heute*. I will quote the English translation included in *Dogma and Preaching* (Ratzinger 2011) and the German original from 1969 (Ratzinger 1969).

<sup>6</sup> In dieser kosmischen Bewegung aber ist, wie wir früher schon sahen, der Geist nicht-irgendein zufälliges Nebenprodukt der Entwicklung, das fürs Ganze nichts zu bedeuten hätte; vielmehr konnten wir feststellen, dass in ihr die Materie und deren Entfaltung die Vorgeschichte des Geistes bilden (Ratzinger 2000, 273).

One important idea is reproduced quite literally from the Münster notes (with *Entwicklung* used again as evolution/development):

Philosophically, then, one would say that the idea of evolution is situated on the phenomenological level and deals with the actually occurring individual forms in the world, whereas the belief in creation moves on the ontological level, enquires into what is behind individual things, marvels at the miracle of being itself and tries to give an account of the puzzling “is” that we commonly predicate of all existing realities. One could also put it this way: Belief in creation concerns the difference between nothing and something, while the idea of evolution examines the difference between something and something else<sup>7</sup> (Ratzinger 2011, 133).

Ratzinger reminds us that “belief in creation and the idea of evolution designate, not only two different areas of inquiry, but also two different thought forms. That is probably the cause of the problematic relation that one senses between the two even after their fundamental compatibility has become evident” (Ratzinger 2011, 133). Since “the inquiry of evolutionary thought is narrower than that of belief in creation” because it is founded upon the compilation of positivistic material, evolutionary doctrine cannot incorporate belief in creation: such a belief has no place within its scope. The real question, then, is “whether the idea of creation, being the broader subject, can for its part accept the idea of evolution within its parameters or whether that contradicts its fundamental approach” (Ratzinger 2011, 134).

The whole article reads as a long argument trying to answer this crucial question: can belief in creation accommodate peacefully evolutionary theory? The topic seems particularly relevant for the creation of the human being, because

<sup>7</sup> Philosophisch würde man also sagen, dass der Entwicklungsgedanke auf der phänomenologischen ebene liegt, sich mit den tatsächlich vorkommenden einzelnen Gebilden der Welt auseinandersetzt, während der Schöpfungsglaube sich auf der ontologischen ebene bewegt, hinter die einzelnen Dinge zurückfragt, das Wunder des Seins selbst bestaunt und sich über das rätselhafte „ist“ Rechenschaft zu geben versucht, das wir über alle vorkommenden Wirklichkeiten gemeinsam aussagen. man könnte auch formulieren: der Schöpfungsglaube betrifft die Differenz zwischen nichts und etwas, der Entwicklungsgedanke hingegen die zwischen etwas und etwas anderem (Ratzinger 1969, 234).

if man is only the product of evolution, then spirit, too, is a random formation. But if spirit evolved, then matter is the primary thing and the sufficient cause of all the rest. And if that is so, then God vanishes and, with him, Creator and creation automatically. [...] For it appears to be a matter of principle here. Either all individual things are the product of evolution, including man. Or else they are not. The second hypothesis is ruled out, and so the first remains, and this appears now, as we have just realized, to call the whole idea of creation into question, because it abolishes the primacy and superiority of spirit, which in some form are to be regarded as a fundamental prerequisite for belief in creation (Ratzinger 2011, 135).

He then explains that the classical way to get around this problem in theology is by saying that the human body may be a product of evolution but the soul is created by God himself, an answer that has the advantage that spirit cannot be examined by the same scientific method with which one studies the history of organisms. However, Ratzinger does not find this compromise at all satisfactory: “Can we divide man up in this way between theologians and scientists—the soul for the former, the body for the latter? Is that not intolerable for both?” (Ratzinger 2011, 135).

To advance towards a more profound resolution of this conflict, we must first address an important question: “to what extent is faith bound up with the notion that God created the individual fundamental realities of the world.” That is,

Can the notion of a world of becoming be reconciled with the fundamental biblical idea of the creation of the world through the Word, with the derivation of being from creative meaning? Can the idea of being that is expressed therein coexist intellectually with the idea of becoming as outlined in the theory of evolution? (Ratzinger 2011, 136).

For this coexistence to be possible, it would seem necessary to dispossess faith of a worldview which seemed to be the Faith itself. Ratzinger argues that we could try to determine

whether the fundamental human question with which faith is associated can still be legitimately answered, even in present-day intellectual circumstances,

as it is by belief in creation, and thus in what form the evolutionary worldview, too, may be understood as an expression of creation<sup>8</sup> (Ratzinger 2011, 138).

In other words, how does one actually understand the world when it is viewed in evolutionary terms? Is it just a “random formation”, devoid of all meaning? When Being is understood dynamically, as being-in-movement that advances,

the direction of evolution and its progressive character are ultimately indisputable, even if one takes into account the fact that there are dead ends in evolution and that its path by no means runs in a straight line. Detours, too, are a path, and by way of detours, too, one arrives at the goal, as evolution itself demonstrates (Ratzinger 2011, 139).

