

SCIENTIFIC PERSPECTIVES IN FUNDAMENTAL THEOLOGY

Understanding Christian Faith in the Age of Scientific Reason

Giuseppe Tanzella-Nitti

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Preface

This book is part of the commitment of the Vatican Observatory to the interdisciplinary research on faith and science and to the evangelization of scientific culture. It is addressed to professors of university courses in science and theology, to students interested in these topics, and to everyone who wants to reflect on a Christian theology developed within our contemporary scientific context. The book originates from an idea I shared at the Vatican Observatory with Guy Consolmagno and Paul Mueller: to propose to the English public a selection of chapters especially relevant for the dialogue between science and theology, excerpted from my Italian four-volume treatise *Fundamental Theology within the Scientific Context*.¹ That treatise was intended to develop a complete program in Fundamental theology which accepted the “counterpoint” of scientific rationality, taking into account the relevant questions that the sciences pose to Christian faith.

Actually, the volume is more than the mere English version of its corresponding Italian work. In translating the original chapters, I tried to adapt their content to a wider English audience. Bibliographical references addressed to Italian readers have been simplified or omitted, while references and authors familiar to English readers have been added wherever possible. Passages referring to theological debates foreign to the English audience, or too specialized for a wider public, have been summarized or simplified. However, according to the intellectual environment of its author, the volume’s general approach still reflects the European theological context. The theological stance adopted here is mainly that of a Catholic perspective: for this reason, the teachings of the Catholic Church’s Magisterium are frequently employed and given comment. Nevertheless, I am persuaded that most of the discussion presented here concerning the dialogue between theological work and the natural sciences can be shared fruitfully also by other

¹ G. Tanzella-Nitti. *Teologia Fondamentale in contesto scientifico*. 3 vols. Rome: Città Nuova, 2015-2018; vol. 4 in preparation.

Christian confessions, having Reformed Churches' theologians contributed more than Catholics to these issues.

The studies at the origin of this book and its English presentation have been made possible thanks to the generous support of the Templeton World Charity Foundation and of the Vatican Observatory Foundation, both of which I gratefully acknowledge.

I am indebted to Gregory Gresko for his careful revision of the whole English manuscript and his very helpful suggestions. I also thank Siddhesh Mukerji for his comments on a first version of this text, and Costanza Murgia for preparing the Name Index. I am very grateful to John Farrell, who first suggested to me the idea of presenting this work to the English speaking audience, and to Paul Allen for his scholarly assistance and valuable help in managing the relations between the Author and the Publisher.

The Author

N.B. Biblical quotations are from the New American Bible Revised Edition (2011). If no other reference is given, English quotations from documents of the Catholic Magisterium and related organisms are those proposed by the official website <http://www.vatican.va>. The English Denzinger-Hünemann collection edited by Robert Fastiggi and Englund Nash at Ignatius Press (2012) has been used, especially for non-contemporary sources. Aquinas' texts from *Contra gentiles* are reported according to the translation prepared by Joseph Kenny, while I have translated the texts from the *Summa theologiae* myself. When a direct quote has a footnote corresponding to a non-English source, then the English text offered is my translation. If nothing different is stated in the footnotes, English quotations from the Fathers of the Church and from authors of the Middle Ages are also my translations, having at hand some classical English version whenever possible. Capital letter in personal pronouns and adjectives referred to God are used only to solve possible ambiguities.

Foreword

A book such as this would have been harder to find acceptance sixty years ago. Many leading postwar theologians dismissed natural theology and rejected the historicity of biblical miracles, which like Enlightenment deists they took for a pack of fables—including even the divine creation of the universe from nothing and the bodily Resurrection, without which no one today except a few ancient historians would ever have heard of Jesus of Nazareth at all. Much has changed to embolden theologians again to proclaim the great biblical truths about the transcendent God who brought the world into being, sustains its existence now and works immanently within it, and raised Christ from the grave to give us concrete hope of an ongoing life with God in a new world beyond our own. With the acceptance of Big Bang Theory, modern cosmology harbors rumors of transcendence. Contemporary historians of science have discarded an immature positivism, decisively rejecting their once cherished dogma of perpetual, inevitable conflict between science and traditional Christian beliefs that was itself a child of liberal religion and anti-Catholicism. Scientific materialism and reductionism are now more widely recognized as personal philosophical beliefs writ large, not objective conclusions of scientific observations. Thoughtful Christians can once again view science as an ally that enhances our faith, not an enemy seeking to undermine it.

In this wide-ranging, insightful work, Fr. Tanzella-Nitti situates himself firmly with those who seek to renew and expand orthodox faith, not to water it down, in dialogue with the facts, theories, and attitudes of science. He does not challenge well-grounded scientific conclusions, such as the vast antiquity of the universe or the evolutionary origin of humanity. In his view, since science has reliably established “the times of the appearance of *Homo sapiens* and the ways in which this biological species emerged from the general landscape of other living beings, Fundamental Theology must justify why it is reasonable to believe that the Creator of the universe has desired to reveal Himself to the human being and entrust him

with a specific task" (p. 274). Thus, he reflects on the significance of the scientific picture for our understanding of God's purposes in creation. At the same time, he places science within a larger theological framework that is robustly Incarnational and sacramental. Although he never hesitates to speak specifically as a Catholic theologian, sometimes with concepts and language that other Christians may find less familiar, all Christians should resonate with his vision of how theology ought to be done in light of modern knowledge: "I am convinced that every theology of Revelation *must begin* with God's revelation in creation, and all explanation of the history of salvation, consigned to Israel in favor of the entire human race, *must be anchored explicitly* in the God who created heaven and earth" (p. 199).

A very attractive advantage of this approach involves wrestling with fundamental metaphysical questions often raised explicitly or implicitly by scientists—this is partly what he means by "fundamental theology." As an historian of Christianity and science, I have long held that these are the places where genuine conversation between science and faith can best take place. Why is the universe comprehensible at all? That is not a trivial question, and some of the greatest scientists have asked it, including Albert Einstein and James Clerk Maxwell. Why do science in the first place? Even unbelieving scientists have acknowledged that the encounter with wonder and the search for meaning make science ultimately a *religious* enterprise—and here Christian belief provides profound answers. Like the Anglican physicist and theologian John Polkinghorne, Tanzella-Nitti realizes that science does not come with atheism attached at the hip, and that Christian theism helps make sense of science itself as a way of comprehending the natural world. Also like Polkinghorne or Robert John Russell, he believes that a solid grasp of science as a way of knowing is indispensable to proper theological education and ultimately to the propagation of the Gospel.

For reasons such as these, the author much admires the great early modern natural philosopher Robert Boyle, especially Boyle's frequent, subtly nuanced references to the "book of nature," a trope that is nearly ubiquitous in Christian history since Augustine. It is hard to think of a better example for a Christian scientist or theologian to emulate than the intellectually humble, deeply pious founder of the modern laboratory. Indeed, no theologian I have read understands theological aspects of the history of science better than Tanzella-Nitti.

*Edward B. Davis*²

² Distinguished Professor of the History of Science, Messiah University; editor (with Michael Hunter), *The Works of Robert Boyle*, 14 vols. (1999-2000)

Table of Abbreviations

| | |
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| CCC | CATECHISM OF THE CATHOLIC CHURCH, Vatican City 1997 |
| CDF | Congregation for the Doctrine of Faith |
| CCE | Congregation for Catholic Education |
| C.G. | THOMAS AQUINAS, <i>Summa contra gentiles</i> , online Eng. trans. Joseph Kenny O.P. (New York: Hanover House, 1955-1957), digital text at https://dhspriority.org (Pontifical Faculty of the Immaculate Conception, Dominican Friars) |
| DH | H. DENZINGER, <i>Compendium of Creeds, Definitions, and Declarations on Matters of Faith and Morals</i> , edited by P. Hünermann. Eng. edition by R. Fastiggi and A. Englund Nash (San Francisco: Ignatius Press, 2012) |
| DV | VATICAN COUNCIL II, dogm. const. <i>Dei Verbum</i> , December 18, 1965 |
| GS | VATICAN COUNCIL II, past. const. <i>Gaudium et spes</i> , December 7, 1965 |
| Gr. | In Greek |
| Heb. | In Hebrew |
| INTERS | <i>Interdisciplinary Encyclopedia of Religion and Science</i> , eds. G. Tanzella-Nitti, I. Colagè and A. Strumia, digital text at http://inters.org/interdisciplinary-encyclopedia |
| Lat. | In Latin |
| LG | VATICAN COUNCIL II, dogm. const. <i>Lumen gentium</i> , November 21, 1964 |
| NT | New Testament |
| PG | J.P. MIGNE, <i>Patrologiae cursus completus, Ecclesia Graeca</i> , Paris 1857-1866 |
| PL | J.P. MIGNE, <i>Patrologiae cursus completus, Ecclesia Latina</i> , Paris 1844-1855 |
| S.Th. | THOMAS AQUINAS, <i>Summa Theologiae</i> (Eng. trans. is mine, from Latin text online at http://www.corpusthomicum.org/) |

INTRODUCTION

Since the closing of the Second Vatican Council more than 50 years ago, much has been written about how Fundamental Theology should have gathered the legacy of the teachings that emerged. In particular, the Conciliar Fathers' careful formulations in *Dei Verbum* and the new way of conceiving the relations between the Church and the contemporary world as exhibited by *Gaudium et spes* looked closely at Fundamental Theology, whose task is to serve the understanding and proclamation of Revelation in a deeply changed social and pastoral climate. It is well known that one of the main areas of elaboration and confrontation in the post-conciliar debate referred to the way in which Fundamental Theology, which the Council did not mention explicitly, had to understand its role. Many suggested that if we were still to speak of the "credibility" of Revelation, then we had to do so while avoiding philosophical categories, resorting instead to more appropriate historic-salvific categories centered on the Paschal Mystery of Christ. In so doing, Fundamental Theology was asked to carry out a critical evaluation of the various strategies with which such credibility was proposed in past times.² One of the major questions concerned the way in which we now had to understand the "apologetic dimension" of Fundamental Theology. We were asked to re-examine this dimension with more theological categories, thereby renewing it ... understanding it in a new way, substituting it, or even, if necessary,

² The bibliography describing the transition from classical Apologetics to contemporary Fundamental Theology is ample. Among others, see: René Latourelle, "A New Image of Fundamental Theology," *Problems and Perspectives of Fundamental Theology* (R. Latourelle and G. O'Collins, eds.; New York: Paulist Press, 1982), 37-58; René Latourelle, "Fundamental Theology," *Dictionary of Fundamental Theology* (eds. R. Latourelle and R. Fisichella; New York: Crossroad, 1995), 324-332; Heinrich Fries, "From Apologetics to Fundamental Theology," *Concilium* 46 (1968): 57-68; Avery Dulles, *A History of Apologetics* (San Francisco: Ignatius Press, 2005), 325-345; Avery Dulles, "Apologetics. I. History," *Dictionary of Fundamental Theology* (eds. R. Latourelle and R. Fisichella; New York: Crossroad, 1995), 28-35; and Pierluigi Sguazzardo, "Storia della teologia fondamentale," *Teologia Fondamentale*, 4 vols. (ed. G. Lorizio; Roma: Città Nuova, 2005), 1: 237-339.

eliminating it. This undertaking, as expected, led to significant backlash regarding how we understand the relationships between philosophy and theology, and faith and reason. The backlash included the uncertainty with which 20th-century thinkers such as Martin Heidegger and Karl Barth regarded these relationships. This generated considerable consequences not only for Fundamental Theology but for all theological work, up to the point of necessitating a review of the role of philosophy within theology through the pages of *Fides et ratio* (1998) at the end of the century.

The various scenes where this debate has taken place since the 1960's—whose actors and interpreters have included biblical theology, ecclesiology, pastoral care, and catechesis—have given rise to an educational history that theological publications can only partially report because a large part of it has been written in the daily lives of the people of God. They belong to this story, already in progress: the close confrontation between Christian faith and secular thought; the inevitable debate with non-Christian religions; the ambiguous crisis of philosophical reason, too weak to deal with the ultimate questions about truth and the meaning of existence but strong enough to sanction and demand their banning from civil life; the emergence of new anthropological views, the result of which theology has suffered a certain displacement; the uncertainties with which the Church's ordinary pastoral work has responded to growing secularization and to the progressive affirmation of religious indifference; the seductive eruption of techno-science and the models of life that it presents; the secularity-affirming laws and claims of certain Western-world nations that have excluded, in principle, public space for Christianity and for religion in general while ignoring that religion, as part of the life of citizens, should be protected and respected by the laws of the State. It is precisely in this intellectual climate that the Magisterium of the Catholic Church has voiced the need for a new evangelization, emphasizing that the integral confession of the Christian identity and the witness of a holy life were, and still are, the two indispensable conditions for the *sequela Christi*.

Well aware of this state of affairs, most of the authors that developed theological-fundamental reflections around the time of the Council and then, again, at the end of the 20th century were passionate interpreters of these delicate ecclesial and intellectual circumstances. However, they also saw the hopes and opportunities that new social and cultural frameworks could provide for theology

and the proclamation of the Gospel. They all agreed upon one idea: the task of “giving the reasons for one’s own faith,” a task common to theology and preaching, could no longer have as its sole purpose the defense of a religious patrimony, which seems to have been dangerously weakened or irreparably undermined by the anthropological changes produced by the world of technology and the fast evolution of moral and social customs. Rather, proclaiming the reasons for Christian faith today includes the task of promoting the whole human being, a commitment towards man and all humans, to that man whom Christ still declares to reveal to himself, and to enlighten and save (cf. GS, 22).

The main repercussion for theology of all of these circumstances can be summarized by saying that, in the preceding decades, they generated a new awareness and an urgent call for a specific area or discipline within theological work to understand itself and be developed as a theology *before an interlocutor* and a theology *in context*. This discipline, however, is nothing but Fundamental Theology, whose role should never be dismissed. Beyond the still-open debates regarding the method that Fundamental Theology should follow and the internal articulation of its themes, it is the discipline appropriate for that need, as it recognizes Revelation and its credibility, *jointly considered*, as its specific object and core.³ Fundamental Theology is called to embody the travail of our evolving society, fully understanding the intellectual, cultural, social, and spiritual situation of contemporary people, to whom is addressed the proclamation of the Gospel. They have the right to know the reasons for believing in it. Some authors have highlighted the role of Fundamental Theology by speaking of a theology placed at the frontier of theological discourse, as a sentinel that keeps watch for what can be seen on the horizon. Other authors speak of the need for a contextual theology.⁴

³ A precise reference to the need for a renewed “discourse on credibility” and for a new, original apologetics is one among the programmatic exhortations of Pope Francis: “Proclaiming the Gospel message to different cultures also involves proclaiming it to professional, scientific and academic circles. This means an encounter between faith, reason and the sciences with a view to developing new approaches and arguments on the issue of credibility, a creative apologetics, which would encourage greater openness to the Gospel on the part of all.” *Evangelii gaudium*, n. 132.

⁴ The idea that Fundamental Theology is placed not only in the foundation of theological discourse but also on its boundary can be found in the document of the CCE, *The Theological Formation of the Future Priests*, February 22, 1976, n. 109. We

All agree, therefore, that Fundamental Theology has gained a meaningful specificity in our times. Like all other theological disciplines, it is asked to develop a “critical knowledge of faith” following a rigorous method of study. But, it is also asked to extend its work in exercising a “*diakonia* in favor of faith” that reaches all the people of God, albeit through appropriate mediations. In doing so, Fundamental Theology finds once again its most accredited historical task of fostering believers’ comprehension and intelligibility of Revelation so that, in strengthening the reasons for their own faith, they may adequately and credibly announce the Gospel to those who do not yet believe.

At this juncture, we may focus on the two expressions presenting what contemporary Fundamental Theology should embody: “theology before an interlocutor” and “theology in context.” These do not signify that Fundamental Theology is simply a form of kerygmatic theology or a kind of hermeneutics that is attentive both to the existential and epistemological categories of the interlocutor. Nor do these expressions indicate a theology that employs reason that is separate from faith. Instead, they point to the idea that fundamental theological discourse should be meaningful to anthropology, history, and science and, therefore, should also be able to heed their insights. Fundamental Theology should dialogue with the other disciplines, avoiding too narrow or merely critical-epistemological perspectives. It should maintain a truly existential and holistic dimension because, rather than a set of particular responses to individual questions posed by different disciplines, the Gospel message declares a comprehensive view of human life and an all-inclusive vision of the world. And it is with the global vision/comprehension of the interlocutor, his whole intellectual and existential context, that the proclamation of the Gospel today confronts itself.

It is not surprising that developing a Fundamental Theology which understands itself as a theology in context and before an interlocutor must sooner or later confront scientific thought, particularly the vision of the world coming from the natural sciences. It is science, in fact, that today influences to a great extent the addressees of theological discourse and the general cultural context in which the Christian faith must be explained and

note that the ideas set out in these pages (cf. nn. 107–113), read years later, do not lose their relevance.

transmitted. It is a matter of fact that the influence of scientific thought does not concern only today's cultural circles of learned people but also ordinary people. Contemporary men and women come into contact with scientific data through an increasingly extended popularization (or through a certain image of those results) and experience the advancement of science through the many technological applications that are now part of their daily life.

In a study commissioned by UNESCO from 1974 to 1977, Jean Ladrière (1921–2007) recognized that the interaction between contemporary science and culture generated a double effect. On the one hand, science can give rise to destructive and destabilizing consequences because it transforms the different cultures in which it operates, putting into crisis many of their convictions, value systems, and traditions. On the other hand, science engenders revolutionary advances and the construction of a new culture capable of unprecedented potentials.⁵ The destabilizing effect could, and does in fact, involve some aspects of theological work and the transmission of faith (*transmissio fidei*), especially when scenarios of the history of salvation are narrated and taught in contrast with (or placing in parentheses) the contemporary scientific worldview. This is why, in the preceding decades, faith-and-science topics have increasingly captivated public opinion in societies where the main religious references are represented by the teachings of Christianity or, in any case, by the Scriptures of the Judaeo-Christian tradition. In fact, the discourse on God carried out by this religious tradition intersects with the real world and natural history—the earthly context and the nature of the human being—most of all in the Christian belief of the Incarnate Word. This confrontation between faith, science, and culture concerns theology, catechesis, and the personal life of every believer to differing degrees.

In principle, there are enough theoretical bases to frame the relationship between theology and science within the classical approach to faith and reason, which in some ways is associated with the age-old question of how theology relates to philosophy. In doing so, one can take advantage of the resources with which the theological tradition previously has addressed those earlier questions while also employing the more recent suggestions of the Church's Magisterium. In all honesty, sufficient elements also exist

⁵ Cf. Jean Ladrière, *Les enjeux de la rationalité. Le défi de la science et de la technologie aux cultures* (Paris: Aubier - Éditions Montaigne, 1977).

for framing the relationship between scientific thought and atheism, as it is historically demonstrated that the progress of the first does not necessarily cause the rise of the second. The image of a science based on materialism and ontological reductionism—as if those were the premises of any scientific knowledge—is no longer appropriate today, although widely transmitted during the 19th and early 20th centuries. The current intellectual climate supports scientific activity that remains open to a philosophical foundation transcending the empirical level, a science that remains open to recognizing the question of meaning.

However, the existence of non-conflictual ways for relating science and theology cannot avoid the fact that scientific rationality today poses specific requirements for the work of fundamental theologians. For instance, scientific rationality asks that the content of biblical Revelation be taught and proclaimed in a way respectful of the knowledge and scientific data shared by everyone, without falling into contradiction, and expects that the Word of God should be explained in an anthropologically significant way. Science also requires that the credibility of the witness be judged on the basis of his or her intellectual maturity, which today also includes a certain synthesis between science and faith, a synthesis that should be reflected also in the Church's preaching and catechesis. In this respect, Fundamental Theology is called to play an intelligent mediating role in all theological work. When required, it should courageously propose homogenous development of the dogmatic teaching of the Church, taking into account the increase of knowledge brought about by scientific progress. Over the past centuries, some theological formulations have employed views of nature and of human beings that were consonant with the science of the time. These views, at least in some respects, are no longer adequate today. In summary, in our contemporary scientific era, the exposure *ad extra* of the Word of God requires its proper "inculturation" into scientific culture—just like the Church does when proclaiming the Gospel to people of different cultures with respect for their own languages and traditions.