In his view, the real question, that cannot be settled within the theory of evolution itself, is “whether being, understood in such a way as a path – that is, evolution as a whole – has a meaning” (Ratzinger 2011, 139).

Having arrived at this point, Ratzinger can now propose a satisfactory solution to the problem of whether the idea of creation can accept the idea of evolution. If “temporal being as a whole is encompassed by the one creative act of God”, then “belief in creation does not tell us what the meaning of the world is but only that there is one”, and so today

we can understand better what the Christian dogma of creation was always saying but could hardly bring to bear because of the influence of the model from antiquity: creation should be thought of, not according to the model of the craftsman who makes all sorts of objects, but rather in the manner in which thought is creative<sup>9</sup> (Ratzinger 2011, 140).

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<sup>8</sup> [...] ob die menschliche Grundfrage, der er zugeordnet ist, auch unter den gegenwärtigen denkerischen Voraussetzungen legitim noch so beantwortet werden kann, wie es im Schöpfungsglauben geschieht und in welcher Form so auch das evolutive Weltbild als Ausdruck von Schöpfung verstanden werden darf (Ratzinger 1969, 240).

<sup>9</sup> Und so wird uns vielleicht heute mehr verständlich, was christliche Schöpfungslehre zwar immer schon sagte, aber unter dem Eindruck der antiken Modelle kaum zur Geltung bringen konnte: Schöpfung ist nicht nach dem Muster des Handwerkers zu denken, der allerlei Gegenstände macht, sondern in der Weise, in der das Denken schöpferisch ist (Ratzinger 1969, 242).

In summary, he concludes that “to believe in creation means to understand, in faith, the world of becoming revealed by science as a meaningful world that comes from a creative mind” (Ratzinger 2011, 140).

Could this reasoning be applied also to human evolution (or the creation of *spirit*)? Taking an idea that was already present in *Introduction to Christianity*, he mentions Teilhard de Chardin to explain how we should try to find meaning in the evolution of the human being:

The alternative: materialism or a spiritually defined worldview, chance or meaning, is presented to us today in the form of the question of whether one regards spirit and life in its ascending forms as an incidental mold on the surface of the material world (that is, of the category of existing things that do not understand themselves), or whether one regards spirit as the goal of the process and, conversely, matter as the prehistory of the spirit. If one chooses the second alternative, it is clear that spirit is not a random product of material developments, but rather that matter signifies a moment in the history of spirit. This, however, is just another way of saying that spirit is created and not the mere product of development, even though it comes to light by way of development<sup>10</sup> (Ratzinger 2011, 140–141).

I believe that with this crucial statement Ratzinger settles the question: *spirit* (that is, what makes humans special) appeared through evolution, but is *not just* that. There is meaning in the unfolding of spirit through evolution (development), because there is a creative mind at work. But one thing is clear in this creative action:

It would have to be noted that, if anything, the creation of spirit is least of all to be imagined as an artisan activity of God, who suddenly began tinkering with the

<sup>10</sup> Die Alternative Materialismus oder geistig bestimmte Weltbetrachtung, Zufall oder Sinn, stellt sich uns heute in der Form der Frage dar, ob man den Geist und das Leben in seinen ansteigenden Formen nur als einen zufälligen Schimmel auf der Oberfläche des Materiellen (das heißt des sich nicht selbst verstehenden Seienden) oder ob man ihn als das Ziel des Geschehens ansieht und damit umgekehrt die Materie als Vorgeschichte des Geistes betrachtet. Trifft man die zweite Wahl, so ist damit klar, dass der Geist nicht ein Zufallsprodukt materieller Entwicklungen ist, sondern dass vielmehr die Materie ein Moment an der Geschichte des Geistes bedeutet. Dies aber ist nur ein anderer Ausdruck für die Aussage, dass Geist geschaffen und nicht pures Produkt der Entwicklung ist, auch wenn er in der Weise der Entwicklung in Erscheinung tritt (Ratzinger 1969, 243).

world. If creation means dependence of being, then special creation is nothing other than special dependence of being.<sup>11</sup> (Ratzinger 2011, 141).

We can safely conclude that in this period, which includes his mature works of academic research, Ratzinger's view on the relationship between faith in creation and the theory of evolution is one of perfect compatibility, provided we accept: i) that God's action does not involve a *craftsman-like* tinkering with natural processes, and ii) that evolution is not *necessarily* devoid of meaning.

## 2. From 1979 to 1986

Ratzinger did not write about the theory of evolution in the following years. On 24 March 1977, he was appointed Archbishop of Munich and Freising, and named Cardinal three months later. Since then, his contributions will include texts of pastoral nature (homilies, allocutions, etc.) as well as other texts with a more academic content.

### 2.1. The Salzburg Lecture and the Homilies on Creation, 1979–1981

On the 14<sup>th</sup> of March 1979, two years after his appointment as Archbishop of Munich, Ratzinger pronounced the Guest Lecture at the Thomas celebration of the Catholic Faculty of Theology of the University of Salzburg. Under the title *Konsequenzen des Schöpfungsglaubens* (Consequences of Faith in Creation) this speech was first published in 1980 (Ratzinger 1980). During the spring of 1981, Ratzinger delivered a series of four Lenten homilies on the topic of creation at Munich cathedral, which were published in 1986 in a book entitled *Im Anfang schuf Gott* (Ratzinger 1986a). The Salzburg lecture was later added as an appendix to the collection of homilies, and published

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<sup>11</sup> Schließlich wäre zu sagen, daß man gerade die Erschaffung des Geistes sich am allerwenigsten als ein handwerkliches Tun Gottes vorstellen darf, der hier plötzlich in der Welt zu hantieren beginnen würde. Wenn Schöpfung Seinsabhängigkeit bedeutet, so ist besondere Schöpfung nichts anderes als besondere Seinsabhängigkeit (Ratzinger 1969, 244).

together in English in 1995 (Ratzinger, 1995). For this reason, and also due to their temporal proximity, I analyse their contents in this section.

The main topic of the Salzburg Lecture is Logos and Rationality. As I have explained above, the purpose of this article is not to explore those themes in Ratzinger's theology, but to analyze his references to the theory of evolution. In this regard, there is only one explicit mention of evolution in the Salzburg Lecture, when Ratzinger complains about the little attention that theology of creation received in post-Vatican II theology. He says that this was, at best, only discussed in the context of the issue of the compatibility between creation and evolution, "a question that of its very nature is centered on humankind" (Ratzinger 1995, 80). For him, the anthropological question for theology would be if there is something proper of human beings that ultimately can be explained only in theological terms.

In the homilies about creation, he engages with topics of wider theological and philosophical implications, such as sin, grace, necessity, chance or the rationality of creation. Evolution is mentioned in the third homily, where he stresses again the compatibility between creation and evolution provided we distinguish correctly their explanatory levels. He explains that when the nineteenth century perceived that some things previously considered immutable were in fact the product of a long process of becoming<sup>12</sup>, the universe could be compared to a growing tree. The theory of evolution seeks to understand and describe these biological developments, but "in doing so it cannot explain where the "project" of human persons comes from" (Ratzinger 1995, 50). Here he confronts Jacques Monod's view that all life –including human beings– is the product of haphazard mistakes, expressed in his 1970 book *Le Hasard et la Nécessité*. In contrast with Monod's worldview of blind randomness, Ratzinger is adamant that creation is not the product of chance:

It is the affair of the natural sciences to explain how the tree of life in particular continues to grow and how new branches shoot out from it. This is not a matter

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<sup>12</sup> Dinge, die wir für unveränderlich und immer gleichartig halten, produkt eines langen Werdens sind (Ratzinger 1986a, 42).

for faith. But we must have the audacity to say that the great projects of the living creation (*die großen Projekte des Lebendigen*) are not the products of chance and error [...] [but] point to a creating Reason (*schöpferische Vernunft*) and show us a creating Intelligence (*Schöpfergeist*) (Ratzinger 1995, 56).

Ratzinger understands the danger of deriving unwarranted philosophical implications from evolutionary theory, and he clearly accepts that the scientific details of the evolutionary process must be solved only by science. However, during this discussion he does something unprecedented: “Now let us go directly to the question of evolution and its mechanisms” (Ratzinger 1995, 54). Never before had he entered into a discussion of scientific matters, and in fact he does not discuss the *mechanisms* of evolution; his point is that an organism and a machine both “realize a project, a thought-out and considered plan, which is itself coherent and logical. Their functioning presupposes a precisely thought-through and therefore reasonable design”<sup>15</sup> (Ratzinger 1995, 54). However, he also stresses that organisms must not be compared to machines: an organism is smarter and more daring, moves from within and has the power to reproduce itself, it can “renew and continue the project (“Projekt”) that it itself is”<sup>14</sup> (Ratzinger 1995, 54). I note the use of “design” (*Entwurf*) in this passage to describe Nature, although from the context it can be safely concluded that it is meant more as general project (*Projekt*) than as the artefact-like connotation typical of Intelligent-Design (ID) parlance. I will revisit this issue below, when some writers will surmise (as I believe, incorrectly) that Ratzinger was leaning towards an ID-like position.

## 2.2. Evolutionismus und Christentum

On 25th Nov 1981, Joseph Ratzinger was appointed Prefect of the Roman Congregation for the Doctrine of Faith. The next text in which he mentions evolution is the Foreword for the proceedings of a symposium organized

<sup>15</sup> Beide haben nämlich gemeinsam, dass sie ein Projekt, einen bedachten und vernünftigen Entwurf verwirklichen, der in sich stimmig und logisch ist (Ratzinger 1986a, 44).