There is still a delicate step to undertake, moving from an accord between theology and science affirmed *in principle*—always possible in the theoretical field—to a *de facto* confrontation. While the former may consist of clear-cut, at times abstract philosophical statements, the latter obliges the theologian to closely examine scientific results and their reliability, as one would approach a work-

in-progress at an open construction site. In my opinion, the work urgently needed today is not to add one more generic study about the relationship between theology and the natural sciences—a subject already tackled by many authors—just to provide epistemological clarifications aimed at showing that scientific results and Christian Revelation do not overlap when trying to answer major questions about “the origins”: of the cosmos, of life and its evolution, of human beings. To claim a correct epistemology and to point to the different levels involved in the sciences, philosophy, and theology is a necessary but insufficient step towards showing the meaningfulness and credibility of Revelation’s message. A more urgent work is to investigate—and this is precisely what I wish to propose in the present volume—what the “intelligence of faith” and “the reasons for faith” mean when we are faced with the natural history of the cosmos, when we confront physical, chemical, and biological knowledge provided by the scientific worldview of the 21st. century. Fundamental Theology is called on to explore the delicate relationship between the history of salvation and the history of the cosmos, between the revelation of God addressed to humanity and the historical-cultural heritage of *Homo sapiens*, between God’s action in nature and in history and the development of natural phenomena within space and time, between God’s fidelity to his promises and the cosmic future of matter and life. I am aware that theology cannot answer these paramount questions in a thorough way, and available data, theological and scientific, are often too scanty to solve them in a convincing manner. However, I am also persuaded that these questions demand a place in the theological agenda, and theology should suggest, whenever possible, which approaches are practicable and which are not.

A similar program was undertaken within a university context by Thomas Aquinas, when he began to explain the meaning of Christian Revelation and its content against the backdrop of profane knowledge, especially that transmitted by Aristotle. As is well known, the Greek philosopher had entered the mediaeval university not only through his works on metaphysics, ethics, and politics, but also by way of his books on meteorology, physics, astronomy, biology, and zoology (i.e., the sciences of that time). Today, when we talk about the need to value the impact that scientific results and contemporary views on nature can exert upon theological work, we do not refer to results coming from a provisional and fluctuating knowledge. Rather, we refer to a body of shared knowledge already

consolidated over time, whose global coherence allows us to understand the intimate structure of matter and its fundamental forces, to shed light on the history of the cosmos and life, and point out the essential steps of their evolution. There is a consolidated scientific knowledge that certainly does not depend on changing paradigms, nor on a contingent and provisional language—no matter the extent of progress made by future investigations. The overall knowledge we have today about the history of the universe and the evolution of life, at least in its essential content, has reached a point of no return. For this reason, it contributes in ways that are certainly incomplete, but surely unambiguous, to humanity’s big quest to seek the truth of our place in the universe.

In many cases, the interaction between science and theology involves dogmatic issues, which usually are tackled and developed by specific theological treatises. On some of these issues, as we know, the Magisterium of the Catholic Church has also offered some explicit formulations over the centuries. Consider, for instance, the dogmatic content of the act of creation, the theology of original sin, and eschatology. However, the perspective of Fundamental Theology is somewhat different from that of dogmatic theology. The former focuses on the relationship between faith and reason—between faith and science—in order to assess the credibility of Revelation. The latter, rather, is aimed more at presenting dogma and deepening its meaning in light of human salvation. The perspective of Fundamental Theology closely follows the four tasks that Thomas Aquinas assigns to the role of reason in theological work.⁶

In this volume, I deal particularly with the second among these tasks: to pave the way from errors that claim to demonstrate the content of Revelation as meaningless or irrational. Essentially, this is intended to show that the progress of scientific knowledge does not deny or render pointless what Christian Revelation affirms and the faith of the Church announces. When examined against the backdrop of other truths now discovered by science, their teachings do not fall into contradiction. Their capacity to appeal to contemporary humanity remains unchanged. The “Fundamental Theology within the scientific context” that I suggest here is primarily entrusted to establish what I call the “meaningfulness” of the Word of God, and only on a second stage to show its credibility,

⁶ Cf. C.G. I, 9.

which we understand today as an intrinsic property of Revelation.

In order to comprehend in a sound, dogmatic way themes such as the Incarnation of the Word, the relationship between nature and grace, the Catholic doctrine regarding original sin, or Christian eschatology (just to give a few examples of the subjects we will encounter), we need specific biblical-dogmatic developments. These are well beyond what I can offer in this volume. In this respect, the work of Fundamental Theology remains clearly incomplete; just as the construction of a house remains unfinished if the engineer and the architect confine themselves to showing the suitability of the building, demonstrating that it does not violate any law of statics, or simply affirming we have all the necessary materials to construct it. To build the house we need Dogmatics and a careful understanding of biblical data. A structured dogmatic presentation of the theological themes involved here—including commenting on the declarations of the Church’s Magisterium and its hermeneutics where such declarations exist—should be entrusted to theological treatises other than Fundamental Theology. The reader who now approaches my proposal about the meaningfulness and credibility of Revelation within the context of scientific thought will easily understand the reason for this.

PART I
FUNDAMENTAL THEOLOGY WITHIN
THE SCIENTIFIC CONTEXT

CHAPTER 1. SPEAKING OF GOD IN THE CONTEMPORARY SCIENTIFIC WORLD

1.1 Fundamental Theology's function of prolonging *ad extra* the mission of the Word into the world

The expression "to speak before an interlocutor" is already contained in the Greek word *apologia* (Gr. ἀπολογία). Its primary meaning is "to speak in defense of," or "to speak of to go far away, free" (Gr. ἀπολογέομαι). It indicates the capacity to sustain a position through proper argumentation and/or a witness of life, according to the use we find, for instance, in the Petrine expression (cf. 1 Pet 3:15).¹ Let us for a moment set aside today's debate on whether or not to use the term "apologetic" (which especially in the Anglo-Saxon world seems to have acquired a negative connotation) and, for now, assume that Fundamental Theology possesses an apologetic dimension. This is equivalent to maintaining that part of its specificity consists in arguing before an interlocutor; in trying to elaborate an explanation of the faith *ad extra* to the believing community. This does not mean that faith is undervalued or placed by parentheses. Like any other theological discipline, in fact, Fundamental Theology, too, must be developed within the faith, lest it risk losing its epistemological status. Rather, it means that the exposition of the content of Revelation works in continuity with the *missio ad extra* of the Word, as an extension of it. To expound also means, in a sense, the capacity to *expose oneself* – that is, to accept the risk of the interlocutor's critical inspection. All theological discourse would become *ipso facto* self-referential if no theological discipline were to assume the risk of such *ad extra* visibility; in such a situation, all the questions posed by the various theological treatises would come only from within. By developing its arguments in front of all persons, from whom it learns by sharing their questions and aspirations, Fundamental Theology helps all of theology to prevent the *risk of fundamentalism*.

¹ The NT proposes this same idea in numerous speeches by Paul, as reported in the *Acts* (cf. Acts 19:33; 22:1; 24:10; 25:8; 26:1-2; cf. also 2Tm 4:16); on arguing in the context of persecutions, cf. Luke 12:11.

The original Christian message was proclaimed by people who never put aside their faith in the risen Christ. What they preached and wrote clearly had a twofold purpose: “that you may [come to] believe that Jesus is the Messiah, the Son of God, and that through this belief you may have life in his name” (John 20:30–31); and that, once embracing the faith, “you may realize the certainty of the teachings you have received” (cf. Luke 1:4). As with any other branch of theology, speaking before an interlocutor does not mean that Fundamental Theology must argue in the manner of a non-believer, by employing reason but excluding faith. Rather, as serving the proclamation of the Gospel, Fundamental Theology must educate and inform the *minds* of those who already believe, so that they may know how to give reason for their own faith, listen to everyone’s reasons and take them into account. In this sense, the two classical tasks of apostolic preaching—to argue for faith and to strengthen it—end in harmony (cf. Phil 1:16). Johann Baptist Metz and other authors have qualified them as *ad extra* and *ad intra* missions of today’s apologetics, showing their intimate and reciprocal interconnection.² In order to let the reasons for faith be explained *ad extra*, Metz emphasizes, they must be also addresses *ad intra* to confirm and consolidate the faith of the believer; in fact, all believers are threatened today by the secularized and relativist cultural climate in which they work and think.

Understanding the work of Fundamental Theology as that of a theology “before an interlocutor” allows interpretation of the relationship between faith and reason—a relationship the fundamental theologian must necessarily consider—in a more anthropological and personalistic way. The *reason* to which Revelation and its credibility must appeal is, in fact, a reason that involves the *whole of man*, including his philosophical and scientific rationality. It is a reason that judges as “meaningful” human existential questions and common sense, although they cannot find an exhaustive expression in the analytical dimension of philosophical language. It is not an abstract reason, but one exercised by a subject and, therefore, a personal reason in close relation with the exercise of will and freedom. It is a reason that does

² Cf. Johann B. Metz, “Apologetics,” *Sacramentum mundi. An Encyclopedia of Theology*, 6 vols. (eds. K. Rahner et al.; London: Burns & Oates, 1968–1970), 1: 66–70, here 68.

not address its object in a detached and neutral way, but always captures it within a world of vital options, that bind the subject to reality and make him grasp the value that any object possesses in relation to the fundamental themes of one's own existence. It is a reason that one is aware of being capable not only of formal formulation, but also of the *illative sense*; that is, a common sense able to correlate together different sources of knowledge, including those unsusceptible of formal analysis.³ Each of these sources, considered in their own epistemic context, may not be sufficient to lead the subject to formulate a definite judgment. However, in their simultaneous presence within the subject's mind and, therefore, in their mutual confrontation and confirmation, they push towards an option deemed *reasonable*. Again, a contemporary interlocutor's reason is one forged, to a greater or lesser extent, by scientific rationality and therefore accustomed rigorously to assessing various sources of knowledge and carefully evaluating their reliability. It is a reason respectful of logic and argumentation, always open to new and deeper levels of intelligibility. Finally, it is a reason which has learned to reflect within space-time horizons of cosmic breath, horizons that extend towards the infinitely great and deeply penetrate into the infinitely small. Namely, it is our *scientific* understanding of the world and of life, of their evolution in time; a new understanding that philosophical thought, and therefore also theological thought, must now dialogue and confront.

With faith and reason in confrontation with one another, instead of an abstract, dialectical approach, a personalistic approach should be preferred; one that "translates" the faith and reason poles into two other poles: the Word of God and the interlocutor to whom the Word is addressed. The interlocutor is asked to regard himself as the subject of a reason open to infinity, able to question the whole of reality and the meaning of everything,⁴ although unable to provide *ultimate* answers. In brief, the subject should accept that these ultimate answers can be known only if "narrated" to him, aware that the foundations of his own knowledge lie in the mystery of being – a being received and not created, listened to but not said.

³ Cf. John H. Newman, *An Essay in Aid of a Grammar of Assent* (ed. I. Ker; Oxford: Clarendon Press, 2001), ch. IX.

⁴ This is what Aristotle observed, affirming that *anima est quodammodo omnia* (cf. *De Anima* III, 3); or also what Thomas Aquinas meant when observing that "the natural appetite of the intellect is to know the genera and species and powers of all things and the whole order of the universe." C.G. III, ch. 59.

So understood, human reason can adequately express and embrace all of mankind's religious aspirations and appreciate the contribution that religion gives to the *logos*, even when it comes through the vehicle of the *mythos*. The reason to which Revelation can efficaciously address its appeal must ultimately be a *non-ideological* reason, that is, open to being revealed as a *created reason*. In more specifically personalistic terms, the interlocutor to whom the call of Revelation is addressed and "before whom" the corresponding theological elaboration is proposed must accept that his self is not the measure of the whole. He must perceive his existence as open to the ultimate questions about the radical cause of the world and the very meaning of life. And he must be prepared, in the end, to let himself be revealed as a *creature*.

A reading of the relationship between faith and reason within a more personalistic framework seems in agreement also with the exhortation made by the *First Letter of Peter*. The clear reference to reason—"Always be ready to give an explanation to anyone who asks (παντὶ τῷ αἰτοῦντι ὑμᾶς) for a *reason* for your hope (λόγον περὶ τῆς ἐν ὑμῖν ἐλπίδος)" (1 Pet 3:15)—suggests a rational argumentation, but the object of such "giving reason" is the hope *par excellence* that is "the hope of the risen Christ." In other words, *this* is the very reason for any Christian life. It is confirmed by Peter's subsequent recommendation to "demonstrate" these reasons with the power of witness and of personal experience (cf. 1 Pet 3:15b–16). It is clear that the term "hope" cannot mean uncertainty here, nor waiting for something that may not come. The "hoped-for things" have a substance that is precisely the faith for which the Christian faithful have to give reason (cf. Heb 11:1).⁵ However, since these goods are hoped for and not yet spent, believed in and not yet fully possessed, the exercise of this hope does not exempt the believer from being a true travelling companion of his interlocutor; a person among other people, a person alongside his/her brothers and sisters. "The joys and the hopes, the griefs and the anxieties of the men of this age, especially those who are poor or in any way afflicted, these are the joys and hopes, the griefs and anxieties of the followers of Christ. Indeed, nothing genuinely human fails to raise an echo in their hearts" (GS, 1). Any theological discourse on the credibility of Revelation, therefore, must show a serious interest in the intellectual and existential situation of the interlocutor. It cannot underestimate

⁵ Cf. the theological comment offered by *Spe salvi*, nn. 7–9.

the travail that accompanies the search for truth and good, nor the diversity of the paths along which this search is carried out in the history of everyone.

In the logic of this sharing, which is highlighted very well by the icon of the encounter between the Risen Christ and the disciples of Emmaus, the task arises of a patient “explanation of history,” and even of a necessary “healing of reason” (cf. Luke 24:27). The proclamation of Christian hope and the theological elaboration of the reasons that sustain it cannot be based solely on the emotions and feelings of those to whom it is addressed. The Christian faithful must also take on the burden of supplying their interlocutors with the necessary elements of education and training, which will enable them to recognize the logic of credibility, the content of faith as something reasonable and meaningful. Here we glimpse, in the end, the relationship between Revelation and philosophy, between Christian faith and its rational preambles, that is, a knowledge that precedes faith and guides one's decision of self-giving to Christ.

1.2 Revelation as a historical event: the interdisciplinary nature of Fundamental Theology

A specificity of Judaeo-Christian Revelation is that it includes the characteristics of both a *mystery* and an *event*. Revelation is, in itself, a *mystery* because the decision to reveal Himself belongs to the mystery of God's life. The ultimate reason for God's communication to man—both the gratuitousness of his creative love and, more so, the gratuitousness of his salvific condescension—is a mystery. Above all, mystery relates to the unfathomable source from which Revelation proceeds: the immanent life of the one and triune God, his personal eternal communion.

But Revelation is also an *event*. The self-communication of the Absolute, of the one and triune God, is made manifest through an event, indeed a series of events, that break into history. They are events that take place in the history of a people, also in the history of the whole of humanity and in the personal conscience of each human being. They are events that, for the most part, have occurred and continue to occur before the eyes of all. In the logic of Revelation, mystery and event are inseparable, as they are in the Incarnation of the Logos, which is both a mystery and an event, and expresses the fullness and fulfillment of the self-communication of the Word. God offers his mystery to humanity through the historicity and

concreteness of the event, an event whose meaning can only be grasped in the light of the mystery of God's condescending love.

Precisely the fact that God's Revelation is made manifest through events, through historical happenings, immediately triggers a contextual confrontation between Fundamental Theology and the different disciplines that study and interpret those same events. As theology is qualified to proclaim mystery in light of faith, so history, anthropology, and the natural sciences are qualified to inform our understanding of events in light of empirical rationality. For Fundamental Theology, entering into relationship with history and the sciences is inevitable. Indeed it is a duty. The consequences suffered in the past for having ignored or underestimated these relationships are still vividly felt today. The judgments of history have been too severe to justify a further lack of interest in these issues as, unfortunately, still occurs in most of contemporary theology.

The contextual and interdisciplinary vocation of Fundamental Theology to which I am referring here should not be confused with the ordinary interdisciplinary openness that each branch of theology must cultivate in order to attain a better intelligence of its own object. The latter, for example, includes the consideration of psychology and medicine in spiritual theology, of ethics and anthropology in moral theology, of hermeneutics and philology in biblical theology and exegesis, of cosmology and paleoanthropology in dogmatics on creation. Also, the character of being a "theology in context" does not concern the task of providing general epistemological criteria for regulating the confrontation between theological knowledge, as a whole, and other disciplines such as philosophy, history, hermeneutics, or the sciences. Actually, this is a concern of theological epistemology and of introductory courses in theology, which are specific sectors of the Fundamental Theology program but do not characterize this discipline as a whole.

Rather, the contextual character and the interdisciplinary dimension that Fundamental Theology is called to practice within a scientific context derive from its responsibility to respond to the questions that *history and the sciences pose to Revelation and to its appeal for salvation*. These questions are sometimes genuine challenges that call into question Fundamental Theology's proper object, Revelation and its credibility, by asking for the truthfulness of those historical-factual dimensions that Revelation involves, albeit transcending them. Unlike other theological treatises, Fundamental Theology

must deal with this contextual confrontation by accepting a universal horizon as wide as Revelation itself. And it must do so without concentrating on some specific content as is the case with other theological treatises such as Christology, theological anthropology, and biblical theology. Because of the historical extension of the Word, Fundamental Theology is asked to discuss the comparison between the history of salvation and the *history of everything*, between the history of Jesus Christ and the *history of everyone*. The congenital concern for universality entailed by Revelation also determines and regulates the relationship between Fundamental Theology and philosophy. As we shall see with regard to Judaeo-Christian Revelation, the concern for universality also rules its relations to *religion*; a confrontation that cannot be eluded insofar as a religion is no longer circumscribed within a local ambit but assumes the character of a universal reading/understanding of the whole of reality.

As theology is the expression of a *fides quaerens intellectum*, each theological treatise resorts to specific itineraries of philosophical rationality and moves within the specific object it addresses. In the case of Fundamental Theology, the interaction with philosophy is broader because its own object, the discourse on God presented by Revelation, is, in principle, analogous to philosophy's discourse on the Absolute and the Unconditioned. It is the existence of this double "demand for universality," both on the part of Revelation and on the part of philosophy, that requires Fundamental Theology to examine and provide a credible synthesis of the relationship that the God of Jesus Christ has with the God of philosophers and scientists.

The ground where these demands for universality, theological and philosophical, confront each other is twofold. This comparison must take place in the cosmological sphere as the cosmos represents the universal extension of being. It also must take place in the anthropological sphere because the human being is open to the totality of meaning. The cosmos is the object of philosophy, which investigates all that exists, and the object of the power of God, who reveals Himself through creation. Analogously, philosophy aspires to investigate and interpret the human phenomenology of freedom, feelings, psychology, cognitivity, nature, and culture. This same phenomenology is precisely what Revelation claims to explain and decode when presenting the human being as the image and likeness of God. We understand why, in 1959, Joseph Ratzinger qualified the relationship between religion and philosophy, between faith and

science, and between critical reason and religious behavior, as the basic problem of Fundamental Theology.⁶

When the contextual character of Fundamental Theology is more specifically addressed to the program of a “theology in the context of scientific rationality,” two tasks clearly emerge. The first is the choice of explaining the relationship between faith and reason in a manner respectful of scientific reason. The second is the definite acceptance of the latter to provide a homogeneous development of dogmatic knowledge. Without forgetting the personalistic perspective mentioned above, nor yielding to the idea of a reason separate from faith, it will be necessary to examine carefully the requests that scientific-philosophical rationality today make to the teachings of Revelation and their credibility. Then, the interlocutor’s “rational context” must be made explicit since it is the same context in which theological elaboration and the proclamation of the faith are called to operate. Concerning the second task, that of providing a homogeneous development of dogma, it is necessary to consider how scientific knowledge could cease to represent for theology (only) a source of trouble and become (also) a positive source of speculation. Specifically, I mean a speculation that is capable of increasing intelligence of the Word of God and making its rich message more explicit in terms of its content and also of its capacity to appeal to every human being throughout the various epochs of history.

In both cases, Fundamental Theology is called to work with competence and depth and to address useful criteria for forging a new and proper relationship with the natural sciences. I use here the adjective *new* because the historical weight of some well-known clichés have often made this relation infertile, although today it seems to be regaining interest in some academic circles.⁷ The

⁶ Cf. Joseph Ratzinger, *Der Gott des Glaubens und der Gott der Philosophen. Ein Beitrag zum Problem der theologia naturalis* (ed. H. Sonnemans; Trier: Paulinus, 2006)

⁷ As is well known, the bibliography concerning the dialogue between theology and the natural sciences is very extensive. It concerns for the most part authors belonging to the Churches of the Reformation, although the number of authors from the Catholic arena today is increasing. After the pioneering volume *Physics, Philosophy and Theology. A Common Quest for Understanding*, edited Robert J. Russell, William R. Stoeger and George V. Coyne (Vatican City: LEV - University of Notre Dame Press 1988), a number of encyclopedias have been edited on this topic. Among them: *Dizionario Interdisciplinare di Scienza e Fede*, 2 vols. (eds. G. Tanzella-Nitti and A. Strumia; Roma: Urbaniana University Press - Città Nuova, 2002); *Encyclopedia of Science and Religion* (ed. J.W. van Huyssteen; New York: Macmillan,

dialogue between *theology* and science – part of the largest and most syncretic world of the relations between *religion* and science – has been characterized by good insights, but also by a general lack of methodological rigor. Across this complex terrain, Fundamental Theology should be able to extract seeds to plant in lands of more relevant theological quality, useful for the elaboration of a contemporary theology of Revelation and of a renewed Theology of credibility. Consider, for instance, the relationship between the history of the cosmos and the history of salvation, or the theology of miracles. These are just two examples of those fields still awaiting a convincing answer, especially when the world of science poses questions to the Church’s preaching. This is a difficult task, but now more than ever, a necessary one. And precisely in this area, it is necessary to overcome the excessively narrow perspectives that still seem to hamper many studies on “theology and science.” I refer to those studies that confine themselves to look for suitable methodologies without tackling any hot issues, and those that seem concerned about providing only biblical-exegetical clarifications, forgetting the substance of things.