<sup>14</sup> es kann das Projekt, das es selber ist, erneuern und weitergeben (Ratzinger 1986a, 44).

during the spring of 1985 in Rome by the Congregation and the Department of Philosophy of Munich University, published under the title *Evolutionismus und Christentum* (Ratzinger 1986b). As stated in the introduction by Robert Spaemann, the main purpose of the symposium was to reopen the dialogue between science and religion and refute the idea that evolutionary thinking cannot be integrated into the Augustinian or Thomistic theology of creation without contradiction.

In his contribution, Ratzinger argues that evolution has been elevated to a model of thought that claims to explain the whole of reality and thus has become a kind of *first philosophy*:

If it is no longer difficult for faith to let the natural scientific hypothesis *evolution* unfold in accordance with its own methods, then the total claim of the philosophical explanatory model “evolution” is all the more a radical inquiry into faith and theology<sup>15</sup> (Ratzinger 1986b, VIII).

Although he states again the compatibility between faith and the methods of evolution, I note that he refers to evolution as a “hypothesis” (*Hypothese*), even though evolution –by the time of this writing– was established as a widely accepted and solid theoretical explanatory framework. Therefore, the use of *hypothesis* in this context could arise from his concern that a scientific theory was being used by some atheistic scientists and philosophers as a universal philosophy to explain everything.

### 3. From 1999 to 2006

#### 3.1. Verité du Christianisme?

We have to wait almost fifteen years for the next text in which Ratzinger mentions the theory of evolution. On the 27th of November 1999, he was invited to deliver a lecture at the Sorbonne University which was later

<sup>15</sup> Wenn es für den Glauben heute keine Schwierigkeit mehr bereitet, die naturwissenschaftliche Hypothese Evolution sich gemäß ihren eigenen Methoden ruhig entfalten zu lassen, so ist der Totalanspruch des philosophischen Erklärungsmodells „Evolution“ um so mehr eine radikale Anfrage an Glaube und Theologie (Ratzinger 1986b, VIII).

published as “The Truth of Christianity” in the book *Truth and Tolerance* (Ratzinger 2004b). At the end of this lecture, Ratzinger brings again the question of whether evolution can present itself as the *first philosophy*, in the context of the broader discussion about rationality and meaning in Nature as seen by the Christian faith:

The question that has now to be put certainly delves deeper: it is whether the theory of evolution can be presented as a universal theory concerning all reality, beyond which further questions about the origin and the natures of things are no longer admissible and indeed no longer necessary, or whether such ultimate questions do not after all go beyond the realm of what can be entirely the object of research and knowledge by natural science [...] The question is whether reason, or rationality, stands at the beginning of all things and is grounded in the bases of all things or not [...] whether reason, being a chance by-product of irrationality and floating in an ocean of irrationality, is ultimately just as meaningless; or whether the principle that represents the fundamental conviction of Christian faith and of its philosophy remains true: *In principio erat Verbum*—at the beginning of all things stands the creative power of reason. Now as then, Christian faith represents the choice in favor of the priority of reason and of rationality (Ratzinger 2004b, 180–181).

However, this paragraph is preceded by a very significant passage with an explicit criticism of some technical aspects of evolutionary theory:

No one will be able to cast serious doubt upon the scientific evidence for micro-evolutionary processes. R. Junker and S. Scherer, in their “critical reader” on evolution, have this to say: ‘Many examples of such developmental steps [micro-evolutionary processes] are known to us from natural processes of variation and development. The research done on them by evolutionary biologists produced significant knowledge of the adaptive capacity of living systems, which seems marvellous.’ They tell us, accordingly, that one would therefore be quite justified in describing the research of early development as the reigning monarch among biological disciplines. It is not toward that point, therefore, that a believer will direct the questions he puts to modern rationality but rather toward the development of evolutionary theory into a generalized *philosophia universalis*, which claims to constitute a universal explanation of

reality and is unwilling to allow the continuing existence of any other level of thinking. Within the teaching about evolution itself, the problem emerges at the point of transition from micro- to macro-evolution, on which point Szathmáry and Maynard Smith, both convinced supporters of an all-embracing theory of evolution, nonetheless declare that: “There is no theoretical basis for believing that evolutionary lines become more complex with time; and there is also no empirical evidence that this happens” (Ratzinger 2004b, 179–180).

This text is surprising in many respects. If the real question is whether reason, or rationality, stands at the beginning of all things, then the technical explanations and the plausibility of macro-evolution, as were understood at the time, seems a technical point of little importance. So far, he had countered the attempts to present evolution as a first philosophy by demarcating very clearly the explanatory boundaries of a scientific theory and pointing toward questions that must be answered by philosophy. Now, in order to show that evolution does not possess such universal explanatory power, he questions the scientific validity of some basic tenets of evolutionary biology (in this case, “macro-evolution”).

What is remarkable is that Ratzinger quotes John Maynard Smith and Eörs Szathmáry (two atheistic evolutionary scientists who had published “The Major Transitions in Evolution” in 1995) to support his claim that macro-evolution is a mere hypothesis. The quote given by Ratzinger is (almost literally) the first sentence of the abstract of an article published by these two authors in the journal *Nature* in 1995; but that abstract continues: “Nevertheless, eukaryotic cells are more complex than prokaryotic ones, animals and plants are more complex than protists, and so on. This increase in complexity may have been achieved as a result of a series of major evolutionary transitions. These involved changes in the way information is stored and transmitted” (Maynard-Smith, 1995). In fact, that article argues for an increase in complexity during evolution, (not for its impossibility, as Ratzinger implies).<sup>16</sup>

<sup>16</sup> I believe that the problem arises from a common misconception about the use of the term *complexity* in evolutionary literature. Among non-theist scientists, the term tends to be avoided because it is usually conflated with *progress*, the latter having a certain te-

It would be very interesting to trace the origins of this change in Ratzinger's strategy to defend faith in creation by criticizing evolutionary explanations that belong strictly to the scientific realm. Ratzinger acknowledges that he is quoting Maynard-Smith and Szathmáry indirectly from a textbook on the origin and history of living things, which appeared in its fourth edition of 1998 as "Evolution. Ein kritisches Lehrbuch". The authors were Reinhard Junker, director of an evangelical creationist association who taught "Creation Research" at the Free Theological University in Gießen until 2016, and Siegfried Scherer, a microbiologist who was honorary chair of the same association. I believe that it is safe to conclude that Ratzinger did not read Maynard-Smith and Szathmáry's articles in depth, and that he did not spend the years between 1986 and 1999 studying the scientific details of evolutionary biology, which raises the question of where did his doubts about the plausibility of *macro-evolution* originate.

Until historians and biographers address this question in greater detail, the answer must remain somewhat speculative. However, a series of pieces written by journalist John Allen Jr. for the National Catholic Reporter a few years later shed some light on this issue. According to Allen (Allen, 2006a) Ratzinger began to make the distinction between "micro" and "macro-evolution" in the 1980s after hearing a series of lectures at the Gustav Siewarth Academy, a small catholic academy founded by Alma von Stockhausen in Germany's Black Forest. Allen learned this from a catholic anti-evolutionist French intellectual called Dominique Tassot, whom he interviewed in the summer of 2006. In that interview, Tassot explains that he had sent a letter to Benedict XVI before the meeting of the *Schülerkreis* in Castel Gandolfo (see below); later in that same interview, Tassot defines macro-evolution as "the

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leological undertone of advance towards a *better* or more *perfect* ontological status. This mistrust is clearly shown by a similar passage in the Introduction to the 1997 English edition of *The Major Transitions in Evolution*, where these same authors write: "On the theoretical side, there is no reason why evolution by natural selection should lead to an increase in complexity, if that is what we mean by progress" (Maynard-Smith 1997, 4). It is clear that the authors are stressing the lack of any theoretical basis for an increase in *progress*, which is what is meant (in their view) by *complexity*. Most likely Ratzinger was not aware of this prejudice against complexity-as-progress (i.e. teleology) when he cites Maynard-Smith and Szathmáry, hence the misunderstanding.

appearance of an organ in the offspring which did not exist in the parent. When you put it that way, you understand immediately that it's impossible" (Allen, 2006b). It is shocking that any person with a scientific background could have such a naïve and distorted concept of the macroevolutionary process in 2006. If this was the view of the mechanisms operating during evolution that Ratzinger was given during his time at the Gustav Siewarth Academy, it is no surprise that he had developed misgivings about the solidity of its foundations.

It is unfortunate that Ratzinger did not seek advice from more prominent scientists who might have given him a different outlook on the plausibility of macro-evolutionary processes. The need for an extended evolutionary synthesis, initially proposed by Conrad Waddington in 1950s, had been discussed for years (Parnell 1978; Gould 1982; Maynard Smith 1985; Endler 1988; Gilbert 1996), with a lively debate as to whether evolution should move beyond the gene-centered approach of selection-drift-mutation and other established evolutionary processes, to a more organism- and ecology-centered approach in which additional processes, particularly developmental influences, shape the evolutionary process in important ways. Evolutionary theorists, as far back as 1980, had already questioned the neo-darwinist paradigm (Gould 1980) and reviewed the relationship between micro- and macro-evolution (Lande 1980). Macroevolution itself had been extensively covered in a textbook written twenty years before the Sorbonne Lecture (Stanley 1979), and these debates should have reached Ratzinger after he became Prefect of the Congregation for the Doctrine of Faith in 1981. Werner Arber, a protestant theistic evolutionist and Nobel Prize-laureate microbiologist, was member of the Pontifical Academy of Sciences since 1981 and his insights would have been very helpful, but it seems that such communication never happened.