Scientific results may have implications for more than one theological treatise. They will certainly affect the theology of creation and theological anthropology, both in protology and eschatology. Additionally, they will influence some topical aspects of moral theology on human life, environmental ethics, and also, to a certain extent, sacramental theology and the Treatise on God. Fundamental Theology, however, has to face scientific knowledge in quite a specific way.⁸ Fundamental Theology does not deal with the sciences in a circumstantial or instrumental manner, but in a general way that is propaedeutic for the entire theological discourse. The two main tasks mentioned above – the setting of a renewed relationship between faith and scientific reason, and how to employ the latter for development of dogma – are, in fact, propaedeutic. The Second Vatican Council (1965) and then the Magisterium of John

2003); *Religion and Science. Critical Concepts in Strumia Religious Studies*, 4 vols. (eds. S. Fletcher Harding and N. Morvillo; London - New York: Routledge 2011); and *Encyclopedia of Sciences and Religions* (eds. A. Runehov and L. Oviedo; Dordrecht: Springer, 2013). See also the free online encyclopedia *Interdisciplinary Encyclopedia of Religion and Science* (inters.org), edited by G. Tanzella-Nitti, I. Colagè and A. Strumia.

⁸ Cf. P. ALLEN, “Fundamental Theology,” eds. Runehov and Oviedo, *Encyclopedia of Sciences and Religions*, 908–916.

Paul II (1978-2005) exhorted theologians to take responsibility for the *ratio temporis* by listening to the results of the sciences and making use of an interdisciplinary approach. Such approaches involve, first and foremost, Fundamental Theology, from whose elaboration the other theological disciplines could later benefit.

It may be helpful to recall here some of those exhortations. Many passages from *Gaudium et spes*, for example, discuss the role of scientific thought. This document recalls that the progress of the sciences, through which the nature of the human being is better revealed and new paths towards truth are opened, is also of benefit to the Church (cf. n. 44). *Gaudium et spes* recognizes that man, by applying himself to the study of various disciplines such as philosophy, history, mathematics, and the natural sciences, contributes to elevating the cultural and social situation of all mankind. Subsequently, it also recalls that technical-scientific progress can foster a certain phenomenalism and agnosticism when the method of science is raised to the supreme norm of a search for global truth. Yet, referring to the latter, the Council itself points out: "Those unfortunate results, however, do not necessarily follow from the culture of today, nor should they lead us into the temptation of not acknowledging its positive values. Included among these values are scientific study and fidelity toward truth in scientific inquiries, the necessity of working together with others in technical groups, and a sense of international solidarity" (GS, 57). One may readily deduce the involvement of theology from what is reported in another passage: "The recent studies and findings of science, history, and philosophy raise new questions which effect life and which demand new theological investigations. Furthermore, theologians, within the requirements and methods proper to theology, are invited to seek continually for more suitable ways of communicating doctrine to the men of their times. For the depositing of Faith or truths is one thing, and the manner in which they are enunciated in the same meaning and understanding is another" (GS, 62). In the decree on priestly formation *Optatam totius*, the Council speaks of the need for priestly candidates to have a humanistic and scientific background adequate for undertaking higher studies (cf. n. 13). The same decree also indicates that, in their theological studies, "account should also be taken of the more recent progress of the sciences. The net result should be that the students, correctly understanding the characteristics of the contemporary mind, will be duly prepared for dialogue with men of their time" (n. 15). The task of Fundamental

Theology to enter into a necessary relationship with the sciences – without any inferiority complex but with a positive attitude of considering their results – is also clearly mentioned in the instruction *The Theological Formation of Future Priests*, which the Congregation for Catholic Education issued in 1976 as the fruit and summary of the Council’s recommendations.⁹

However, it seems to me that, above all, the long pontificate of John Paul II represents a true “point of no return.” His sincere interest in the world of the Academy and of scientific research is demonstrated through many courageous communications. In the Letter to the Director of the *Vatican Observatory* (1988), he wrote:

Contemporary developments in science challenge theology far more deeply than did the introduction of Aristotle into Western Europe in the thirteenth century. Yet these developments also offer to theology a potentially important resource. Just as Aristotelian philosophy, through the ministry of such great scholars as St Thomas Aquinas, ultimately came to shape some of the most profound expressions of theological doctrine, so can we not hope that the sciences of today, along with all forms of human knowing, may invigorate and inform those parts of the theological enterprise that bear on the relation of nature, humanity and God?¹⁰

That same document formulates other provocative questions and concludes that to address them properly “would require the sort of intense dialogue with contemporary science that has, on the whole, been lacking among those engaged in theological research and teaching.”¹¹ Unlike what may have happened in other periods of history of the Church, it seems to me that, in this area, the Magisterium of the Catholic Church was anticipating theological research, pointing out a path that theology still appears somewhat unready to follow.

Only a few authors seem to have been in tune with this challenge issued by the Catholic Magisterium. Among the reasons for that is the delay experienced, especially in Europe, by the so-

⁹ Cf. CCE, *The Theological Formation of Future Priests*, February 22, 1976, nn. 110-111.

¹⁰ John Paul II, “Letter to the Rev. George V. Coyne, Director of the Vatican Observatory,” *Papal Addresses*, Pontificiae Academiae Scientiarum Scripta Varia, n. 100 (Vatican City: Pontifical Academy of Sciences, 2003), 299.

¹¹ John Paul II, “Letter to the Rev. George V. Coyne,” 299.

called “university theology” with respect to the teachings and research carried out in State and lay universities, at least from the end of the 19th century onward. This gap continues to be significant in the Catholic theology of Latin-speaking countries. The absence of scientific education or, in general, a poor acquaintance with scientific culture in clergy training programs has contributed to a fracture that only a few extracurricular initiatives in recent decades have attempted to mend. When scientific education is cultivated among members of the clergy, it is more for reasons of pastoral care, for instance towards intellectuals or academicians, than to improve theological research as such.

In the countries of Anglo-Saxon tradition—particularly communities coming from the Reformation—the dialogue of theology and the sciences has been less precarious. However, it has developed within philosophical paradigms that rarely make use of a metaphysical-continental tradition employed by their Catholic colleagues. Generally speaking, philosophers and even scientists dealing with “science and theology” movement are more numerous than theologians, demonstrating that theology is still far from being a competent interlocutor, apart from a few praiseworthy exceptions.

These exceptions certainly include authors such as Karl Rahner, Wolfhart Pannenberg, Jürgen Moltmann and Paul Tillich, to name the most representative and internationally renowned. None of these authors, however, studied the interaction between theology and science in a truly systematic way. Moltmann tried to awaken theological scholars by dialoguing with the natural sciences in two areas congenial to him: ecology and eschatology.¹² Concerned with proposing a theology capable of speaking of God to contemporary man influenced by scientific mentality, Rahner wrote a number of essays tackling quite complex issues.¹³ Pannenberg was more interested in the theological synthesis and tried to solve theological problems by resorting to analogies taken from the world of natural

¹² Cf. Jürgen Moltmann, *Wissenschaft und Weisheit. Zum Gespräch zwischen Naturwissenschaft und Theologie* (Gütersloh: Kaiser, 2002).

¹³ Cf. Karl Rahner, *Natural Science and Reasonable Faith* (Theological Investigations, 21; Darton: Longman & Todd, 1988), 16–55; Karl Rahner, *Theology as Engaged in an Interdisciplinary Dialogue with the Sciences* (Theological Investigations, 13; Darton: Longman & Todd, 1975), 80–93; Karl Rahner, *On the Relationship between Theology and the Contemporary Sciences* (Theological Investigations, 13; Darton: Longman & Todd, 1975), 94–102.

phenomena.¹⁴ Each of these authors carried out this interdisciplinary work within the paradigms and pre-comprehensions that characterized their theological work. For Rahner, it was a precise way of establishing the correspondence between anthropology and Christology. For Pannenberg, it was the embrace of a strong historical-idealist vision, while Tillich's apologetic approach framed the relation between scientific culture and theology within a question-answer correlation. Other European theologians tried their hand at this work: according to a historical-epistemological (T.F. Torrance, K. Heim) or ethical-cultural (G. Gismondi) perspectives; or even building a bridge towards dogmatics (J. Ruiz de la Peña, J.-M. Maldamé, D. Edwards). However, none of them intended to offer a proper systematics.

Alister McGrath's thought deserves a separate mention here. The author of a three-volume work entitled *A Scientific Theology* (2001–2007),¹⁵ McGrath brings reflection on nature into the domain of theology. He does so not only by suggesting a non-philosophical natural theology—one he develops following the inspiration of Thomas Torrance—but also by resorting to a theory of knowledge eager to join together what theology and the sciences have to say about the same reality. However, the work of this Anglican theologian, whose general vision I consider to be in-tune with the contents of this volume, cannot be considered a systematic theology in light of scientific data, nor a project of Fundamental theology. In actuality, he privileges the historical-epistemological dimension, albeit encompassing points of interest in the theology of God's revelation in creation. Theological proposals attentive to the context of the sciences also should include the work of Bernard Lonergan. His perspective is more philosophical-epistemological than theological-fundamental, but his philosophy may certainly inspire a renewed Fundamental Theology. All these authors, however, exerted a minor influence on the “science and theology” dialogue, and their attempts seem confined, until now, within narrow theological circles.¹⁶

¹⁴ Cf. Wolfhart Pannenberg, *Toward a Theology of Nature. Essays on Science and Faith* (ed. T. Peters; Louisville: J. Knox Press, 1993). Cf. also *Systematic Theology* (Edinburgh: T. & T. Clark, 1991–1998), 2: 1–174.

¹⁵ Cf. Alister McGrath, *A Scientific Theology*, 3 vols.: 1. Nature, 2. Reality, 3. Theory; (Edinburgh - Grand Rapids, MI - Cambridge, UK: T & T Clark - Eerdmans, 2001–2006).

¹⁶ Other contemporary theologians have paid attention to scientific results within

I, myself, have offered a general overview of this topic in other essays, also addressing some specific issues. In particular, I have posited that the philosophical bases for justifying the program of employing the sciences in theology were already present *in nuce* in the thought of Thomas Aquinas. This program may still be realized, at least in part, with the help of his inspiration. It is a program also present in the approach to scientific knowledge of authors such as Antonio Rosmini and John Henry Newman. In dialogue with the sciences, I have emphasized the capacity for dogmatic development contained in the seven criteria suggested by Newman in *The Development of the Christian Doctrine* (1845), which determine the homogeneous evolution of a doctrine when called to interact with new knowledge and events that are emerging through the course of history.¹⁷

Fundamental Theology's contextual and interdisciplinary nature stems from the event-like and, ultimately, historical dimension of Revelation. Thus, it is legitimate to ask whether such a nature relates only to the gnoseological sphere, within which the relationship with the events studied by the sciences takes place, or whether it should also involve the ambit of *praxis*, the events being those occurring in society and the *polis*. The question is not without interest if we remember that the proposal of a political theology put forward by Johann Baptist Metz, and the more radical proposals of a liberation theology as elaborated by Gustavo Gutiérrez, Jon Sobrino, and Leonardo and Clodovis Boff, were basically "proposals for an understanding of Revelation." The ecological doctrine of creation developed by Jürgen Moltmann—based on a specific historical and soteriological understanding of Revelation and with particular attention to its eschatological tension—is also a source of responsibility and of political and social praxis for all believers. It is not a coincidence that J.B. Metz's book entitled *Faith in History and Society* (1977), written after his theological program in *Theology of the*

their work. Our analysis is obviously restricted. The following scholars should also be mentioned: John Haught, Alexandre Ganoczy, Jean-Michel Maldamé and Stanley Jaki among Catholics; and Ted Peters, Robert J. Russell, Nancey Murphy, Arthur Peacocke and Philip Clayton, among authors from Evangelicals and Anglican traditions. Many others, such as John Polkinghorne or Ian Barbour, have addressed theological issues while belonging to philosophical or even scientific disciplines.

¹⁷ Cf. Giuseppe Tanzella-Nitti, *Natural Sciences in the Work of Theologians* (2008), INTERS, DOI: 10.17421/2037-2329-2008-GT-5.

World (1968), adopted the subtitle *Toward a Practical Fundamental Theology*. Similarly, Moltmann places the public dimension of theology not only on the temporal and, therefore, universal distension of history, as in Pannenberg's proposal, but also on the dimension of praxis, reminding Christians to be exemplars of historical hope and responsible recipients of the entrustment of creation.¹⁸

I believe that the answer to this question, and therefore the answer that addresses the proper contextual nature of Fundamental Theology, depends on the model used to understand the relationship between the theology of Revelation and the theology of history. Fundamental Theology's commitment to praxis will be judged pertinent, rightly or wrongly, by how much the theology of history will absorb a theological reflection on Revelation. This commitment is relevant up to the point in which so-called profane history completely overlaps with the history of salvation. In any case, Fundamental Theology is certainly called to clarify which understandings of historical praxis—and, therefore, of ethical, social, and political praxis—are compatible or incompatible with the reading of human history offered by Revelation. It is also called to clarify which praxis in these areas are in accord with the recapitulation that Christ, the center and fulfillment of history, realizes as the fullness and fulfillment of Revelation.¹⁹ While the practical modalities of this confrontation belong to moral theology, to the social doctrine of the Church and anthropology, there is no doubt that Fundamental Theology can elaborate upon its own models within the corresponding theoretical aspects, as its core is the study of the interconnection between Revelation and history.

However, there is a certain difference between the "contextual" dimension of a theology that confronts the sciences and that of a theology encountering historical-political praxis. It must be observed, in fact, that it is not Christian Revelation that must be read in the light of sociopolitical history. Rather, in a certain sense, the opposite holds true. That is, history must be read in the light of Revelation. The same could not be said of the sciences. In fact, some

¹⁸ Cf. Jürgen Moltmann, *Jesus Christ for Today's World* (Minneapolis, MN: Fortress Press, 1994); and *Creating a Just Future. The Politics of Peace and the Ethics of Creation in a Threatened World* (London - Philadelphia: SCM Press - Trinity Press International, 1989).

¹⁹ The development of ch. III of *Gaudium et spes* (nn. 33–39) represents a good example of how to make such a comparison.

of the content of Revelation can certainly be read in light of the results of science (including the historical sciences insofar as they are sciences, and not as a source of praxis). In this way, the Word of God may be correctly understood, thanks to new scientific knowledge, with its intelligibility thus increased. However, the understanding of history is not captured by political programs or ideologies. In many cases, Revelation can (and even must) be read in light of history and experience, generating implications for theological work and causing an appropriate “enlargement” of theological reason. Consider how tradition, open to history, allows the Church to interpret the Scriptures, or how the lives of the saints contribute to the development of dogma. More generally, as the Second Vatican Council recommended, looking at history calls us to recognize those “signs of the times” in the light of which the Church must orient her mission in the world (cf. GS, 4).

Finally, when by the historical-contextual dimension we mean the interlocutor’s historical situation, as the recipient of the message of Revelation and the subject who answers to God by his faith, it is clear that Fundamental Theology should be fully concerned with such contextuality. This is the reason for Fundamental Theology’s interest in the analysis of psychology, sociology, contemporary history, or anything else that can aid the anthropological awareness of the person who receives the announcement of the Gospel and provide a better understanding of his living experience. The interest Fundamental Theology has in the human sciences does not oblige theology to assume a “hermeneutic model.” Actually, the attention to the life and thought of the interlocutor is not aimed at discovering a hidden truth to be sought and extracted, as hermeneutics does, but rather at the modalities that make more effective the transmission of a truth received and already known through the gift of Revelation.

Without changing its epistemological status or ceasing to be true theology, Fundamental Theology perceives this need for better knowing the interlocutor’s historical situation and thus develop reflections that, thanks to proper mediations, should be used also within pastoral or catechetical contexts. The greater competence of these latter areas to address the living context of the Gospel’s addressee, as well as their expertise to study modalities and strategies adequate for a more effective diffusion of the Word, are beyond any doubt: the point to highlight is that Fundamental Theology must be capable of building bridges toward pastoral theology and catechesis. And it will be available for that goal,

provided that its language remains sufficiently clear, its ecclesiality is guaranteed, its Christocentrism is openly expressed, its idea of reason and its theology of faith are presented resorting to personalistic categories, and its apologetics made suitable to help the Church mission of the Christian faithful. Concern for providing a stronger connection among Fundamental Theology, pastoral theology, and catechesis, guided by the rightful intention to serve the people of God, has been at the origin of important insights in the 20th century theology. This concern led the work of many authors: from Romano Guardini to Henri de Lubac, from Paul Tillich to Langdon Gilkey, from Karl Adam to Karl Rahner, from Avery Dulles to Joseph Ratzinger, even if they did not conceive specific or organic projects in the mode of a new Fundamental Theology.

1.3 Is Fundamental Theology a model of theology suitable for a university campus?

The character of Fundamental Theology as theology before an interlocutor and in context makes it a suitable “laboratory” for the development of a *public* theology. It is certainly true that every theological discipline must be ready to play within the field of public debates, being able to demonstrate the reasonableness of its teachings across a wider intellectual and social context. This happens, for example, when moral theologians are engaged in debates on bioethics, when ecclesiologists discuss the relations between the Church and civil society, or when biblical exegetes speak of the historicity of Jesus of Nazareth. However, unlike Fundamental Theology, the approach and methodology of all these disciplines are not oriented primarily toward providing the reasons for belief. Instead, they are concerned with explaining and deepening their specific object, even if the intellectual climate in which they operate may be adverse and prone to heated disputes. Fundamental Theology does not have the competence to enter into the merits of every debate in contemporary culture. Nor must it bring every problem back into its field, thus running the risk of becoming a “panta-theology” and then losing its specificity. Yet, precisely because of its particular concern for the cultivated interlocutor and its greater capacity to operate in dialogue with other knowledge, it can and must develop *strategies of rationality* at the service of theology as a whole. In a certain way, it acts as a *laboratory* for developing a theology with a public dimension and presence, suitable for acting in an *agorà* (the public square of the

ancient Greeks) with a multitude of voices. The rationale of this presence cannot be limited to pay a greater attention to the role of mass media, which already gave rise to a discipline called “theology of communication,” often placed in the area of Fundamental Theology because of the significant interactions that any theory of communication has with evangelization.²⁰ I am persuaded that the contribution of Fundamental Theology to developing a public theology at the service of the whole theological discourse is most clearly seen when it is viewed as a model of *university theology*.

Here, the use of the adjective *university* does not merely indicate higher-level teaching with the conferral of corresponding academic degrees, which, indeed, concerns all branches of theology. Nor is this adjective meant to introduce the living discussion of why theology should or should not have its own faculty within public university campuses.²¹ Here, my intention is rather to consider the character-

²⁰ A discipline with an epistemological status still uncertain, the “theology of communication” shows an implicit association with Fundamental Theology both because of the respective authors, who come largely from this theological area (among those who have a dedicated interest are A. Dulles, P. Sequeri, G. Lorizio, N. Martins, H. Peukert), and, even earlier, because of the possibility of reflecting on the continuity and parallel between God’s revelation to humanity and human communication in a world of personal beings. Systematic bibliographies and overviews are found in Helmut Peukert, *Science, Action and Fundamental Theology. Towards a Theology of Communicative action* (Cambridge: MIT Press, 1984); Felicísimo Martínez Díez, *Teología de la comunicación* (Madrid: Editorial Católica, 1994); *Cross Connection. Interdisciplinary Communications Studies at the Gregorian University* eds. Jacob Srampickal, Giuseppe Mazza, Lloyd Baugh (Roma: PUG, 2006); Paul A. Soukup, *Christian Communication. A Bibliographic Survey* (New York - London: Greenwood Press, 1989); and *Communication and Theology. Introduction and Review of the Literature* ed. P. A. Soukup (Stratford upon Avon: Avon Litho 1991).

²¹ Among the many contributions to this discussion, whose historical beginning was certainly represented by *Der Streit der Facultäten* (1798) by Immanuel Kant, and whose most fruitful synthesis is yet expressed by *An Idea of University* (1852) by John Henry Newman, see: Karl Rahner, *Theology Today* (Theological Investigations, 21; Darton: Longman & Todd, 1988), 56-69; Pierre-Luigi Dubied, “La place d’une Faculté de théologie dans l’Université d’aujourd’hui,” *Revue de Théologie et de Philosophie* 120 (1988): 21-28; *Theology and the University* (ed. J. Apczynski; Lanham, MD - New York - London: University Press of America, 1990); *Christianity and the Disciplines. The Transformation of a University* (eds. Oliver D. Crisp, Gavin D’Costa, Mervyn Davies and Peter Hampson; London - New York Bloomsbury - T&T Clark, 2012). I have provided a short historical overview in Giuseppe Tanzella-Nitti, *Passione per la verità e responsabilità del sapere* (Casale Monferrato: Piemme, 1998), 84-98. It should be also remembered that, in order for theology to gain greater visibility in the public cultural debate, it is not strictly necessary to ensure that all university campuses host Faculties of Theology within them. This would be a positive

istics required by a theological teaching performed within the context of a secular university. Such an approach is especially relevant when teaching is provided within study programs addressed to students of non-theological schools, as occurs for instance in Catholic universities or other universities having a Christian inspiration but working in a secular context.²² While seeming marginal at a first glance, this issue is considerably relevant for understanding the meaning of a theology in front of an interlocutor and a theology in context.