### **3.2. The Meeting of the *Schülerkreis* in Castel Gandolfo**

On April 19th 2005, cardinal Ratzinger was elected Pope. On the 12<sup>th</sup> of September 2006, Pope Benedict addressed the University of Regensburg

(the Regensburg Lecture) about the scope of scientific rationality and the relationship between reason and faith. The term “evolution” is found only once in that text, in the sentence “Attempts to construct an ethic from the rules of evolution or from psychology and sociology, end up being simply inadequate” (Benedict XVI 2006), so it is not relevant for this discussion. But a few days before this Lecture, an important event took place regarding the topic of evolution: the meeting of the *Schülerkreis*<sup>17</sup> in Castel Gandolfo at the beginning of September 2006.

This meeting was momentous because its theme was precisely “Creation and Evolution”. All the speeches and the subsequent discussion (including Pope Benedict’s comments) were recorded and published in German in 2007 and in English in 2008 (Creation and Evolution 2008). In the Foreword, cardinal Schönborn summarizes some of the most relevant texts written by Ratzinger on the topic, but he also quotes some words from the general audience of 9<sup>th</sup> November 2005 where Pope Benedict comments Psalm 135, 1–9:

In the beginning the creative Word –this Word that created all things, that created **this intelligent design which is the cosmos**– is also love (Benedict XVI 2005).

I have highlighted in bold the words quoted by Schönborn (Creation and Evolution 2008, 22) because he had written a controversial article in *The New York Times* on July 2005 under the headline “Finding Design in Nature” (Schönborn 2005), so this quotation could be interpreted as a vindication of ID by the Pope. However, the German translation says “diesen intelligenten Plan” (note that “design” usually corresponds to *Entwurf*) and the Italian version gives “questo progetto intelligente”. In the absence of an official text (this audience is not included in the December 2006 issue of *Acta Apostolicae Sedes*), we can assume that the original text is either the German or the Italian -where Benedict uses “plan” or “project”, respectively; it is hard to understand why the translator chose “design” for the English version.

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<sup>17</sup> The *Schülerkreis* is the circle of former students of Joseph Ratzinger, who meet regularly with their professor.

As this general audience came a few months after Schönborn's piece in *The New York Times*, some observers thought that the meeting of the *Schülerkreis* would result in an official statement in support of ID or some type of rejection of evolution. For instance, John Allen's interview with anti-evolutionist Tassot (see above), which had been conducted a few days before the start of the meeting in Castel Gandolfo, led a journalist from the London newspaper *The Guardian* to publish an article with the headline "Pope prepares to embrace theory of intelligent design" (Hooper 2006). Given the expectation surrounding the meeting of the *Schülerkreis*, I will analyse in some detail the presentations more directly involved with the theory of evolution and the comments made by Benedict XVI.

Peter Schuster, president of the Austrian Academy of Sciences, delivered the lecture "Evolution and Design. A review of the state of the art in the theory of evolution" in the morning session of September 1<sup>st</sup> (Creation and Evolution 2008, 27–60). He reviewed extensively the historical roots of the theory of evolution and dealt with various aspects that could be relevant to the subsequent discussions. Interestingly, macroevolution is only mentioned in an illustration with a theoretical model for macroevolutionary steps involving cooperative networks and the emergence of new hierarchical levels. He closed his lecture with a discussion of "evolution as tinkering" (Ibid., 53–57), the idea initially proposed by François Jacob (Jacob 1977) that has been subsequently confirmed in many situations, particularly in the field of genome evolution. Although the lecture is wide-ranging, it lacks an in-depth discussion of developmental biology and its relationship with evolution, the field known as "evo-devo" (Müller 2007) which helps to explain evolution of form ("macroevolution") through the rewiring of gene regulatory networks involved in embryonic development. I have reviewed elsewhere recent literature on this issue, together with other themes such as pleiotropy and epistasis, and the predictability of genome evolution (Novo 2016).

Schuster's lecture was repeated in front of Benedict XVI in the morning session of the next day, followed by another lecture by Robert Spaemann. Two more lectures by Paul Erbrich and cardinal Schönborn were delivered

in the afternoon session, and at the end the Pope replied to all lectures. In his response to Peter Schuster (Creation and Evolution 2008, 160–164), Ratzinger underscores that “the theory of evolution implies questions that must be assigned to philosophy”, and he points four such questions. Surprisingly, the first two sound like an outright rejection of evolution as a valid scientific theory:

In particular, to me it is important, first of all, that to a great extent the theory of evolution cannot be proved experimentally, quite simply because we cannot bring 10,000 generations into the laboratory. That means that there are considerable gaps in its experimental verifiability and falsifiability due to the enormous span of time to which the theory has reference.