In non-ecclesiastical Catholic universities, or in other civil universities promoted by Church institutions where some theological courses are required of all students, we usually find (with few exceptions) programs of anthropology, ethics, history of religion, or philosophy of religion. At the Catholic University of the Sacred Heart in Italy, Fundamental Theology is taught in the first year of the first level three-year university course. The remaining two years, respectively, offer dogmatic theology and moral theology. Discussing contentious ethical and moral issues, or presenting Christianity within the more familiar framework of history or philosophy of religion, is thought to be a more fruitful and appropriate approach to attracting student attention. As far as we know, a theological-fundamental program is overlooked in general, probably because it is considered to be of theoretical interest and foundational in character. Therefore, it is judged to be less useful, at least in the short term. However, when imparted lessons touch upon themes of theological anthropology or moral theology, teachers comes across the problem of having to introduce (and then establish) the role of Sacred Scripture. They have to refer in one way or another to this source, also when these lessons are given to non-believing students. Some teachers might even consider introducing biblical Revelation in an institutional way, for instance stressing that it is a teaching required by the institution promoting the university. Or

development, but it would not solve the problem. It is more useful to require, instead, that Faculties of Theology, wherever they operate in public or in within ecclesiastical contexts, respect the criteria of scientific and university excellence. Their purpose cannot only be the formation of the clergy. Rather, they must present themselves as ambitious research centers with qualified and recognized publications.

²² In particular, this teaching is formally prescribed in those universities that require the qualification of "Catholic." See the recommendation by the Vatican II Council, decree *Gravissimum educationis*, n. 10, and John Paul II's Constitution on Catholic Universities, *Ex corde Ecclesiae*, n. 19.

they may give a heuristic foundation, by offering connections of a historical order (such as the presence of Christianity in the development of Western culture) or of an anthropological order (addressing the greater dignity of the human person given by Judaeo-Christian Revelation), to cite a few examples.

A program of Fundamental Theology, having Revelation and its credibility as its main subject matter, would overcome this problem, simply because it has the advantage of offering such a foundation by itself. It then could develop methodological itineraries more accessible even in non-confessional contexts without losing its theological status. To use an expression that may seem like (but is not at all) a cliché, to develop a model of university theology means to show the reasons why the God of Abraham—who is the God of Jesus Christ—is also the God of philosophers and scientists. This model works simply because philosophers and scientists are subjects of study in all university contexts. Actually, one of Fundamental Theology's specific tasks is to show the deep meaning of the relationship existing between Revelation and reason, i.e., philosophical reason and scientific reason. To perform such a task, Fundamental Theology must elaborate contextual and interdisciplinary itineraries crisscrossing with other sources of knowledge, as they are taught in a university classroom.

Itineraries of this kind are possible within both contexts of humanistic and scientific knowledge. In the first case, the methodological route would start from the recognition of *human uniqueness*, generally labeled as the "anthropological question" expressed in literature, art, culture, or philosophy, which show the natural openness this question has to the notion/question of God. For this reason, the humanistic path could start from the field of cultural anthropology, soon recognizing religion as a fundamental anthropological constant, making references to paleoanthropology, phenomenology, and psychology. Starting from a more strictly philosophical field, it would be possible to underscore reflections that highlight the self-transcendence of the human person, with special reference to his freedom and to those theoretical paths that show human questioning concerning the Absolute. It is with this question about God, witnessed by the whole of human culture and expression of man's openness to divine revelation, that the answers of Judaeo-Christian Revelation must be put in relation. This must be done without fear of hermeneutic conditioning. That is, showing that the answers of Revelation not only satisfy but also exceed

human inquiry, thus guaranteeing their origin from beyond the hermeneutical and anthropological horizon within which human questioning inevitably remains circumscribed. The fullness and fulfillment of these answers must, therefore, be illustrated in the event of Jesus of Nazareth, whose historicity, human psychology, and uniqueness across the panorama of the founders of religion should be underscored. The relationship between the anthropological problem and the question of God thereby can be explained by demonstrating the convergence between anthropology and Christology. This is a synthesis that Fundamental Theology is required to develop properly, one full of ethical, cultural, and social consequences. The result is that the interlocutor is progressively led to face (as it must be) the very person of Jesus Christ and his testimony as Son sent into the world by the Father, rather than simply a way of doing theology. The interlocutor is then asked to consider his reasonable option before Jesus' claim, an option whose responsibility must be perceived now in all its depth. At the conclusion of this theological itinerary, the continuity existing between the historical event of discipleship following Jesus of Nazareth, and the faith in the Risen Christ as proclaimed today by the Church community should be explained.

Within the fields of scientific discipline, the theological-fundamental itinerary can start with recognition of the philosophical-humanistic presuppositions of all scientific activity, as a human activity rich in meaning and open to the acknowledgment of a *logos*, but also able to be a subject of *pathos* and *ethos*. Using the philosophical reflections of authors who were experts in scientific research and, in many cases, also protagonists of the history of science, the teacher should highlight the ontological and logical incompleteness of any empirical and formal system that proposes itself as the ultimate answer on reality. Subsequently, such incompleteness should be placed in relation to the openings envisaged by the human activity of scientists. Namely, this includes openings towards an Absolute that gives reason for the contingency of nature, and towards a Logos as the ultimate source for the rationality of nature and the information that nature embodies. While respecting the methodological autonomy of the sciences, and properly distinguishing the empirical, metaphysical, and purposeful levels, as well as the quest for meaning present in every reflection on reality, the scientific path can be extended to offer an interdisciplinary formulation of the "cosmological problem" and of

the “problem of the foundations.” A further step is to show the reasonableness of these two “problems” within the context of scientific activity, and also the intimate openness that any research activity has to the question of God. Revelation and its content ultimately must be linked to this last question, privileging the revelation of God through the Book of Nature, and then showing its articulation with the Book of Scripture and God’s revelation through history. Fundamental Theology also should introduce here the necessary Christological resonance. This is fully capable of giving meaning, unity, and purpose to the history of the physical and biological universe, as well as revealing the ultimate foundation of its rationality, even when that history is presented within evolutionary paradigms and cosmic breath. The ethical aspects linked to scientific research should then be understood as the result of internal reflection on the activity of science and not imposed from the outside, thus overcoming an instrumental and functionalist view of science. Such an approach will be possible only within a more humanistic vision of science as an activity able to bind the researcher to truth and goodness and, precisely for that purpose, an activity legitimated to defend its own autonomy.

Theology in a university context does not have the natural world or the human being at the center of its discourse. Like any other theology, *it speaks above all of God*. If it speaks of nature and man, it does so in order to explain their relationship with God. A good university theology knows how to awaken discourse on God starting from culture, history, and even the sciences by accepting the task of having to address cosmology, anthropology, religion, or philosophy, as all areas of knowledge, in some way, open themselves to questions about the ultimate causes of the world and the meaning of human life. Again, it is easy to recognize this task as one more central to Fundamental Theology than to other theological treatises. Speaking of God is an unavoidable engagement for human knowledge. As noted in John Henry Newman’s work *An Idea of a University* (1852) and confirmed by many aspects of contemporary debate today, if theology refuses to speak of God within a university and public context, then the “emptiness” left there soon will be expressed by other actors who could easily handle the notion of God with less pertinence.²³

²³ Cf. John H. Newman, *The Idea of a University. Defined and Illustrated* (Chicago: Loyola University Press, 1987), *Discourse IV: “Bearing of Other Branches of*

To summarize, the model of a university theology operating within a civil context, including theological courses given in Catholic universities or other secular universities having a Christian inspiration, would be first and foremost a model of theology developed and taught “before an interlocutor.” It should operate with a methodology capable of providing the foundations of its thought and the reasons that justify the meaningfulness of its contents, engaging in constant dialogue with the cultural and existential circumstances of contemporary men and women. Secondly, it would be a typically “contextual” theology, especially attentive to the universality of its own discourse. Its reflection should be carried out while bearing in mind scientific results; the anthropological, religious, and cultural scenario of the whole planet; the times of its long evolution; and the course of events that have accompanied the historical journey of the human race.

The cultural and universal significance of a university theology cannot ignore the mystery of Christ, crucified and risen. Although dialogue with philosophy and religion may seem facilitated by an image of God that remains silent about his Trinitarian life and the scandal of the Incarnation of the Word, in reality, a theology without Christ would not be true theology. A credible proclamation of the mystery of the crucified and risen Christ as the ultimate meaning of the world and center of history, must be able to uphold this meaning and this centrality within a complete diachronic and synchronic setting, having the widest possible reach. In essence, a theological discourse on God’s revelation must not limit itself to proposing its own story: it must seek *to give reason for all stories and for the entirety of history.*

Finally, such a university theology would have a markedly “interdisciplinary” character. This does not imply making hasty syntheses of knowledge from different sources, but rather demonstrating pertinent connections between the content of Revelation and the objects of other disciplines; between the ultimate questions that many areas of knowledge envisage and the answers offered by the Word-Logos. Interdisciplinarity means being able to illuminate the transcendent dimension that innervates any research activity seriously interested in the knowledge of truth. The more willing theologians are to listen to and dialogue with researchers in the other sciences, the more capable theology will be to carry out

this demanding task. But it is solely up to theology to move into the area of meaning that hosts the *ultimate* reasons for reality, the mystery of our freedom and of our responsibility, that responsibility of taking a position before the world and ourselves, and the responsibility of taking a position before God. This space is just right for such a task. Within this sphere, as other disciplines rightly do with their specific objects, theology cannot admit intrusions.

A university theology would certainly be exercised and taught starting from the faith and within the faith. As with any other teacher, the theologian has reached precise conclusions regarding the principles of his subject matter. Like any other, he also experiences an existential involvement towards his subject of study, even more so in his specific case, as he is dealing with God. However, he can also reasonably address a public that has not yet received the grace of faith; a public capable of understanding the principles of theology, but not yet capable of being existentially bound to the life that animates those principles, faith in the Incarnate Word. Accordingly, when Fundamental Theology is taught within a confessional or ecclesiastical environment, it does not have a dual addressee—believers and non-believers—but rather elaborates upon its object so that its only addressee—those who already believe—may be able to offer reasons for believing to those who do not yet believe. A university theological programme *developed by a fundamental-theological laboratory* that is addressed to a non-confessional environment can, instead, also appeal to those who do not yet believe and thus can manifest the character of announcement, of a respectful but passionate proclamation of the Gospel. This was the character of the theology of St. Paul or St. John, which, for the reason of being a proclamation, did not cease to be true theology.

As a laboratory for the study and exercise of such a public approach, Fundamental Theology would have the important role of fostering the concurrent flow of knowledge from theology to other knowledge, and from other knowledge to theology. This approach realizes a mutual provocation that is indispensable for the search of those specific strategies of rationality to which I referred beforehand. From the university context, theology can seize the feedback of such strategies and orient all theological work towards a deeper knowledge of the terrain on which the most important games will be played: scientific and university research in a quickly evolving society. This necessary attention to the future, however, does not

preclude emphasizing the unchanged way in which the major problems of human life and its main philosophical questions remain unaltered, even within profoundly transformed contexts. Thus understood, theology is placed in the position of serving the best aspirations of humankind and helping the Church to be the *universal* sacrament of salvation, “sign and instrument both of a very closely knit union with God and of the unity of the whole human race” (LG, 1; cf. LG, 48).

CHAPTER 2. THE CREDIBILITY OF REVELATION AND SCIENTIFIC RATIONALITY

In a well-known page of *Gaudium et spes*, the Council Fathers observed that “the intellectual formation is ever increasingly based on the mathematical and natural sciences and on those dealing with humanity itself, while in the practical order the technology which stems from these sciences takes on mounting importance. This scientific spirit has a new kind of impact on the cultural sphere and on modes of thought. [...] Thus, the human race has passed from a rather static concept of reality to a more dynamic, evolutionary one” (GS, 5; cf. n. 57). Can such a change in mentality also affect our way of understanding the credibility of Revelation? To answer this question, some implications of this mentality deserve to be examined more closely. They concern both the social-intellectual situation of the interlocutor and the forms of rationality on the basis of which he judges the message of Revelation as something credible and reasonable. Nonetheless, implications of the scientific mentality also affect the credibility of the witness who announces the message, as they must show themselves to be aware of what science may have to say about some of the material that is conveyed. The Church's Magisterium seems to have perceived such a new situation more vividly than theologians. However, with the exception of a few authors, theologians seem more inclined to leave any reflection on credibility or comparison with the sciences to the apologetic, non-specialized literature. The extensive Magisterium of John Paul II is probably, in this regard, the place where the exhortation to develop a strictly theological approach appears more clearly. This is what he said in a speech delivered about 30 years ago to the Secretariat for non-believers:

Today, mentalities are deeply imbued with scientific methods. Now a catechesis insufficiently informed about the problems of the exact sciences, as of human sciences in their diversity, may accumulate obstacles in an understanding, instead of opening up a way to the affirmation of God. And it is you, philosophers and theologians, that I am addressing, look for way that will

help the scientifically-minded to recognize the validity of your philosophical and religious reflection. For what is at stake is the credibility, even the validity of this reflection, for many minds influenced, even without their knowledge, by the scientific mentality conveyed by the media.¹

Fundamental Theology is accordingly called upon to reflect on the judgment of “irrelevance” that could be formulated with regard to the Gospel message, precisely because contemporary men and women have become accustomed to entrusting their criteria of certainty only to scientific knowledge. Consequently, they become familiar with entrusting the solution of their problems to technical resources and to the progress of the sciences. This is especially true in today’s context, where the needs and aspirations of a spiritual order seem to be obscured by a growing satisfaction with material consumer goods.

Could a technologically advanced society remove all relevance to the question of God and the possibility of his saving revelation, to the point of showing an almost total loss of interest in a message that speaks of eternal life, as noted by Benedict XVI in *Spe salvi* (2007)?² Obviously, a good philosophy could show the insuppressibility of the fundamental anthropological questions, even in a society marked by a technological mentality. A good philosophy, moreover, could make the necessary distinction between scientific thought and a positivistic mentality based on an ontological materialism. It could highlight the internal contradictions of a science that desires to be self-sufficient by presenting itself as the fulfillment of human aspirations. However, it remains a fact that the technical and scientific mentality is now widely shared by those who live in the contemporary societies of the Western world. How, then, could Fundamental Theology within a scientific context contribute to new evangelization in a postmodern, secularized world?³ It can do so by

¹ John Paul II, *Address to the Congress on “Evangelization and Atheism,”* Secretariat for Non-Believers, October 10, 1980; cf. also John Paul II, *Address to the Secretariat for Non-Believers*, on occasion of the Conference “Science and Non-Belief,” April 2, 1981.

² Cf. *Spe salvi*, nn. 10, 16–20.

³ Years ago, Juan Alfaro had already presented a sharp analysis of this situation with a corresponding exhortation to theological renewal: “Theology, in its task of making Christian revelation intelligible to the people of our time, must understand the capital importance of science and technology in today’s culture. This is a phenomenon that is not limited to groups of intellectuals but is gaining ground among the popular masses themselves. The most important result of scientific and technical progress is the profound change in mentality which leads to a new

examining how scientific rationality influences the way in which the credibility of Revelation is assessed, and how this mentality affects the way in which the credibility of the Gospel's witnesses is perceived. Let us briefly examine the potential nature of this contribution.

2.1 Contemporary scientific thought shapes the interlocutor's rationality and calls for a synthesis between faith and reason

Knowledge of the sciences and the critical awareness that accompanies this knowledge are no longer the privilege of a restricted class of experts. Rather, today they concern the contextual knowledge of ordinary people. Thomas Aquinas, referring to dialogue with non-believers, affirmed in the *Summa contra gentiles* that it is necessary to resort to natural reason, to which everyone—without exception—should assent (Lat. *necesse est ad naturalem rationem recurrere, cui omnes assentire coguntur*). Translating this well-known passage into contemporary terms, we should say that this accepted rationality (*naturalis ratio*) is, today, critical knowledge originating from the sciences, especially from the mathematical and natural sciences. It is true, of course, that scientific reasoning remains inadequate for judging what belongs to the logic of Revelation, nor can it measure within the canons of a formal language what belongs to the revealed mystery. These points are rightly taken for granted and certainly not questioned here. Here we wish to emphasize, rather, that the new knowledge brought forth by scientific reason has changed our vision of the world—in extension and in depth—by determining the watermark against which contemporary men and women evaluate the credibility of a religious message. This watermark cannot be ignored by a theology that intends to be called *scientific*. This is true even despite the fact that today scientific rationality coexists with extrascientific forms of judgment and irrational forms of consensus across contemporary postmodern society. To ignore this point would be a clear error of assessment in both a pastoral and theological sense: “In the modern world”—affirmed John Paul II on another occasion—“scientific thinking has been oriented above all towards what is visible, measurable, in the light of the experience of the senses and with the instruments of

understanding of man's relationship with the world and with history, and consequently with himself. The change in man's self-understanding requires a new understanding of the Christian message.” Juan Alfaro *Rivelazione cristiana, fede e teologia* (Brescia: Queriniana, 1986), 146.

observation and investigation available today. In a world of positivist methodologies and technological applications, this incomprehensibility of God is even more felt by many, especially in the context of Western culture. Thus particular conditions have arisen for the expansion of agnostic attitudes, or even atheistic attitudes, *due to the premises of the common thinking of many people today.*"⁴

A direct way of approaching the question is to ask what is the true import—for the credibility of Revelation—of Rudolf Bultmann's critical claim that "we cannot use electric lights and radios and, in the event of illness, avail ourselves of modern medical and clinical means and at the same time believe in the spirit and wonder world of the New Testament."⁵ In more general terms, Bultmann entrusts to scientific reason the necessary task (for him) of demythologizing evangelical material in order to increase the credibility of its residual nucleus. Bultmannian exegesis and its demythologization program have received sufficient responses in recent decades from both Catholic and Evangelical theology, thus a reply is not necessary here.⁶ Nevertheless, Bultmann's warning possesses a kernel of truth that should be taken into account. Today's scientific mentality is not compatible with a naive exegesis of Scripture, but requires the theologian to make a mature and clear effort. The error of irresponsible deconstruction is certainly to be avoided as methodologically anti-scientific for any reliable theological work.

Likewise, we must avoid uncritical attribution to the deposit of faith of contents not belonging to Revelation. The maturity we require today goes beyond the albeit necessary search for a wise balance between the literal sense and other scriptural senses. For instance, one can choose between a realistic or an allegorical exegesis of the star that guided the Magi to recognize the birth of the Messiah (cf. Matt 2:1–12), but once a realistic exegesis is adopted, it becomes clear that proposed solutions, to be plausible, must respect and agree with scientific data. In the miracles of Jesus healing physical pathologies, we may preserve the reference to Satan and consider it to be a significant, not merely cultural element (cf. Matt 17:14–21;

⁴ John Paul II, *General Audience*, August 28, 1985; emphasis in italics added.

⁵ Rudolf Bultmann, *New Testament and Mythology and Other Basic Writings* (trans. S.M. Ogden; Philadelphia: Fortress Press, 1984), 4.

⁶ Cf., for instance, Stanley E. Porter and Jason C. Robinson, *Hermeneutics. An Introduction to Interpretive Theory* (Grand Rapids, MI: Eerdmans, 2011).

Luke 13:11-16), but then we must explain convincingly what relationship the action of the devil has with the natural order of the cosmos and with human life. We can affirm that Jesus' eschatological discourses announce the real upheaval of the physical universe and its global dynamics; but we have to take also into account what physical cosmology says about future scenarios, being able to explain the continuity between the present history of the physical cosmos and its future transfiguration. We could offer manifold examples, but the idea here underlined is clear enough: if theological language and exegetical work make use of concepts and contents that intersect with the order of nature, that is the object of the sciences, then the scientific data and their possible retroactive action on dogmatic formulations and biblical hermeneutics must be heeded and accepted.

It is surprising, centuries later, to see how the theology of Thomas Aquinas was in tune with this program of listening to the sciences of his time. His references to Aristotelian physics or to natural knowledge shared at his time, which could today make a hasty reader of Aquinas smile, are proof that he took that intersection seriously and, as far as possible, wanted to be able to explain the reasonableness, not the contradictory content, of the revealed teachings.

Accepting that the scientific mentality is a form of widespread rationality has implications not only for judging the credibility of what we propose to believe, but also affects the ways in which we understand the credibility of the witness. A credible, trustworthy witness who is not deceiving himself unawares must possess a synthesis between faith and reason that also includes knowledge coming from the natural sciences, anthropology, and history. Not all witnesses are required to have reached an intellectual synthesis of equal depth, but, indeed, a synthesis commensurate to the cognitive universe of those whom they address. The interlocutor judges the credibility of the witness who proclaims the Word to him based on multiple and varied dimensions, ultimately based on the charity and holiness of life of the witness. But it must also include, on some level, the moral certainty that he has not been deceived by someone as a victim of unconscious credulity. The greater the maturity, depth, and contextual knowledge of those who preach the Word, the more certain we are that they are not wrong in what they preach.

The Pauline doctrine about the foolishness of preaching is not under discussion here. St. Paul exhorts the Christian faithful to

present to the world only Christ crucified, overcoming by the language of the Spirit what human wisdom might require or argue. If the *effective source of salvation* comes only from the cross of Jesus and not from any human wisdom, then the *way in which this salvation is proclaimed* must nevertheless appeal to man's wholeness, mind and heart, intellect and will, scientific knowledge and life experience. Those who evangelize can credibly bear witness to Revelation and its saving content insofar as they demonstrate a sufficiently profound intellectual and existential synthesis, able to give reasons for the motives that have captured their intellect and their heart. What makes the Gospel's announcement credible is not a fragmented and juxtaposed knowledge that the witness may demonstrate to possess or know how to handle. Instead, it is the unity of intellectual life that he manifests and that allows him truly to understand the deep implications of what he believes and preaches. Whether we like it or not, the credibility that the interlocutor bestows on the witness is based also on the witness's intellectual depth because we trust more in those who know more.

According to this perspective, it is not superfluous to recall that the examples of many scientists who are also Christian believers greatly contribute to the credibility of Christianity, because of the value of their witness. The fact that people who had or still have profound scientific knowledge have accepted the Word of God in a non-fideistic way leads the interlocutor to think that such a learned knowledge, to which he grants authority, is fully compatible with the act of faith he is asked to make. The practical judgment of people of science who were also profound men and women of faith has something to say to all the people of God. They are Christian witnesses whose demanding and articulated cognitive context has embraced the contents of a supernatural message that goes beyond reason.

The considerations made for individual witnesses also apply to the Church as a whole. The Church's historical familiarity with scientific culture and its active contributions to science over the centuries – demonstrated by both individuals and the institution – positively enhance its credibility. The many and important testimonies in this regard far outweigh the misunderstandings and errors that also have inevitably characterized some historical events, think for instance to some aspects of the Galileo affair. Although the latter has had a much greater weight in public opinion and in popular imagination, any serious historical analysis would have no

difficulty highlighting the positive role played by Christian theology and the Church in the origin and development of the sciences in the Western world. Throughout the history of the Church, scientific knowledge was not an obstacle to stating the credibility of Revelation. Rather, it has served as part of the intellectual and hermeneutical context necessary to understand and preach the Word of God. Today, well-documented pastoral activity and intelligent catechesis should be able to grasp these arguments and deepen them according to the interlocutor's cognitive context. The unity of life and intellectual synthesis of Christians who personally have contributed, in the past as well as in the present, to the progress of scientific research should be mentioned and proposed explicitly, especially in regards to figures who are familiar with the history of science. Authors from Blaise Pascal to Robert Boyle, from Gregory Mendel to Alexander Volta, from James Clerk Maxwell to Charles Babbage, from Agoustine Cauchy to Pierre Duhem, from Louis Pasteur to Alexander Fleming, and from Pavel Florenskij to Georges Lemaître, all play a remarkable role in attesting to the credibility of the faith they professed, because it was a faith declared and lived within the scientific context of their own lives. Among them, certain authors deserve special emphasis in the Catholic tradition, because they are witnesses whose holiness of life has been recognized formally by the Church. It is the case, for instance, concerning the Danish geologist Niels Stensen or the Italian mathematician Francesco Faà di Bruno. We could also include those whose heroic virtues have been already declared in the ecclesiastical procedure for their canonization, such as the French genetist Jérôme Lejeune or the Italian physicist Enrico Medi.

Let us now examine how scientific rationality can affect the credibility of theological discourse. This is a particular aspect of the broader subject of how reason should operate within theology. Some theologians would remain perplexed before the idea that scientific gains could exert a rational or a linguistic control over the content of Revelation, or contribute to an increase in its meaningfulness. It is not infrequent to evoke a Popperian (and ultimately Kantian) epistemology, according to which theological statements, unable to be falsified, are required to renounce the (Popperian) status of scientificity. In this way, theology would be protected from any undue interference of science, but theological assertions could only preserve their truthfulness in a separate world that does not intersect with that of the sciences. An image of God without any factual

consequences, thus advocating a sort of factual emptiness of theological affirmations, could never be called into question by the natural sciences, which, instead, have the world of facts as their own object.

I am persuaded, however, that this way of protecting the meaning of the theological speech would push theology into a blind alley. This was not the vision, for instance, shared by Thomas Aquinas nor other authors who were in fruitful dialogue with the scientific culture of their time. If we remember the four areas in which Aquinas mentions the different tasks of reason in relation to faith in his *Summa contra gentiles*, we can easily see that contemporary scientific reason has something to say about three of them. These tasks of reason are: to show the preambles of the faith; to demonstrate the falsity of those statements that declare some revealed truths of faith be contradictory or wrong; and, to propose arguments that lead to taking the authority of the Scriptures seriously, such as the testimony of miracles.⁷ I would like to offer here a few short comments on each of these three tasks.

Concerning the first task – that of expounding the preambles of faith (including the existence of God) – scientific rationality could certainly influence our current way of formulating a “philosophy of God” as a preliminary reflection and preamble to any later theology of credibility. First of all, natural theology should show the validity of those rational lines of thinking that come to recognize the existence of a Foundation of being, of a First and Final Cause, or of an unconditional Absolute, answering those objections, fallaciously presented as true scientific conclusions, which deny the rational value of these paths. Only a competent philosophy of nature able to understand the meaning of scientific data and theories and to recognize which epistemology is implicitly assumed when presenting some conclusions of science, may effectively counteract such objections. Secondly, theology should examine the potential virtues of contemporary scientific insights for a better philosophical formulation of cosmological or teleological arguments concerning the existence of God. Such a formulation is certainly philosophical in character, but is also mindful and informed about what current scientific knowledge may suggest. When speaking of cosmological

⁷ Cf. C.G. I, chaps. 7–9. The fourth task of reason regards the way in which reason grasps the analogy and coherence of the content of faith as a whole, making stronger their credibility.

and teleological arguments, science offers stimulating insights to both the philosopher and theologian. Consider, for example, contemporary perceptions of problems of logical and ontological incompleteness as they emerge from mathematics, logic, scientific cosmology, or even some aspects of biology. These are all contexts with which scientists are familiar and which illuminate the philosophical contingency of the material world. Think also of the scientific data that supports a weak, non-idealistic version of the Anthropic Principle (WAP), or a finalistic understanding of the evolution of the cosmos and of life. Although they may be based solely on arguments of plausibility and consonance, philosophical itineraries that wish to move from nature towards the search for a First Cause or a Transcendent Foundation of Being cannot ignore these scientific contexts. Indeed, they represent the accepted interdisciplinary framework for carrying out a serious and meaningful debate.

The second task that Aquinas entrusted to reason was to provide arguments for demonstrating the falsehood of statements that claim to deny some of the content of Revelation or intend to empty them of their meaning. We observe that this approach is quite different from merely supporting the epistemological irreducibility of theology to the sciences by establishing a clear cognitive separation between the two. The latter is what many authors do today when, for instance, they maintain that the separation between sciences and theology is equivalent to a separation between *logos* and *mythos*. As in the time of Thomas Aquinas, today's theological formulations should be presented within the context of scientific rationality, both to respond to any objections about their real meaning and to clarify the philosophical-rational framework that supports them. When this confrontation is accepted, two consequences result. The first is to unmask the error of those who invoke scientific data so as to question the correctness or internal coherence of the theological formulations. The second is to show the need for renewing some theological formulations within the framework of a homogeneous development of the dogma. This second consequence becomes inevitable when we discover that certain implications inherited from theological formulations of the past now lead to irreconcilable inconsistencies with well-established scientific knowledge. Both of theology's duties—presenting its formulations within a scientific context and reviewing them in light of new data—require prudence and precision. The theologian

should not judge the scientific context as a linguistic and conceptual field that is foreign to him. Rather, he should see it as the field in which the “*ad extra* exposure” of the Word becomes *mission*, and later, *inculturation*. Just as the missionaries adapt to the lexicon of the people they visit and serve, so that the preaching of the Word of God may be understood properly, in the same way dogmatic teachings proposed in a scientific era must be familiar with the language and contexts of the sciences. Otherwise, they would run the risk of appearing insignificant, or worse contradictory, to those who inhabit that language and context. The lexicon used thus becomes important to guarantee the acceptability and credibility of theological statements, because even if the nucleus of the revealed truths of faith is not contradictory, the historical way of formulating them could be. This has already happened in the past (and could still happen) when the cosmology, anthropology or history implicitly present in the theological language of a specific epoch ceased to dialogue with the growing scientific knowledge of natural reality.

Although our primary concern here is the work of the theologian, the observations above also highlight the delicacy (and suggest a search for correctness) with which pastors should care for their teachings and preaching. If in the Middle Ages the Magisterium of the Church used the same language as the scientists of the time, today it is no longer the case. Ecclesiastical language still rests upon classical bases and has undergone a poor transformation with the advent of the scientific era. In a certain way this is unsurprising, because Church teachings referred to a kind of philosophical language able to resist the changing of time and culture (the so-called *philosophia perennis*). However, this choice should not cause a loss of interest towards a deeper understanding of reality, nor prevent dialogue with those who express new knowledge and make it available on a vast scale.⁸

Special attention should be paid to a number of meaningful issues. For instance, it is necessary to find a convincing accord between the canons of universality that are typical of scientific language and the canons of uniqueness that are typical of theological language. It is also important to know how to explain within a cosmic landscape the relationship between faith in Jesus Christ—

⁸ Useful suggestions in this regard were already presented years ago by Lucien Morren “L’influsso della scienza e della tecnologia sull’immagine dell’uomo e del mondo,” *Scienza e Fede* (ed. P. Poupard; Casale Monferrato: Piemme, 1986), 56–68.

true man and true God—and the existence of the one God who created heaven and earth. It will be necessary to offer a view of the mystery of the Holy Trinity (a mystery certainly not extraneous to the logic of the created world) that maintains harmony with the access of philosophers and scientists to the One God understood as First Cause and Foundation of all reality. Due to the widening of our cosmic horizon, we also need an appropriate reading of the contextual “geosupremacy” that Sacred Scripture and the history of salvation seem to convey. In short, it will be necessary to find new syntheses in which the vastness of cosmic spaces, the long times of chemical transformations, and the complex paths of biological evolution on earth or elsewhere do not cause any disorientation or conceptual deconstruction but find their place in a renewed theology of creation.

Moreover, a more precise language and better knowledge of physical reality and of its laws will protect the theologian (and also the scientist) from the risk of presenting scientific results and Christian Revelation on the same conceptual and epistemological level. This is especially relevant when the great questions about the origins (what we call today “frontier issues”) such as the origin of the cosmos, origin and dissemination of life, origin of the human race, and the origin of consciousness are posed and presented to the general public. Applying a correct epistemology and clarifying the different levels of understanding involved in those issues becomes a prerequisite for demonstrating the meaningfulness of biblical Revelation and its credibility.

It also seems clear that to speak today of miracles and to study their occurrence—I refer here to the third task Aquinas entrusted to the work of reason in favor of faith—must necessarily be done in dialogue with the natural sciences. I think that the rational context of the natural sciences does not prohibit theology from speaking of miracles, as the judgment on what is or what is not a miracle is ultimately a matter for theology and not for the sciences. In addition, the criticism of miracles seems to have come from biblical exegesis or from influential currents of philosophy of science more than from scientific rationality properly stated. The interaction between theology and the natural sciences remains mandatory to the extent that the former legitimately (and, in my opinion, rightly) desires to keep the *ontological* dimension of the miracle, without being absorbed into the *anthropological* or *semiological*, which are the other two dimensions that miracles certainly have. A mediation of the

philosophy of nature is necessary here in order to help the theologian understand what belongs to the laws of nature (philosophy of nature) and what instead belongs to scientific laws and their complex epistemology (science and philosophy of science). It is important, in fact, not to transfer the problems of recognizing the latter, which are certainly more severe, to the reasonable affirmation of the former, which operate on a level that transcends the empirical. A scientifically equipped theology will not regard scientific epistemology as an obstacle to sustaining the position that the whole natural order depends on its Creator and on its salvific action. Rather, useful ways should be found of explaining the empirical counterparts that correspond to what theology calls “miracles.” The theologian must direct the attention of the interlocutor to the personalistic and Christological aspects of the miracle, which do not reduce the ontological reality of what happens in nature but rather reveal its ultimate meaning. Among the reasons for the contemporary decline of interest in the “theology of miracles” is the lack of familiarity with scientific knowledge. This lack has premises and consequences on which I already have commented. The occurrence of what theology legitimately calls a miracle is not an unbelievable event, but an event that points to the One who is the cause of *being* and the specific *nature* of things – that being and that specific nature (formal causes) that science receives without creating them, whose *ultimate* cause about which it is incompetent. An epistemologically responsible theology will be able to clarify that giving credence to miracles does not mean subscribing to the idea that the proof of Revelation as a supernatural event rests on deistic bases, on an image of God who guarantees the existence of *deterministic* laws of nature. As we will see in a following chapter of this volume expressly devoted to this issue, admitting the existence of non-ambiguous and knowable *natural* laws, which make the recognition of the miracle possible, does not mean thinking that physical reality is governed only by deterministic *scientific* laws. Responsible theology does not confuse the god of deists with a sound metaphysics. Those who share in a scientific mentality today still can acknowledge and understand what theology calls “miracles” and are called to take a personal position before them.

A deeper, even scientific, knowledge of the created world does not weaken the credibility of the Word of God. In the Old Testament, knowledge of nature and its laws is presented as a reason to believe in the words of Jahve because he who made heaven and earth does

not abandon his people. In the New Testament, the appeal to the signs carried out by Jesus, in relation to the faith that is due to him as the Son sent by the Father, is too explicit not to consider these signs as adequate to show everyone – people of science included – the salvific presence of the Almighty. On this subject as in others, an accomplished theology is called upon to show correspondence between the openings towards the Absolute that emerge from the activity of the sciences and the revealed image of God. Those who share a theoretical context where this connection is well-explained and founded can see with optimism the cognitive progress of scientific thought, without thinking that science can produce only critical remarks on the message of Revelation and its credibility.

According to Walter Kasper, in order to assess the credibility of Revelation within the context of scientific rationality we should ask: Can we recognize the act of faith as a meaningful, intellectually honest and humanly responsible act?⁹ Actually, this interrogation includes three essential questions, which I posit as follows: a) What makes the person of the revelator or witness a genuinely credible person in the eyes of the interlocutor? b) What makes revealed content – the dogmatic content of which we have no empirical experience – a truth that we can believe in and accept? and c) Are there ways of measuring the soundness and responsibility with which to assume the risk of believing, provided that a truth *subjectively* perceived by a credible revelator or witness could be different from the *objective* truth as such? A theology of credibility should always keep these questions in mind while developing its arguments, identifying the sources of knowledge from which it derives its answers, and making explicit the articulation between faith and reason that underlies those answers. I propose here, in the following sections, some basic reflections in order to address, as far as I can, these three questions.

2.2 What makes the Revealer and the witness credible?

In a propaedeutic way, it is necessary first of all to consider the personal relationship between the interlocutor/recipient of the announcement and the witness/revelator of the message announced. It would not make sense, in fact, to examine the

⁹ Cf. Walter Kasper, *An Introduction to Christian Faith* (New York: Paulist Press, 1980), 60–70.

credibility of the witness – in the present as in the past – if we do not have the warranty of being able to access his person and his personality. With regard to the forms in which the Christian message was announced in the past, to have access to the personality of the witness means undertaking, as much as possible, an effort to investigate and then set forth the historicity of the revealing subject, including the truth of his words and works. Albeit through the inevitable mediations of the given time period, every fundamental-theological path must guarantee such access. If Fundamental Theology cannot carry it out within its methods and programs, it must evaluate and integrate the data provided by other theological disciplines. The existence of barriers that impede reaching a truthful relationship between any subject and a witness should not be overlooked. Consider forms of manipulable mediation (the role of the media), methods that provide only an indirect relationship as occurs for the witnesses of the past (historical analysis), or circumstances that do not allow the witness genuinely to reveal himself (that is, to make himself known). In the past as well as in the present, the reality and truthfulness of the relationship between the addressee of the message and the witness of the message proclaimed are favored by (and necessarily involve) a deep and intense frequentation of the witness/revealer.

When the witness or the origin of the message is located in a distant past, our relationship with them is in the hands of the inevitable mediation of historical-documental sources. The relationship between today's interlocutor and the origin of the Christian message, to the point of going back to its source – Jesus of Nazareth as Revelator and Revelation – is favored by the recognition of adequate guarantees to state a historical continuity between the word initially proclaimed by the first disciples of Jesus and the word preached today by the Church community. This continuity, once demonstrated, puts the interlocutor once again before the Revelator's words and calls him to take a stand in front of Him. Fundamental Theology, then, has the important task of establishing this continuity, resorting to historical and critical-literary arguments as well as to theological ones, as required by the very nature of the content at stake. Those who already believe in the Gospel's message are also called to acknowledge the credibility of the witness, first of all appreciating and intensifying the truth of their relationship with the Revelator himself, from whom all witnesses descend. This is achieved through the sacramental forms of the *memorial* (the

constant presence of the Revelator and of his Word in the Church's liturgy, and therefore throughout history) and of *prayer* (existential acquaintance with the Revelator and personal dialogue with him). Firm anchoring to the person of Jesus Christ, sought, encountered, and frequented, is essential because all other witnesses have no foundation in themselves, and their human experience is fallible.

Once the possibility of having access to a true relationship with the witness has been established, the credibility of the witness must be evaluated and judged on the most complete anthropological basis possible. This includes all the various dimensions that we would recognize today as significant for making such a judgment: coherence of words and deeds, psychological maturity, empathy, ability to understand the interlocutor and his existential sphere, and fidelity to promises made (up to the point of self-sacrifice, if necessary). For a witness to be credible, he must show that he is existentially engaged in the message he proclaims, with the radicality and intensity that the message requires of all those to whom it is addressed. Only in this way does the witness become, in the eyes of the interlocutor, a sign, indeed *the* sign, that the content he announces is fully credible. Since the Christian message entails the claim of unconditional truth and meaning, the witness is asked to behave unconditionally and absolutely – that is, as a *martyr*. The meaning of this term, however, is not restricted to a violent outpouring of blood but concerns something even more important, namely, the heroism of living all Christian virtues, of which that outpouring is ultimately an effect. For most witnesses-martyrs, this heroism will be experienced in ordinary life, a heroism known as fidelity and perseverance in goodness, until the end.

The evaluation of the credibility of the witness first and foremost regards the person of Jesus of Nazareth: the Sign *par excellence*. We should then employ all the various ways in which his knowledge and acquaintance can be favored (historical access, memorial, and prayer). Therefore, the considerations that (albeit starting from the limited documents available to us) highlight the psychology of Jesus of Nazareth acquire decisive importance, including his mental maturity; his emotional, affective, and sentimental equilibrium; and his human reliability.

The relationship between the witnesses of Jesus Christ and Jesus Christ himself is also of considerable interest for the logic of credibility. The credibility of the witness is manifested in that he refers everything to Christ until he withdraws humbly before Him

to Whom he witnesses. The witness is called to let Christ “inform” his life, leaving Christ to speak and reveal Himself through his words and actions. It is in this sense that, according to Pauline insight, it is no longer the witness who lives, but Jesus Christ who lives in Him (cf. Gal 2:20). The Christological centrality of Revelation and the logic of the witness do not preclude—indeed in a certain way they require—that an anthropological assessment of the credibility of witnesses be applied also to the words and works of those witnesses who belong to the economy of the First Covenant, also including, in a certain way, the credibility of the image of God there conveyed. Using available biblical data, we turn then to both the anthropology of the witnesses of the Word (Fathers, Patriarchs, Prophets) and the personality of the Revelator (God himself) as made known through the history of salvation. Far from being any “anthropological reduction” of the Word of God, it simply means that God and His message to human beings can be recognized as credible only on the basis of what anthropologically qualifies concepts such as fidelity, reliability, sincerity, and coherence.

However, an important issue must be clarified here. Although an encounter with the living tradition in which the witnesses of the Word are inserted—that of a spiritual message received, lived and transmitted in history—is very important, much of the information available lies in a few precise documental sources. These are the texts that gather the apostolic *kerygma* (New Testament) and those documents delivered to us by the religious experience of Israel (Old Testament). The question arises, then, of whether the objective credibility of witnesses can be assessed on the basis of sources considered to be denominational and confessional, such as the books of Sacred Scripture. This question actually is connected to a second one, on how the judgment of credibility is available to those who do not share the faith. This scenario arises once we accept that the ultimate reasons for believing are received together with Revelation, not by the philosophical judgment of a reason separated from faith that is chronologically prior to the act of faith. Some clarifications, therefore, are necessary. I will examine them briefly here.