A second thing that was important to me was your statement that the probability is not zero, but not one, either. And so the question arises: How high is the probability now? This is important especially if we want to interpret correctly the remark by Pope John Paul II: “The theory of evolution is more than a hypothesis.” When the Pope said that, he had his reasons. But at the same time it is true that the theory of evolution is still not a complete, scientifically verified theory (Creation and Evolution 2008, 162).

Even though it is a verbal answer (presumably, on the spur of the moment) and not a well thought-out text, these two paragraphs illustrate Ratzinger’s unfamiliarity with basic facts about evolutionary biology and with the standard concept of scientific theory. Scientific theories are structures of ideas that explain and interpret facts. The theory of evolution is a widely accepted explanatory paradigm (in Kuhnian sense) of the fact of evolution, and it has been experimentally verified in many of its predictions even though it is still progressing (in Lakatosian sense) as any other valid scientific theory. We can assume that this is why John Paul II said that it is more than a *hypothesis*. It is absurd to imply that it is unverified because its probability “is not one”. In his reply, Peter Schuster says that any scientific theory can only be in progress if there are still unanswered questions; in that regard, the fact that the probability of evolution is between zero and one “is of course trivial” (Creation and Evolution 2008, 165).

The third point made by Benedict regards the saltational nature of evolution:

The summing up of minute steps does not suffice. There are “leaps”. The question of what this involves has to be examined in greater detail (Creation and Evolution 2008, 162).

When this remark was made, this question had indeed been debated by evolutionary biologists for decades, since Gould’s proposal of punctuational change at all evolutionary levels (Gould 1980). As an example of this debate, Gould’s paper was later included in a volume edited by Maynard-Smith to commemorate the centenary of Darwin’s death, in a chapter entitled “Evolution –sudden or gradual?” (Maynard-Smith 1982, 125–181). It is understandable that this discussion had escaped the attention of Ratzinger and the other members of the *Schülerkreis*, all of them philosophers who are not expected to have good knowledge of the technical aspects of evolutionary biology.

The fourth question raised by Benedict XVI is of a more philosophical nature:

The fourth interesting thing is that the positive mutations are few and the corridor in which the development was able to play itself out is narrow. This corridor was actually opened up and walked through (Creation and Evolution 2008, 162).

Again, the question of the predictability of evolution had been debated for years, since Gould’s best-seller on the Cambrian explosion (Gould 1990) and the response by Conway-Morris (Conway-Morris 1998). In fact, the most comprehensive book on evolutionary convergence by Conway-Morris (Conway-Morris 2003) had been published three years before the meeting at Castel Gandolfo. The issue is relevant to the point raised by Ratzinger, because it implies that within an evolutionary history full of contingencies, similar phenotypic solutions are frequently reached by independent paths (a situation known as convergent evolution). Another classical debate that can be found in any textbook of philosophy of biology, and very relevant to

the point made by Ratzinger, is the role of natural selection in evolutionary adaptations, a hotly debated issue since the classical *Spandrels* paper by Gould and Lewontin (Gould 1979). In summary, from the analysis of the discussions during the meeting in Castel Gandolfo it becomes apparent that the members of the *Schülerkreis* were not conversant in the classical debates about the implications of evolutionary biology.

The final sentences of Ratzinger's reply to Schuster return to a more philosophical level:

These are the great perennial questions of philosophy, which confront us in a new way: the question of where man and the world come from and where they are going. Apropos of this, I recently became aware of two things that the three following lectures also made clear: There is, in the first place, a rationality of matter itself. One can read it. It has mathematical properties; matter itself is rational, even though there is much that is irrational, chaotic, and destructive on the long path of evolution. But matter per se is legible. Secondly, it seems to me that the process too, as a whole, has a rationality about it. Despite its false starts and meanderings through the narrow corridor, the process as such is something rational in its selection of the few positive mutations and in its exploitation of the minute probabilities. This twofold rationality, which in turn proves to correspond to our human reason, unavoidably leads to a question that goes beyond science yet is a reasonable question: Where does this rationality originate? Is there an originating rationality that is reflected in these two zones and dimensions of rationality? Science cannot and must not answer this question directly, but we should acknowledge that the question is a reasonable one and dare to believe in the creative Reason and to entrust ourselves to It (Creation and Evolution 2008, 163–164).

Ratzinger refers here to the rationality of matter and the rationality of the process of becoming, something that we had seen in his first writings. It is interesting that he considers these two basic ideas as something of which he has become aware “recently”, because it is clear to me that this theme characterized his thought since his very early writings on evolution. We only have to remember expressions like “Christian faith represents the choice in favor of the priority of reason and of rationality”, from the 1999 Sorbonne

address (Ratzinger 2004b), “the great projects of the living creation (...) point to a creating Reason and show us a creating Intelligence” from the 1981 Munich homilies (Ratzinger 1995); or even “to believe in creation means to understand, in faith, the world of becoming revealed by science as a meaningful world that comes from a creative mind”, from the 1969 article “Schöpfungsglaube und Evolutionstheorie” (Ratzinger 2011).

### 3.3. Final writings

After the meeting of the *Schülerkreis*, the theory of evolution is hardly mentioned in the writings of Benedict XVI. At the end of 2008 the Pontifical Academy of Sciences held a meeting with the title “Scientific Insights into the Evolution of the Universe and of Life”. In his address to the participants in the conference, Benedict XVI mentions evolution in a general way, highlighting again the rationality of matter and the cosmos:

To ‘evolve’ literally means ‘to unroll a scroll’, that is, to read a book. The imagery of nature as a book has its roots in Christianity and has been held dear by many scientists. Galileo saw nature as a book whose author is God in the same way that Scripture has God as its author. It is a book whose history, whose evolution, whose ‘writing’ and meaning, we ‘read’ according to the different approaches of the sciences, while all the time presupposing the foundational presence of the author who has wished to reveal himself therein. This image also helps us to understand that the world, far from originating out of chaos, resembles an ordered book; it is a cosmos. Notwithstanding elements of the irrational, chaotic and the destructive in the long processes of change in the cosmos, matter as such is ‘legible’. It has an inbuilt ‘mathematics’. The human mind therefore can engage not only in a ‘cosmography’ studying measurable phenomena but also in a ‘cosmology’ discerning the visible inner logic of the cosmos” (Arber 2009, XXXIV).

His last reference to this idea came in the general audience of 6<sup>th</sup> February 2013, as part of a catechesis on the first chapter of Genesis, just five days before he announced his resignation:

The fundamental truth that the accounts of Genesis reveal to us is that the world is not a collection of forces that clash with each other; it has its origin and its

permanence in the Logos, in God's eternal Reason which continues to sustain the universe. A plan of the world exists which is conceived by this Reason, by the Creator Spirit [...] Consequently, there is this alternative: either the priority of the irrational, of necessity, or the priority of reason, of freedom, of love. We believe in the latter hypothesis (Ratzinger 2013).

It is worth noting that he refers to the cosmos as a "plan", and this is what the German translation gives<sup>18</sup> (*Plan* instead of *Entwurf*, which could be translated as "design"). Note also that the final sentence of the original text should be translated as "we believe that the latter is true"<sup>19</sup>, whereas the official translation surprisingly suggests that what Christians believe is a "hypothesis".

## Conclusion

From the analysis of the texts in which Joseph Ratzinger deals with the theory of evolution, I propose that we can identify two clearly demarcated periods, separated by a transitional period of almost two decades. His academic writings spanning up until 1979 are the most elaborate and contain deep philosophical and theological insights into the relationship between faith in creation and the theory of evolution. Ratzinger, the theologian of the 1970s, believes that the former can accommodate the latter, provided we keep each of them within its own explanatory framework.

We can see a change in Ratzinger's attitude towards the theory of evolution at the beginning of the 1980s, when he becomes aware that evolution was being portrayed as an impersonal and irrational process governed by chance, and used as an argument against theism. The attempts by some atheist scientists to portray evolution as a "first philosophy" will prompt a critical response that becomes more evident in Ratzinger's writings over the next twenty years. Unfortunately, his criticism of the philosophical excesses by some atheist intellectuals also led him to undertake explicit attacks to the idea of macroevolution and to the scientific status of the theory

<sup>18</sup> Es gibt einen Plan für die Welt, der aus dieser Vernunft, aus dem Schöpfergeist hervorgeht.

<sup>19</sup> Daher die Alternative: entweder Priorität des Irrationalen, der Notwendigkeit oder Priorität der Vernunft, der Freiheit, der Liebe. Wir glauben, daß letzteres wahr ist.

of evolution, initiated in his 1999 lecture at the Sorbonne University and strongly expressed in the Castel Gandolfo meeting of the *Schülerkreis* in 2006. I have suggested, from evidence in the literature, that this critical attitude towards the theory of evolution was reinforced, and perhaps initiated, by his contacts with anti-evolution German intellectuals during the 1980s. These influences led to a biased view of evolutionary processes that unfortunately was not properly balanced with inputs from evolutionary scientists open to theism, resulting in some ill-advised remarks about technical aspects of evolution, and a lack of depth in his discussions with other members of the *Schülerkreis* about the wider implications of evolutionary theory.

After 2006, Benedict XVI kept silence on this topic and his few references returned to the original ideas expressed in his early writings: regardless of the actual path shown by the scientific theory of evolution, the rationality and inner logic of the cosmos point to a Logos, a creative Reason that is also Love and gives meaning to the whole of creation.

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