The fact that credibility is an *intrinsic* property of Revelation and primarily refers to the person of the Revealer (that is, Jesus Christ), and only in a derived manner to his witnesses, does not mean that one cannot judge whether a witness is credible or not or that anyone, even those who do not possess the gift of faith, can express such judgment. To argue in terms of the personal credibility

of a witness is not to speak of credibility in an extrinsic way. We always speak of credibility seen as an intrinsic property of the Revelation and of the Revealer, without whom we would not understand who the witness is. Nor could the latter be a sign of anything. By means of a practical judgment or following reflexive arguments, someone can be judged a credible subject both by those who have already accepted the revealed Word as well as by those who do not yet believe (to whom the message is addressed). Believers strengthen the reasons that make their faith credible, constantly listening to the sources and looking to the Source who is Jesus, the Revealer. Correspondingly, non-believers legitimately assess the anthropologically founded reliability of witnesses who proclaim the Gospel's message to them. In this sense, it is admissible that the judgment, "You are credible, so I believe you and I believe what you say," can also be expressed by those who come from unbelief and, precisely through that judgment, have the possibility of moving towards faith. The elements that make this judgment meaningful (such as witness behavior, coherence, fidelity) are only fully understandable, of course, once some knowledge of the content of Revelation is present. The addressee of the Gospel's message receives the Word together with the historical and religious-existential contexts strictly associated with that Word, in light of which both the credibility of the witness and the One whom he represents can be legitimately evaluated.

2.3 What makes the content of Revelation meaningful and non-contradictory?

It is the credibility of a personal being—that of Jesus the Revealer and that of his witnesses—that determines how the interlocutor may approach a revealed content transmitting statements that are non-evident or beyond his experience. The reliability and trustworthiness of the witness characterize the interlocutor's judgment about the content proposed to him and the new knowledge contained therein. However, even when the credibility of the witness is reasonably acquired and his behavior indicates his radical and unconditional involvement in the message proclaimed, it is not possible straightforwardly to derive the truth of the transmitted contents strictly from this expression. The relationship between a *revealing subject* and the *objective truth* is certainly a delicate one and not easy to resolve, making it necessary to direct our attention now also to information contained in the

message, that is, to the content of revealed teaching. We must admit that a practical judgment of credibility, guided by personalistic signs (such as coherence, learning, and fidelity of the witness) must be accompanied by speculative judgment that is objective in character and examines what is proposed for belief.

The priority given to the subjective-personalistic dimension of credibility suggests asking what “credibility” could mean when it objectively refers to teachings, doctrines, and content delivered by the witness and which we have already recognized as unambiguous and intelligible. The preambles of the faith—philosophical in character—are not sufficient to answer this question due to the dogmatic and supernatural nature of the great majority of truths revealed by God and proposed to the faith. When the teachings of Revelation refer to God’s life and will, it seems clear that their credibility cannot be the result of any philosophical-rational reasoning, unable to offer a foundation for the mysteries believed. Neither the Mediaeval Masters nor the neo-Scholastic theologians, who had developed a philosophical theology of credibility, had intended to do so. The adjective “credible” was proposed by neo-Scholastic authors as the capacity of the mysteries to be believed because of the signs attesting to the divine origin of Revelation, and not due to a rational justification of their content.¹⁰ The objective dimension of credibility thus could rely on arguments of plausibility *drawn from a religious and existential horizon*, which presents the proposed teachings as something adequate for our understanding. For instance, the resurrection of Jesus or his real presence in the sacrament of the Eucharist can acquire significance and intelligibility, and then be thought “credible,” when one considers the human wish for eternal life, a life forever shared with the beloved, or the intimate union with him as if it were part of oneself, all categories belonging to the religious language of love.

Regarding the notion of credibility, two perspectives must be distinguished here. The first is to consider the credibility of Christian teachings as coherently proven “with the eyes of faith.” The second is to consider it as an indication of the acceptability and reasonableness of those teachings, their being “worthy of faith” in the light of the interlocutor’s historical, anthropological, and philosophical knowledge. In the first case, which goes from faith to reason, we can speak of the *credibility of Revelation in the strict sense*,

¹⁰ Cf. S.Th. II-II, q. 2, a. 1, ad 3 and a. 10, ad 2

a property intrinsic to the Word of God that shows the coherence of the believed mysteries, their full intelligibility in Christ, and their link to the experience of the Church and its fruits. The foundation for this credibility is no other than *Deus revelans*. In the second case, which goes from reason to faith, the interlocutor who receives the message can legitimately consider the *significance, acceptability and reasonableness* of the content revealed, all terms which are preferable over the term credibility. The second perspective is propaedeutic to the first.

Generally speaking, and regardless of the existential situation of the interlocutor, the content already believed (*creditum*) or proposed to be believed (*credendum*) must satisfy certain basic requirements, otherwise the addressee of the message will lose interest in hearing what is told. The *kerygma* preached by the Apostles and proposed to the faith (for example, God saved his people; Jesus is the Christ and offered his life to forgive our sins; Jesus of Nazareth rose from the dead), as well as the other teachings contained in the biblical Revelation and proposed by the Church to the faithful, must: (a) be intelligible on the basis of a philosophical-rational background possessed by the subject; b) appear meaningful on the basis of the subject's anthropological and existential experiences; (c) be non-contradictory, especially not denying or controverting any evidence or unquestionable knowledge shared by everyone; (d) be associated to specific *signs* that philosophical reason would attribute on the ontological level to the action of the Absolute, all-powerful Creator as the only authority responsible for the events that originated the message conveyed.

Incidentally, we observe that scientific thought, although it does not play a specific role in assessing the credibility of an individual person (unless medicine or psychology is asked to verify the health and psycho-physical maturity of the witness) undoubtedly plays an important role in estimating the significance and reasonableness of revealed content. Actually, science has something to say about all of the four requirements listed above. The grid of meanings that makes revealed content intelligible (a, b), the shared knowledge that dogmatic teachings or their direct implications must not contradict (c), or finally the knowledge of facts or events that could only be associated with the presence and authority of the Absolute (d), they are all requirements that involve and may interact with scientific rationality. The requests summarized above (a-b-c-d) can be rightly ascribed to a knowledge

propaedeutic to faith, because they prepare for the act of faith without causing it. Although, generally speaking, the preambles of faith are something that disposes those who do not yet believe towards faith, the above four prerequisites concern both the believer and the non-believer; they operate from both perspectives (from faith to reason, and from reason to faith). The characters of paradox and scandal that the Word of God certainly possesses—very well highlighted by dialectical theology, and the *theologia crucis* developed especially by Lutheran and Evangelical theologians—surely challenge the significance and reasonableness of many revealed teachings. However, they never ask us to refute or contradict well-established knowledge that has been acquired by science or logic. If this were to happen, the same intelligibility as the message would be lost. Moreover, it should not be forgotten that the scandalous dimension of the divine Word, which goes beyond the horizon of human understanding and expectations, can be recognized and emerge only if those who hear the Word have a background of acquired, non-conjectural knowledge. In other words, it is necessary to possess a *dóxa* (expected knowledge) at the philosophical or even scientific level, in order to be able to evaluate the extent and meaning of a *parádoxa* (unexpected message) at the supernatural level.

Let us now consider especially the perspective of those who have faith in the revealed Word. They adhere to the person of the witness and, ultimately, to God the Revealer. In this case, we can add to the four prerequisites above new reasons to believe. “Credibility of the believed content” now means that the believer sees, with the “eyes of faith,” elements of judgment that comfort and corroborate his faith within progressive levels of intelligibility and adherence.¹¹ It is not superfluous to insist on the dynamic character of faith. To believe is a continuous process, and not an act that the faithful performs once and for all. Many signs of Revelation are discovered and rediscovered, as if seen for the first time even after years of life of a living faith. When age, knowledge, and experience increase, the believer puts these signs again in dialogue with the critical rationality he has acquired over the years. For those who already believe, the credibility of the revealed content—whose ultimate reason always remains the credibility of the Revealer—can benefit

¹¹ Cf. Pierre Rousselot, *The Eyes of Faith* (Eng. trans. J. Donceel; New York: Fordham University Press, 1990).

from a number of motives that are both of a practical and speculative nature. Among them are: (e) the coherence or analogy between what is already believed and other truths proposed by Revelation for belief. Such coherence clarifies more and more the personality of God the Revealer, the organicity and universal scope of his plan of salvation, and the way in which this plan reaches all people and all times in Christ, the center of the cosmos and of history; (f) the anthropological-existential correspondence between the object of one's own belief and what the subject has constantly sought within one's own religious life; it is the property that believed truths have of revealing and solving what, without the light of Revelation, in the existence of the subject would have remained an unsolvable enigma; (g) the fruits that the life of the Kingdom generates, both those historically known and those experienced by the subject, all centered around the sign of holiness, that of a charity which conquers, attracts, and reveals what is authentically human and what a truly human society would achieve.

It is thanks to considerations such as these (e-f-g) or others of similar value that specific teachings going beyond human reason are judged as "credible" by the believer. In this way, for instance, he judges they are credible: the Beatitudes presented by Matthew's Gospel in the Sermon on the Mount; the requirements to enter the Kingdom; Christian participation in the divine sonship of the Word-Son; the true presence of Jesus in the Eucharist; the redemptive value of Christ's cross; the salvific effects of his glorious resurrection; the divinity of Jesus Christ as one-with-the-Father; the relational dimensions of the mystical Body of Christ; or, finally, the existence of an eternal life, that of a Trinitarian communion in God.

Which kinds of judgment could a non-believer formulate instead? In addition to assessing whether the content of Revelation is meaningful, intelligible, and non-contradictory (a-b-c), he could consider such content plausible when recognized to be in tune with his natural religious sense and his existential experience. Just as the life of grace and the supernatural virtues perfect without removing the dynamic of natural life, so too the human heart aspires for truth and goodness. Even in those who do not yet believe, there is reasonable expression in the Word of God, because this Word is congruent with higher human desires. The demanding requirements of the Kingdom of God are judged to be congruent with the way in which a human society developing in solidarity and peace would and should want to live. The revelation that in the Foundation of all

things there is a communion of love – that of the Trinitarian life – is congruent with the value given to the relational life, and with the perception that love is the deepest and most authentic reality capable of providing truly ultimate answers about the reason for our existence. Christian theology knows that such correspondence exists and is recognizable by all, at least on some level, because it is based ultimately on the truth that the human being – every human being – is the image and likeness of God, created in Christ, who is the true man. There is conformity between the content revealed by God’s Word and what every human being experiences in his or her own humanity. Nature considers the supernatural to be *reasonable* simply because it is our natural experience that man infinitely surpasses man, as Blaise Pascal wrote. Even more, as Maurice Blondel stated, the man who does not open himself to the supernatural feels a suffering and distressing emptiness. Every human being is always able to see around him the fruits of supernatural life, and acknowledge them as signs of an authentically human life – the life of the true human being, the one created in Christ.

Consequently, those who do not yet believe can be legitimately attentive to what Revelation announces and the implications flowing from it: God is the Creator, the just Judge, the Subject of merciful love and of a fatherhood that extends to all mankind; God the Father desires to make human beings share in the legacy of the Son and in the gift of his Spirit; the One and Triune God is the protagonist of a history of redemption and forgiveness in favor of man wounded by sin. These teachings and the ability they have to interpret the history of the cosmos and of humanity, the power they have to decode the deep nature of man, his aspirations, and the logic of his relational life, should manifest on their own their reasonableness and open the non-believer toward acceptance of their truthfulness; if not by a speculative reasoning, they could do so because they are connatural to what we feel. The truth of the Kingdom, which is the truth of Christ himself, is supported decisively by the fact that the Kingdom is already given in the lives of Christ’s disciples. The reasonableness of the Christian message does not depend only on the fact that it can interpret past history (general and personal) in a coherent way or nourish with hope for the future, something possible also for other visions of the world, as happens in ideologies and other forms of gnosis. As widely testified in their apologetic works, the Fathers of the Church were persuaded that the reasonableness of Christianity was manifested also by the

firm fruits of the Kingdom that pagans saw realized in history. Despite all of the human limitations (also present in the Church) and the chiaroscuro of a mystery *already but not yet* realized, these fruits are hardly found in gnostic movements or ideologies: according to the criterion of truth offered by the Gospel states, “by their fruits you will know them” (Matt 7:16). This is a judgment that the intellectually honest, righteous man—even tried by doubt and pain like Job—can formulate with regard to a word proclaimed to him as divine: “By hearsay I had heard of you, but now my eye has seen you.” (Job 42:5). If we were to speak of “credibility” towards those who receive the announcement of the Word and have not yet accepted it, this credibility could not be anything other than this. As Ernst Troeltsch observed some time ago,

the concordance of the Christian faith with the deepest needs of the human heart, the irresistible fascination that the Christian moral commandment exerts on the conscience, the humbling and uplifting power of the Gospel are ultimately the only proofs of its truth. The direct effect that witnesses itself as operated by God, that is the demonstration. Beyond that, there is nothing more to expect.¹²

Faith can arise only along the path of a sincere search for truth, up to recognizing the Truth in the person of Jesus Christ. At that moment, reasonableness becomes acquired credibility. The *analytic* nature of speculative judgment, which is necessary in large part for the rational-philosophical phase of the journey towards faith and begins examining its preambles, gives way to the *synthetic* nature of practical judgment, once the Word is accepted and lived. Here the Word is appraised credible and true. In this way, even the dogmatic content of faith becomes an object of human experience: “Learn to savor how good the Lord is” (Ps 34:9). Such an experience does not refer to unusual forms of mystical knowledge; rather, it is shared by every Christian faithful who lives in the world and strives to behave according to his faith. Lived experience truly contributes to conferring credibility to what is believed by faith. The believer, then, can formulate his plain judgment, the fruit of an experience that does not deceive: “It is true because I know it, I have experienced it, I have seen it.”

¹² Ernst Troeltsch, *Gesammelte Schriften*, vol. II: “Zur religiösen Lage, Religionsphilosophie und Ethik” (Tübingen: Mohr, 1922), 228.

2.4 How risky and uncertain is it to believe?

The above opening question concerning what makes an act of faith meaningful, intellectually honest and humanly responsible, offers us a final reflection on the truth of the message witnessed. The question of what renders an act of faith truly responsible shifts our focus back to the person of the witness or revealer. The interlocutor who has not yet accepted the Word by faith can, like anyone else, wonder legitimately about the risk connected with the possibility that a witness judged credible unconsciously deceives himself, even when he does not intend to deceive. The question can go so far as to involve Jesus of Nazareth himself, of whom Nietzsche cynically stated, "He has flown higher than any other, but he deceived himself in the most sublime way."¹³ This criticism is always relevant, if we think of the numerous readings of Jesus' life (frequent in the past yet still existing today), which describe him as a man of profound moral doctrine but with the illusion of having been chosen as the Messiah, and finally disappointed about the end of his life story and his needless hope that the God of Israel would redeem him from death and bring success to his mission. This is an illusion that some authors, like the rationalist philosophers of the Enlightenment, considered to be operating also in Christ's disciples. I refer to those interpretations of Jesus' resurrection that do not charge the Apostles with the fraudulent trick of stealing the corpse, but rather suggest that the women and the Apostles believed as God he who God was not, deceiving themselves in good faith, starting simply from an inexplicable empty tomb and totally subjective visions of the Lord after his death. The possibility of being mistaken would not spare even the contemporary disciple who, although a credible witness, would be spreading an untrue message about the Kingdom of God and the consequences this kingdom would have for humanity. Similar reflections could be made for other religious confessions, whose radical and apparently coherent behavior, and the tenets believed, may have no relation to the truth.

Assessment of the risk under discussion does not seem to be quantifiable or approachable in terms of probability. The object of Pascal's famous wager, which some might perhaps invoke, was a

¹³ Friedrich Nietzsche, *Jenseits von Gut und Böse*, "Nietzschen Werke" (Leipzig: Kröner, 1906), vol. VIII, 85.

statement regarding the probable existence of God, not the reliability of a witness. Moreover, Pascal's wager had only the purpose of provoking a discourse on God among people accustomed to gambling. Quantitative evaluation of a risk can be formalized only when this risk can be associated with the probability that a certain event has to occur, given the distribution function which governs the occurrence of these types of events. If we desire to calculate the probability associated with the event, "John is telling the truth," we would have to know a sufficient number of events having John as protagonist and for which we could verify whether John was actually telling a truth or falsehood. It would be only a quantitative way to assess the reliability and, therefore, the credibility of a witness. If the event to be tested instead were, "John deceived himself in good faith and therefore unintentionally spoke falsely," then it would be difficult to have a function of distribution of events of this type, either due to their scarcity throughout John's life or because of the difficulty of consistently controlling the actual, unconscious falsehood of John's statements. Although a quantitative approach of this kind is not feasible for various reasons, nevertheless it is interesting to note that it would always end up suggesting ordinary and basic judgments concerning the reliability of a witness. In other words, if I want to ascertain whether or not John is deceiving himself, I must try to know as much as possible about John, to the point of understanding whether he is a person who reasonably and carefully evaluates matters to which he usually commits himself or whether, on the contrary, he is a superficial and gullible person.

During all of this, I must keep in mind that even very responsible, wise, and conscientious people are able to make mistakes about something and someone. After all, we are in a situation similar to the Platonic "second navigation," when the Greek philosopher declares that all we can do in conscience on matters of a certain importance is to seek advice from the wise, and accept what most wise and prudent people consider to be true on a specific subject. Then, subsequently, we can rely only on the "revelation" of a *logos* and undertake, as though on a fragile raft, our navigation of the sea of life.¹⁴

Let us now apply our question to Jesus of Nazareth, to his claim to be the Revealer of God the Father and the Savior. Asking for guarantees as to how he has not deceived himself, and that his

¹⁴ Cf. Plato, *Phaedo*, 85c-d.

relationship with the truth is fully assured, involves examining two essential points. The first is to access his humanity by knowing about him as much as possible in order to evaluate his reliability and sincerity of life. The more credible and psychologically mature a witness is, the less chance he has of being deceived, deluded, or being wrong in good faith. The second point is to explore the only real and radical guarantee that the message he delivers is true, which means exploring whether he is the Truth in person, God Almighty. This latter approach would take the discussion back to the classical proofs of the “event” of Revelation, which the neo-Scholastic model called “objective, extrinsic reasons for credibility” — namely, miracles and prophecies. If the classical proof from miracles and prophecies still makes sense and remains practicable within the context of a historical-documental approach to events that are said to be part of divine revelation, then such proof would find its role precisely here. In fact, the definitive way to guarantee that a credible and responsible witness with a fascinating doctrine and attractive works — someone who “has spoken and acted as no one else has ever spoken and acted” (cf. John 7:44–47) — is not deceiving himself and is on the side of truth, is to acknowledge that “God is with him.” In a judgment of credibility totally entrusted to reason, “God” here can only indicate the image of God to whom philosophy and religious experience could have access. Acknowledging this God at work is nothing more than observing and recognizing his actions in history. In short, looking for such a definitive guarantee would mean exploring once again the connection between the philosophical image and the revealed image of God, and examining those signs that may reveal the presence of God the Creator as guarantor and witness of Jesus of Nazareth.

However, discussing the identity between the witness and the Truth in person is possible only when the witness claims to be *ipse Deus revelans*. For all the other witnesses who are not Jesus of Nazareth, the only way in which human reason can evaluate the risk entailed by a possible discrepancy between the credibility of the witness and the truth of what has been witnessed is to rely, once again, on the best criteria for evaluating the former’s trustworthiness and credibility. Reason, however, requires extending these criteria to their maximum possible degree, up to requiring the *sanctity* of the witness. Saints stand apart as the most reliable witnesses, and they are so also in the eyes of non-believers, because they have heroically testified to the correspondence between their words and their deeds

through their constant coherence of life. Here, and only here, human reason is able to rest. To motivate a radical decision such as that of believing in God, a human being cannot reasonably be asked to trust anyone other than a saint; that is, a martyr, a *true witness*.¹⁵ No one who decides according to rational criteria could consider this credibility to be inadequate, nor would he be criticized by his own conscience for this decision. If the Christian apostles and martyrs of the first centuries had deceived themselves in good faith about Jesus of Nazareth; if John of Zebedee and Paul of Tarsus also had deceived themselves; if did so also Clement and Justin, Irenaeus and Athanasius; if Augustine of Hippo and Thomas Aquinas, Clare and Francis, Thomas More and Ignatius of Loyola, Teresa of Jesus and John of the Cross, Blaise Pascal and Nicholas Stensen, Newman and Rosmini, Pavel Florenskij and Dietrich Bonhöffer, Maximilian Kolbe and Edith Stein had done so too; if Francis Xavier Van Thûan, Mother Teresa of Calcutta and John Paul II were wrong, along with all those who, showing a high coherence of life, had reflected with greater depth on the enigma of the human being and on the mystery of God, accepting the Gospel's message as the word of God and not of humans; if all of them were wrong, then the most reasonable and well-founded decision is to be wrong – if it was really a mistake – together with all these witnesses. It is the opposite choice, I am sure, that would be judged unreasonable by the wise man.

There is still one more step, which is perhaps the last one possible. One may wonder why, at a subjective and experiential level, a human being should feel obliged to follow the dictates of his own conscience and act as a wise man. Why do we decide to evaluate what is reasonable and what is not, asking ourselves and others to choose with “intellectual honesty?” Why on earth should even those who do not believe in God claim guarantees of intelligibility and credibility to motivate a choice in religious matters, with radical consequences for their lives? Isn't this last request basically a sign that there is Someone – also perceived by those who formally say they don't believe – to whom their conscience must respond? Why, in religious matters, should freedom of commitment be worthwhile, and not the frivolity of the libertine criticized by Pascal, the superficiality of the amateur portrayed by Blondel, or the

¹⁵ The Catholic Church's liturgy interprets these same feelings when she prays in one of her Prefaces: “This great company of witnesses spurs us on to victory, to share their prize of everlasting glory...” *Roman Missal*, Preface of Holy Men and Women I.

indifference of postmodern materialist? There can only be one answer. All those who maintain that the important choices of their lives should be undertaken in consciousness – even if they are non-believers – are affirming implicitly the existence of a moral Ground, a conscience to which, they judge, it is good to conform. In this case, one's conscience is the witness whose credibility is at stake; one becomes the witness of oneself. It is no longer the credibility of others that we must evaluate, but the sincerity and credibility of our lives in the face of Truth. The risk of committing ourselves – the risk that our conscience might actually be in accord with the Truth – is nothing but the risk intrinsic to our freedom. In this very moment, freedom discloses itself as true freedom, the freedom of an "I" who must take a stand before a "You," an "I" called to respond only to God.

CHAPTER 3. CONTEMPORARY CRITICISMS OF THE QUESTION ON GOD WITHIN THE CONTEXT OF THE NATURAL SCIENCES

Attending to the scientific and philosophical debate on the question of God is not a secondary task for Fundamental Theology. The problem of God is at the center of Fundamental Theology simply because divine Revelation, with its credibility, claims to offer an answer precisely to this very question. It is because of their common interest in this paramount matter that the encounter between philosophy and theology makes sense. Fundamental Theology explores paths towards God as part of its commitment to focus on the relationship between faith and reason, amending the purely rational aspects of this quest and highlighting its anthropological import. In relating to philosophy, theology must maintain a delicate balance between two poles. On the one hand, it must be aware of the specificity of its theological categories, which oblige it not to be silent about the transcendent and overwhelming nature of the Word of God (from both hermeneutical and noetic viewpoints) with respect to the questions posed by reason. On the other hand, theology must confess that the Absolute—the Foundation of being, as discussed by philosophical thought and at times glimpsed even by scientists—does not concern a Subject other than the same God, Creator of heaven and earth who revealed himself in Jesus Christ.¹ The dissolving of the first pole would be tantamount to transforming theology into philosophical rationalism. Losing the second pole would mean renouncing the character of universality claimed by Judaeo-Christian Revelation, that of being the revelation of the God of everything and of everyone.

Between the end of the 17th and the first half of the 18th century, debate on the problem of God was led, above all, by the Enlightenment criticism of revealed religions. This circumstance obliged apologists to address more explicitly the notion of “revelation,” its historical occurrence, and its epistemic discernment. As we know, the ensuing debate privileged a theoretical approach destined to endure in theological studies. If this gave rise to some

¹ Cf. *Fides et ratio*, n. 34; GS, n. 36.

rationalist tendencies—especially when theology undermined its specificity accepting to argue in the field of the adversary – it is also true that theology’s confrontation with scientific-philosophical criticism brought significant advantages. Theologians were obliged to realize that new categories and different perspectives on God were now dictated by modernity. A similar dynamic is still transpiring today with the rise of secularization, the emergence of new anthropologies, and the public relevance of scientific thought. Franco Arduso pointed out years ago that “In the past, Apologetics developed in dialogue with deism, finding its focal point in the idea of a supernatural revelation over and above a natural [deistic] religion declared insufficient. Today the dialogue is no longer with deism, but with incredulity, with atheism, and with human projects elaborated without any reference to transcendence. In this situation, the focal point of Fundamental Theology could become the reality of God and his credibility in a world that rejects him and considers him as superfluous.”²

The notion of God, as we know, belongs first of all to human religious experience. The subject of such experience is the human being as *sapiens*. This adjective not only qualifies the morphogenetic characteristics of a species of the genus *Homo*, but also the capacity to engage precisely a *sapiential knowledge*. Here, the ultimate questions and, therefore, the question of God, find their historical place. Along this perspective, both religious and philosophical, *homo religiosus*’ access to the notion of God can be placed in productive relation with the theoretical itineraries that lead to the Absolute and to the Foundation of being. On the other hand, the notion of God is raised and becomes the object of criticism also among those who deny the probative value of such itineraries, not infrequently appealing to a knowledge derived from the natural sciences or presumed as such.

Criticism of the notion of God is always a criticism of religion. The strongly existential significance of the “object” under debate implies that such criticism is not addressed to the notion of God as such, but to the meaningfulness of the religious attitude that the truth concerning God would imply in the human being, and more precisely in *every* human being. As we know, there are currents of thought that deny the specifically human and transcendent nature

² Franco Arduso, “Teologia fondamentale,” *Dizionario Teologico Interdisciplinare* (Torino: Marietti, 1977–1978), 1: 198.

of religion, that is, the authenticity of its referral to an objective Otherness—whether it be the gratuitousness of Being, the sacredness of life, or the Absolute as the ultimate source of that gift and sacredness. Such Otherness, on which *homo religiosus* feels to depend, is often denied by attributing religion to fully immanent and material causes. This is made, for instance, by tracing back the historical-evolutionary origin of religious behavior to psychological and social dynamics, the struggle for survival, the mere complexity of neuronal processes, and the rise of existential fears and anxieties that humans tried in some way to solve.

The philosophy of religion, even before theology, has been able to highlight shortcomings and limitations of these immanent explanations of religious behavior. As Robert Bellah's thoughtful analysis has shown, the issue of the origin of the religious sense remains, for scientific thought, an open problem.³ The phenomenological approach to the history of religions, carried out especially by Mircea Eliade and Julien Ries, has underscored the limits shown by the functionalist and evolutionary readings of the origin of religion.⁴ The philosophy of religion developed by Max Scheler and Karl Jaspers has highlighted the inadequacy of a totally psychological and immanent understanding of the religious sense. These two German philosophers have shown the need to refer human religious experience to the existentially significant perception of an Otherness, a transcendent subject before whom the human being questions his own life and his own death.

Beginning in the 19th century, two different criticisms proposed to delegitimize the problem of God, thus removing any interest in a divine revelation, especially in its historical and objective dimension. The first type of criticism employed scientific rationality in an instrumental way—often ideologically—in order to undermine the meaning of the notion of God and to state the presumed irrationality of any religious behavior. It started not from the Enlightenment—during which the notion of God still made sense—but from the influential reading of religion made by Positivism,

³ Cf. Robert N. Bellah, *Religion in Human Evolution. From the Paleolithic to the Axial Age* (Cambridge: Harvard University Press, 2011). Cf. also Jeffrey Schloss and Michael Murray, eds., *The Believing Primate. Scientific, Philosophical, and Theological Reflections on the Origin of Religion* (Oxford: Oxford University Press, 2009).

⁴ Cf. Mircea Eliade, *The Quest. History and Meaning in Religion* (Chicago: The University of Chicago Press, 1969); Julien Ries, *The Origins of Religion* (Grand Rapids, MI: Eerdmans, 1994).

which gained strength in 19th century materialism and finally flowed into the logical Neopositivism of the early 20th century. In logical Neopositivism, the gnosological and anti-metaphysical negation of God reached its peak, but this movement experienced a self-referential dissolution already by the mid-20th century.

The second type of criticism of religion intended to delegitimize the “problem of God” by removing all meaning from the “problem of man.” This is the program triggered by nihilism, a movement capable of capturing ever new socio-cultural contexts and conditioning multiple images of contemporary man. Nihilism attempts to absorb the “problem of man” within the canons of an existentialism closed to transcendence, or to direct it towards the practice of an atheistic humanism.

Within the kernel of both these types of criticism of religion lies the issue of human freedom, the true fulcrum of the whole question where the problem of God and the problem of man meet. The nihilism of modernity, first with Feuerbach and then, above all, with Nietzsche, denies God so as to affirm the strength of human freedom. In the postmodern era, instead, it is the weakness of freedom that determines the emptying of the problem of God. Today, some science-oriented, physicalist currents transform the weakness of freedom into the explicit denial of its truth: the human being is no longer a free, personal being. Here, freedom is absorbed within the anthropological reductionism of the instinctive pulsions of animal life and of struggle for survival. Or, it is interpreted as a mere neurophysiological phenomenology without reference to any “Self” that transcends the materiality of its brain. According to this view, the human being is no longer an “I,” a responsible subject in front of a “You,” the transcendent Otherness recognized as source of all meaning and being.

Today, a meaningful proclamation of the Gospel should not underestimate the import of the philosophical question on God and of affirming the truth of human freedom. Some could erroneously state that these are only theoretical and abstract issues, having no relevance for a faith sustained by a living and existential testimony. It is true, of course, that the credibility of Revelation is ultimately based on God himself and the way he chose of coming to meet the human being, first and foremost the person of Jesus Christ and his Paschal Mystery. Nevertheless, it is also true that the meaningfulness of Gospel’s proclamation also depends on the possibility that contemporary man may understand *to which God* the apostolic

preaching of Jesus Christ, Son of God, refers (cf. Mk 1:1), and thanks to which freedom man may convert from his own sins (cf. Mk 1:15), for which Jesus Christ died and rose from the death to forgive. A patient anthropological and metaphysical decoding of the religious and philosophical assumptions underlying the apostolic *kerygma* becomes indispensable today. This is especially true in countries in which, although dominated by indifferentism and relativism, the scientific-philosophical criticism of religion is still alive and well. The reader can find elsewhere the response I suggest against the denial of God that originates from delegitimizing the problem of man and rejecting the truth of his freedom.⁵ I prefer here to examine the denial of God set forth by those who qualify the religious attitude as something irrational, presuming to support this thesis through an instrumental and often ideological use of scientific thought.

3.1 The rise of “new atheism” in contemporary postmodern society

For those who believe, atheism represents an inevitable knot on both the philosophical and theological sides. There are already important published works to which the reader can profitably refer on this topic.⁶ The word atheism can mean a practical refusal of God on the part of those who live in materialism or religious indifference, as if God did not exist. However, we refer here to atheism as a positive and explicit denial of God. It is the position of those who reject the God (or the gods) of religion, but also intend to remove any probative value from the philosophical paths that, starting from the

⁵ Cf. Giuseppe Tanzella-Nitti, *Teologia Fondamentale in contesto scientifico* (Rome: Città Nuova, 2015–2018), vol. 3, *Religione e Rivelazione*, 162–215.

⁶ See, for instance: Michael J. Buckley, *At the Origins of Modern Atheism* (New Haven: Yale University Press, 1987); Alister McGrath, *The Twilight of Atheism. The Rise and Fall of Disbelief in the Modern World* (New York: Doubleday, 2006); *The Cambridge Companion to Atheism* (ed. Michael Martin; Cambridge: Cambridge University Press, 2007); and Michael Ruse, *Atheism. What Everyone Needs to Know* (New York - Oxford: Oxford University Press, 2015). For a synthetic review: Gaspare Mura, *Atheism* (2005), INTERS, DOI: 10.17421/2037-2329-2005-GM-2. Classical European studies: Augusto Del Noce, *Il problema dell'ateismo* (Bologna: Il Mulino, 1990); Cornelio Fabro, *God in Exile. Modern Atheism. A Study of the Internal Dynamic of Modern Atheism, from its Roots in the Cartesian Cogito to the Present Day* (Westminster, MD: Newman Press, 1968); Lech Kolakowski, *If there is no God ... On God, the Devil, Sin and other Worries of the so-called Philosophy of Religion* (New York - Oxford: Oxford University Press, 1982); Jacques Maritain, *Approaches to God* (Westport: Greenwood Press, 1978); and Georges Minois, *Histoire de l'athéisme. Les incroyants dans le monde occidental des origines à nos jours* (Paris: Fayard, 1998).

experience of the world and that of our conscience, lead to the existence of a necessary Being, to a First Cause, to an ultimate meaning for human life, and to an intelligent Creator. When opposing religion, negations of God operate mainly on the existential level. However, in the case of the criticism of the above philosophical itineraries, the negation of God operates essentially on the theoretical level. Recall, though, that in this last area we are not dealing with the personal God of religious experience, but rather with philosophical images of the Absolute. Nevertheless, religion could use these same philosophical paths – as Christianity does – as a basis for increasing the significance and intelligibility of God as the object of religious experience, a God to whom man prays and feels existentially bound. Étienne Gilson rightly observes that in the history of philosophy, there is no system of thought that could have successfully proven the non-existence of God. That is, there is none that could establish in a rigorous way a theoretical negation of God.⁷ Instead, there are various philosophical perspectives that intended to show the weakness of some rational proofs of God's existence or have contrasted the affirmation of God on existential, emotional, or rhetorical bases. This state of affairs makes it clear that, on the rational level, the true confrontation concerns the debate between theism and agnosticism, rather than a philosophical conflict between theism and atheism.

Fundamental Theology's treatment of the issue of atheism involves two tasks. The first is to listen to the critique of religion voiced in the public square, whether it comes from common people or from politicians, or from philosophers or scientists, in order to understand their reasons and provide answers that can free the field from errors so as to help Christian faithful mission to evangelize. The second task consists in examining some criticisms – both existential and theoretical – that intend to “remove meaning from the notion of God,” to show its weakness or even fallacy. The meaningfulness of the notion of God remains, in fact, decisive in helping human reason to recognize itself *as capax fidei*.

I will address both tasks here, albeit in a synthetic way. In accordance with the aims of this volume, I will pay particular attention to what the public square claims to arise from within the scientific context, precisely so as to assess this assertion and evaluate its possible implications. It should not be forgotten that, since the

⁷ Cf. Étienne Gilson, *L'athéisme difficile* (Paris: J. Vrin, 1979).

modern era, atheism has looked for an ally in science to support its position. It has done so, for example, by declaring that the birth of the scientific method—based on experiments and on their subsequent verification—resulted precisely from the emancipation of the natural sciences from philosophy and theology, two fields destined to recede progressively and then to disappear from the horizon of true knowledge. This perspective is still present today in some authors, who are not free of ideological tendencies, affirming that the autonomy of science is correlative to its *a-theism*. For them, the simultaneous emergence of both theoretical atheism and the experimental method in the same historical period is much more than simple coincidence. Indeed, such an association would have well-established historical roots, since the only form of atheism of antiquity, the naturalism of Democritus and Lucretius, was based on an “atomistic” conception of all things, a term that also evokes a scientific context, as we know today that matter is composed of atoms.

A very explicit appeal to science was made by the positivism of Auguste Comte (1798–1857). It is well known that his “law of the three stages” envisioned the emancipation of humanity—first from religious mythology and then from unverifiable metaphysical philosophy—to arrive finally at scientific knowledge as the only norm of true knowledge shared by all.⁸ It does not matter if the new humanity theorized and proposed by Comte still had priests, religion, and rites, because all these now served to celebrate Reason, finally freed from an infantile mind. It is difficult to underestimate the strength of this vision and the influence it has exerted and still exerts today. Many people remain prepared to endorse the prophecy of the French thinker (actually still unfulfilled) that “theology will necessarily turn off in front of physics.”⁹ As we know, Comte did not replace an anti- or pro-theist metaphysics with a scientific, empirical-experimental method. Rather, he desired explicitly to replace one religion with another religion. Emancipation from religion and philosophy had to lead to a new rational system governed by a “spiritual” ideal capable of motivating the commitment of men and women in favor of a new Humanity that had been freed from ignorance. In this way, his intention was to

⁸ A critical comment on Auguste Comte’s view in Henri de Lubac, *The Drama of Atheist Humanism* (Cleveland, OH: World Publishing, 1963).

⁹ Cf. Auguste Comte, *Course on Positive Philosophy*, lecture 4, 108.

proceed beyond atheism, renouncing *theoretical* approaches to the problem of God and thus anticipating the strategy proposed later by Nietzsche.

The criticism of religion in Friedrich Engels' (1825–1890) dialectical materialism also openly looked – within the framework of Marxist philosophy – for a scientific basis, qualifying itself as “scientific materialism.” This criticism intended to bring into consideration the results that mechanism and mathematical reductionism had successfully disseminated in the 19th century representation of the physical world. This representation conveyed a vision of matter that was believed to derive from new scientific observations, but ended up taking on the same philosophical attributes that metaphysics had assigned to the Absolute. Sigmund Freud (1859–1936) also subscribed to a “scientific atheism” aimed at freeing the human being from obsessive neurosis – religion, in fact – through the “scientific” practice of psychoanalysis. The logical Neopositivism developed by the antimetaphysical current of the Vienna Circle (which promoted a semantic atheism that soon became theoretical atheism at the ontological level) also took its cue from an explicit link with the scientific context, as shown by the thought of Bertrand Russell (1872–1970) and the programmatic manifesto *The Scientific Conception of the World* (1929), formulated by the members of the Circle.

The visions assumed by all these authors were subsequently overcome by a criticism that had arisen within science itself. Think for instance of the inadequacy of mechanism and of self-referential logic made manifest by the discovery of indeterminism and complexity, the introduction of systemic theories, and the formulation of theorems of incompleteness and undecidability. Despite these results, a widespread conviction remained (and still remains) that only the empirical-experimental method of the natural sciences was capable of reaching certitudes and, therefore, of unmasking as forms of pseudo-knowledge the cognitive claims of non-empirical disciplines (metaphysics in particular). This view is shared today by a large portion of public opinion, which consists mostly, moreover, of non-specialists. Atheism of the modern era – especially when argued in terms of Neopositivistic logic – intended to delegitimize the meaning of the notion of God by seeking the context of the sciences as its point of strength.¹⁰ In contemporary

¹⁰ It is not by chance that the notion of God loses its meaning precisely in the

times this seems to be also the case. A large portion of atheism's current statements come from authors who likewise intend to refer to the results of the natural sciences, and in particular to the visions of nature, life, and the human being conveyed by physics and biology. This is not to say that most scientists profess to be atheists, as the analyses of sociologists clearly refute this. It is simply to observe that most declarations of atheism, wherever they come from, *intend to be based* on the sciences.¹¹

To demonstrate this trend, it is sufficient to observe what has happened in recent decades in the Western countries where a certain current of thought named "new atheism" has taken shape. More precisely, we should qualify it an opinion movement more than a philosophical current.¹² Promoted by a few people of science or by influential popularizers, with an emphasis comparable to Comte's law of the three stages, new atheism has now reached wide layers of public opinion, to the point of spreading advertising messages against the existence of God on the public transport of some European capitals. New atheists have also promoted numerous *web-based* organizations in which anti-religious propaganda is supported by an appeal to scientific reason, announcing a fight against ignorance and superstition. In the minds of many, the idea is thus gaining ground that we must now speak of an inevitable "scientific atheism."

Fundamental Theology, which hears all this coming from the public square, must address some questions and offer necessary clarifications. What arguments have the "new atheists" developed, and what is the relationship between their criticism of religion and the image of God associated with Judaeo-Christian Revelation? Is

context of Immanuel Kant's pure reason, forged on the categories of the natural sciences, to regain its meaning only in the context of practical reason, in the moral ambit. If the two important forms of modern atheism proposed by Feuerbach and Nietzsche seem to distance themselves from the previous picture, not having a special relationship with science, it should be noted that their thought is not a form of theoretical-rational atheism, but an atheism affirmed on the basis of options of an idealistic (Feuerbach) and existential (Nietzsche) character.

¹¹ In an issue of the weekly *Time magazine* emblematically dedicated to the death of God, on the cover of which appeared only the words *Is God Dead?*, the columnist stated that the most modern factor of secularization was, of course, science: cf. *Time*, April 8, 1966. On the religiosity of scientists, see Elaine H. Ecklund, *Science vs. Religion. What Scientists Really Think?* (Oxford: Oxford University Press, 2010).

¹² A clear and concise overview in John Haught, *God and the New Atheism. A Critical Response to Dawkins, Harris and Hitchens* (Westminster: J. Knox Press, 2008).

this new atheism legitimized by any contemporary scientific results or do such atheists resort, instead, to *a priori* viewpoints, conveying them with an ideologically connoted and philosophically poorly equipped popularization of science?

A philosophy free of ideological conditioning would warn immediately that the scientific method is not competent to deny or affirm God's existence, as God is not the object of quantitative empirical analysis. This clarification should, in principle, already be sufficient. However, the new atheists' claim that they intend to be anchored in scientific knowledge, and the considerable repercussions that this subject has within practical and pastoral arenas, prompts Fundamental Theology to seek to understand the dynamics that have given rise to this current of opinion, the pre-conceptions involved, and the questions captured.

To understand the "success" of new atheism and explain its popularity, it is necessary to take a look at the socio-cultural evolution experienced during the 20th century. Starting from Nietzsche, positive atheism became based primarily on existentialist approaches. The most recent anti-metaphysical arguments that had resorted to theoretical justifications were those coming from the critique of religion made by Neopositivism and Freudian psychoanalysis. The situation of increasing secularization and practical materialism progressively has caused a gradual loss of interest in the logical-theoretical approach, not only in the question of God, but also in questions of meaning more generally considered. Religious indifferentism in postmodern society seems to have delegitimized both God and reason. Issues having a special impact—such as human conception and end-of-life debates, the vision of sexuality, and moral principles and religious beliefs—are now handled on an individual and private basis. This approach entrusts political choices with the task of resolving what no longer seems possible to argue or solve through a rationality accepted by everyone; that is, through a shared *logos*.

In tune with this cultural climate, the "reasons" for the new atheism resort to a precise strategy: to use commonplace references, to simplify terms to the point of generating misunderstanding, to ignore the existence of different levels of abstraction, and to avoid any historical or hermeneutical clarification. Ambiguous syllogisms—simple to formulate and easy to accept—are sought, which often flow into sophisms with the help of a skillful use of rhetoric and dialectic. The search for universal arguments and

general principles based on a shared logic is replaced by the use of arguments addressed *ad hominem*, which are easier to handle. Emotivity and instinctive reactions, opportunely aroused, are used to strengthen statements that are too weak to be defended at a speculative level. In accordance with the currently prevalent lack of ideals and intellectual interest, the criticism of religion seems motivated not by the aspiration to understand more deeply the human existential condition nor by a desire for truth. Rather, the new atheism seems to be more interested in defending specific lifestyles and in creating movements of public opinion deemed necessary to support them, mainly operating at the level of media consensus and economic profit.

Although some have called it “hysterical” or just “folkloric” atheism, the new atheism succeeds in capturing opportunistically the questions that ordinary people ask concerning religion and for which no convincing answer has yet been received. Atheists present this detriment as an existential wound which they promise to heal. It is also for this reason that the volumes published in recent years by “new atheists” have sold millions of copies worldwide. Some of their titles are sufficiently evocative, such as Christopher Hitchens’ essay, *God Is Not Great: How Religion Poisons Everything* (2007) or Samuel Harris’ book, *The End of Faith: Religion, Terror, and the Future of Reason* (2004). We are not facing, therefore, a current of thought that simply intends to weaken the interest in religion, favoring agnostic, sceptical, or indifferent positions. Rather, we are facing an intentionally declared atheism, whose program is to show the deception of religion and the falsity of the notion of God. In this view, religion must not be underestimated, nor can we limit ourselves to delegitimizing it. Instead, religion must be fought as it is deemed dangerous for the happiness of the individual as well as for the common good of all society.

The liberation from religion proclaimed by all these authors intends to walk in the wake of a neo-Enlightenment. However, distinct from the Enlightenment, new atheists are not concerned with promoting the human being from a cultural point of view, but with saving him from the psychological violence and unhappiness that they argue belief in God would entail. In addition to Hitchens and Harris, the works of scientists such as Richard Dawkins and Daniel Dennett, of and thinkers such as Michel Onfray and André

Comte-Sponville can also be included in this current.¹³ In Italy, Piergiorgio Odifreddi and Paolo Flores d'Arcais share the themes and strategies of the new atheism. It is worth noting that all these authors are in open contrast with those who, in an academic environment and with greater historical and epistemological rigor, have developed an interdisciplinary and fruitful dialogue between scientific thought and theology in recent decades. These last authors are certainly more numerous than new atheists, but much less influential in the media. New atheists also differ from those who, using the terminological classification suggested by Ian Barbour, have supported the thesis of the "divorce" between science and theology. This thesis was underlined by Stephen Jay Gould, promoter of the vision of "Two Non-Overlapping Magisteria," according to which theology/religion and science cover two essentially different fields (not only epistemologically, but also materially), thus guaranteeing no conflict.¹⁴ An intellectual position such as Gould's is considered dangerous by new atheists, because it leaves religion the freedom to operate, albeit within its own field, sowing massacres and error. Rather, they state, reason must defeat religious faith and fight it openly. John Haught critically summarizes their program: "Get rid of faith and everything will get better. For Dawkins, Harris, and Hitchens, the banishing of faith from our minds and public life is the panacea that will end suffering and evil, at least so far as nature allows it. And the best way to dispose of faith is not by violence or even political action, but by filling minds with science and reason."¹⁵

¹³ Among the most illustrative titles, are: André Comte-Sponville, *The Little Book of Atheist Spirituality* (London: Bantam Press, 2008); Richard Dawkins, *The Blind Watchmaker. Why the Evidence of Evolution Reveals a Universe without Design* (New York - London: Norton, 1987); Richard Dawkins, *The God Delusion* (London: Black Swan, 2007); Daniel C. Dennett, *Breaking the Spell: Religion as a Natural Phenomenon* (London: Allen Lane, 2006); Samuel Harris, *The End of Faith: Religion, Terror, and the Future of Reason* (New York - London: Norton, 2004); Christopher Hitchens, *God Is Not Great: How Religion Poisons Everything* (New York: Twelve, 2007); Michel Onfray, *Atheist Manifesto. The case against Christianity, Judaism, and Islam* (New York: Arcade Publishing, 2008), and Victor J. Stenger, *God: The Failed Hypothesis. How Science Shows That God Does Not Exist* (Amherst, NY: Prometheus Books, 2008).

¹⁴ Cf. Ian Barbour, *Religion in an Age of Science* (London: SCM Press, 1990), 3–30; Stephen J. Gould, *Rocks of Ages. Science and Religion in the Fullness of Life* (London: Vintage, 2002).

¹⁵ Haught, *God and the New Atheism*, 12.

The criticism of religion made by the new atheism operate along two fronts. In relation with the sciences, the notion of God is compared to a hypothesis to be verified with the methods of empirical knowledge, embracing the thesis of a philosophical naturalism that is supposed to be based on scientific results. On the anthropological side and in relation to society, religion is seen as a source of intolerance and violence, proposing the idea of an atheist neo-humanism that, guided by reason, will guarantee peaceful coexistence among peoples, feeding them with forms of naturalist spirituality having no God.¹⁶ In both cases, the strategy followed consists of “reducing” and “re-categorizing” the notion of God, the attributes of faith, or events involving subjects of a specific religious belief. Subsequently, they brought back the “reduced” content of religion into artificial categories and, finally, intentionally forced it into dialectical patterns, pushing the public toward a compulsory choice. Faith in God, Dennett holds, cannot be justified by any scientific or logical argument, and this should be enough to get rid of it. The “hypothesis” of God, Dawkins observes, should be introduced only if it satisfactorily “explains” physical phenomena or human behavior according to criteria that can be verified by all. When the notion of God no longer carries out this task, it must be reasonably removed as superfluous.¹⁷

The notions of faith and religion are also recategorized easily as actions that any of us would qualify as deplorable when carried out by subjects who profess to adhere to a “religious” faith, presented by new atheists as an effect of the monotheistic faiths of the earth, with Christianity and Islam at the head. “As long as we accept the principle that religious faith must be respected simply because it is

¹⁶ The promotion of a neo-humanism based on reason is common to all these authors, sometimes colored, as in the case of Comte-Sponville, by the desire for forms of neo-Buddhist spirituality. There is also a commitment to found associations and information networks, as in the case of Sam Harris, founder of the company “Project Reason,” whose motto is *spreading science and secular values*.

¹⁷ “Some scientists and other intellectuals are convinced – too eagerly in my view – that the question of God’s existence belongs in the forever inaccessible PAP [Permanent Agnosticism in Principle] category. From this, as we shall see, they often make the illogical deduction that the hypothesis of God’s existence, and the hypothesis of his non-existence, have exactly equal probability of being right. The view that I shall defend is very different: agnosticism about the existence of God belongs firmly in the temporary or TAP [Temporary Agnosticism in Practice] category. Either he exists or he doesn’t. It is a scientific question; one day we may know the answer, and meanwhile we can say something pretty strong about the probability.”, Dawkins, *The God Delusion*, 48.

religious faith” – observes Dawkins with an easy rhetoric – “it is hard to withhold respect from the faith of Osama bin Laden and the suicide bombers. The alternative, one so transparent that it should need no urging, is to abandon the principle of automatic respect for religious faith. This is one reason why I do everything in my power to warn people against faith itself, not just against so-called ‘extremist’ faith. The teachings of ‘moderate’ religion, though not extremist in themselves, are an open invitation to extremism.”¹⁸ Sacred Scripture, once reduced to an ingenuous literalism, can be brought easily into the same logic, either by making it marry with theses of fundamentalist creationism or by redefining the way of understanding its historicity as Hitchens does with the New Testament: “Either the Gospels are in some sense literal truth, or the whole thing is essentially a fraud and perhaps an immoral one at that.”¹⁹

There are authors who, in recent years, have provided well-founded responses to the phenomenon of “new atheisms.” Alister McGrath in England, John Haught in the United States, and Roberto Timossi in Italy, among others, have tackled the issue in an organic and structured way. G. Lohfink, T. Crean, K. Ward, A. Aguti and M. Micheletti have offered significant critical essays on the subject as well.²⁰ The Italian mathematician Giorgio Israel has contributed to

¹⁸ Dawkins, *The God Delusion*, 306.

¹⁹ Hitchens, *God Is Not Great*, 42.

²⁰ In addition to the already quoted *God and the New Atheism* by John Haught, cf. also Alister McGrath, *The Dawkins Delusion. Atheist Fundamentalism and the Denial of the Divine* (London: Society for Promoting Christian Knowledge 2007); Thomas Crean, *A Catholic Replies to Professor Dawkins* (Oxford: Family Publications, 2007); Keith Ward, *Why There Almost Certainly Is a God. Doubting Dawkins* (Oxford: Lion, Oxford 2008); Scott Hahn and Benjamin Wiker, *Answering the New Atheism. Dismantling Dawkins' Case against God* (Steubenville: Emmaus Road, 2008); Ronald Numbers, *Galileo Goes to Jail and Other Myths about Science and Religion* (Cambridge - London: Harvard University Press, 2009); and Alister McGrath, *Dawkins' God. From The Selfish Gene to The God Delusion* (Hoboken: Wiley, 2014). Among the essays published in Italian which provide replies to the new atheists: Andrea Aguti, “La critica naturalistica alla religione in R. Dawkins e D. Dennett,” *La differenza umana. Riduzionismo e antiumanesimo* (Brescia: La Scuola, 2009), 85–99; Roberto Timossi, *L'illusione dell'ateismo. Perché la scienza non nega Dio* (Cinisello Balsamo: San Paolo, 2009); Gerhard Lohfink, *Dio non esiste! Gli argomenti del nuovo ateismo* (Cinisello Balsamo: San Paolo, 2010); Richard Schröder, *Liquidazione della religione? Il fanatismo scientifico e le sue conseguenze* (Brescia: Queriniana, 2011); Mario Micheletti, “Nuovo ateismo, ateologia naturale e ‘naturalismo perenne’”, *Hermeneutica* (2012), 93–135; and Roberto Timossi, *Nel segno del nulla. Critica dell'ateismo moderno* (Torino: Lindau, 2015).

the unmasking of the ideological drifts of scientism in the postmodern cultural climate.²¹ To all of these authors should be added—far more numerous and, thus, impossible to enumerate in full—all those who have carefully investigated the canons of a rigorous comparison between science and religion and who, while dealing with philosophical, historical, and epistemological aspects, nevertheless have provided the basic elements for addressing a well-balanced critique of the new atheism. The “points of strength” of the new atheists can be listed easily: an instrumental and very often ideological use of the sciences; the renouncing of a rigorous theoretical foundation of what is stated; the ability to recognize some existential discomforts suffered by postmodern society; the fear of religious fundamentalism and the violence that it implies; and, the purpose of orienting scientific culture towards a humanist, non-nihilistic outcome capable of transforming the nonsense of our cosmic solitude into a serene acceptance of the tragic sense of life.²² These authors are well aware that the books hosting their critique of religion could never be used as textbooks for university courses because of their argumentative superficiality and their historical inaccuracy. Instead, they choose to turn to a less expert, more receptive public opinion, for which one can renounce God as one renounces Santa Claus when coming out of childhood.²³

As trivial as it may seem, the strategy of the new atheism is basically quite simple: a fetish is built by carefully defining its profile and characteristics, its irrationality and dangerousness is shown, and then it is shot down to the applause of the crowd. John Haught summed up synthetically the sectors where this strategy operates and the categories that it creates: all believers are represented as fundamentalists, fanatics and perverts; religious faith is the senseless belief in all that is invisible and scientifically unproven; all

²¹ Cf. Giorgio Israel, *Liberarsi dei demòni. Odio di sé, scientismo e relativismo* (Genova: Marietti 1820, 2006); and *Chi sono i nemici della scienza?* (Torino: Lindau, 2008).

²² A similar sentiment is expressed in a well-known comment by the atheist Steven Weinberg: “If there is no solace in the fruits of our research, there is at least some consolation in the research itself. [...] The effort to understand the universe is one of the very few things that lifts human life a little above the level of farce, and gives it some of the grace of tragedy.” Stephen Weinberg, *The First Three Minutes* (New York: Basic Books, 1977), 154.

²³ “The kindly God who lovingly fashioned each and every one of us (all creatures great and small) and sprinkled the sky with shining stars for our delight – that God is, like Santa Claus, a myth of childhood.” Daniel C. Dennett, *Darwin’s Dangerous Idea. Evolution and the Meanings of Life* (London: Penguin Books, 1996), 18.

of reality is made up only of matter, to which science can have access with its measuring instruments; the value of “proof” is exclusively confined to scientific demonstration; and, the term God is identified with an invisible material object, whose existence cannot be demonstrated.²⁴ It is inevitable that, to provide sound counter-arguments against this kind of atheism, one needs to reason on a deeper theoretical level, having a much less immediate impact. One needs to distinguish causal plans, make use of epistemological clarifications, provide adequate hermeneutics, and unmask historical superficialities. This is more difficult, however, because it requires additional intellectual rigor that most of the public does not seem to have today, tending more easily towards clichés and simplifications. This is precisely the strength of the exponents of the new atheism. And here lies, in my opinion, the provocation addressed to theology. Faced with this challenge, theology now grasps all of the need to implement a communication that must be both effective in its methods and rigorous in its content, capable of inspiring a catechesis whose language is suitable for the uninitiated and can intercept the sensibility of all our contemporaries; a teaching that knows how to face the big questions while being able to explain them to children.

3.2 Is Nature enough? “Scientific” naturalism and the origin of a misunderstanding

From what we have seen previously, the elaboration of a response to the criticism of religion made by new atheism seems to concern above all choosing appropriate strategies for communication and evangelization, rather than developing particular philosophical or theological elaborations. However, there is one element that deserves to be highlighted here, beyond all the superficialities, simplifications, and semantic reductions found in the works of the new atheists. In order to give authority to their arguments, all of these authors use the theses of an attractive *philosophical naturalism*, presenting it in the guise of a necessary and indisputable *scientific naturalism*. Such naturalism shifts to an ontological level (i.e., only nature exists, as the origin and end of everything) and to a general epistemic level (one can only know what belongs to nature) a methodological reductionism that would apply legitimately in the gnoseological field (i.e., to understand the

²⁴ Cf. Haught, *God and the New Atheism*, 38–39.

phenomena of nature, including man, the sciences must turn only to nature).²⁵ Instead of reproposing a traditional “materialism,” the supporters of naturalism believe that their approach better captures contemporary sensibility. In fact, the shortcomings of classical materialism are perceived today also among men and women of science at an existential level. In short, to bring everything back to *nature* is more appealing and softer than bringing everything back to *matter*.

The conviction that naturalism actually originates from the results of contemporary science has gained ground in various circles, to the point of entering into the pages of some influential encyclopaedias and dictionaries. The Encyclopaedia Britannica talks about naturalism as a “theory that *relates scientific method to philosophy* by affirming that all beings and events in the universe (whatever their inherent character may be) are natural. Consequently, all knowledge of the universe falls *within the pale of scientific investigation*.” The Italian Enciclopedia Treccani speaks of it as “a tendency not to admit anything beyond or outside of nature, as it exists for itself, without the intervention of supernatural or spiritual principles that in any case transcend it, and therefore to explain every phenomenon, including those concerning the spirit, with *only natural laws*.” The Stanford Encyclopedia of Philosophy presents naturalism as an attempt “to ally philosophy *more closely with science*.”²⁶ Thus, the idea is taking shape that there can be a “scientific naturalism” whose *philosophical* perspective prompts some authors to interpret the origin of the cosmos and of life, the appearance of the human being and of his conscience, his religious experience and the other spiritual or cultural manifestations of human life, in a totally immanent way that is self-referential and therefore closed to transcendence. The conditions *necessary* for the

²⁵ Among those who reflect on philosophical naturalism presented in scientific clothing: *Naturalism. A Critical Analysis* (eds. W.L. Craig and J.P. Moreland; London - New York: Routledge, 2001); Mario De Caro and David MacArthur, *Naturalism in Question* (Cambridge: Harvard University Press, 2004); and John Hought, *Is Nature Enough? Meaning and Truth in an Age of Science* (Cambridge - New York: Cambridge University Press, 2006). Cf. also *Introduzione al naturalismo filosofico contemporaneo* (eds. E. Agazzi and N. Vassallo; Milano: Franco Angeli, 1998).

²⁶ Cf., respectively, *The New Encyclopaedia Britannica*, Micropaedia, 1985, 8: 560 (<https://www.britannica.com/topic/naturalism-philosophy>); *Lessico Universale Italiano* (Roma: Istituto dell'Enciclopedia Italiana, 1974), 14: 516; and *Stanford Encyclopedia of Philosophy*, at <http://plato.stanford.edu/entries/naturalism>. The emphasis (in italics) in these quotations is mine.

development of some phenomena are often presented as *necessary and sufficient*, even though there is no complete knowledge of those phenomena, consequently “reducing” them to the sole purview of the fields of physics, biology, or neurophysiology. Physical laws are considered necessary and sufficient to cause the existence of the universe that spontaneously emerges from “non-being.” The biological processes that regulate life are considered necessary and sufficient to generate all the information on which life is based and depends. The neurophysiology of the human brain is considered necessary and sufficient to explain what consciousness, freedom, and self-awareness are. The religious sense is also understood as a *natural* phenomenon and, therefore, totally immanent to the subject, as the synaptic processes and evolutionary advantages of religious attitude would be necessary and sufficient conditions to justify the appearance of religion. This would be so regardless of any relationship with a transcendent Otherness before the human being. In the intention of such authors, these naturalist pictures of the origin of the cosmos and of life, of human conscience and human religious sense, *break the spell* – to use Daniel Dennett’s expression – thus bringing back within the limits of nature what we erroneously thought could transcend it.

Arguments in support of scientific naturalism evoke, above all, the *evolutionary understanding* of nature and emphasize its *autopoietic dimension*. This natural behavior would be sufficient to justify the emergence of any newness and the progressive complexity of living organisms, also giving reason for the order and beauty present in the cosmos. Everything that exists in nature – and, therefore, nature itself – is fully comprehensible on the basis of *natural* causes only: the action of the laws of nature, the occurrence of random contingencies, the natural selection of genetic mutations best fitting to survival, and adaptation to the environment, among others. Thus conceived, such a naturalism is presented as evidence of atheism because it is capable of removing any agent other than nature, thus denying a Creator who transcends nature and attributes meaning to it. Nature – including the human being – would have no need of such a Creator to explain all that happens. Necessary conditions have all now become necessary and sufficient conditions. Consequently, having removed the question of being (ontological foundation), atheism deduced from naturalism focuses on the explanation of the phenomenology of becoming, carefully avoiding questions of meaning, of the cause of being, or of the ultimate reason

for the specific nature (formal causes) of each entity. Awakening and addressing all these issues is deftly escaped.

A major point must be highlighted here: The fascination of this approach derives from the fact that it contains the undeniable truth that a gnoseological naturalism is fully adequate to describe all of material reality *on the level of empirical causes*. The engagement of “new atheists” to the scientific world concerns mainly the fields of biology and genetics, although there is no shortage of negations of God coming from the field of physical cosmology. The philosophical frame used as reference is the atheistic interpretation of Darwinian evolutionism, developed along the lines that, starting with Thomas Huxley, finds a pivotal milestone in Jacques Monod and takes on a highly challenging tone in Richard Dawkins. In this form of atheism, the “enemy” to be beaten is the idea of creation (belonging to non-falsifiable and thus meaningless metaphysics or theology), declared incompatible with the concept of evolution (belonging to science and confirmed). During such debates, the position of those who affirm the existence of a Creator is equated intentionally, for dialectical purposes, to those who support a creationist vision (i.e., an anachronistic fixed-species vision, according to which the various biological species were “created” and appeared as such on our planet). Asserting the existence of a Creator is often associated with the superfluous introduction of spurious final causes or spiritual agents, both operating on an empirical level where nature is actually capable of “doing everything by itself.” Finally, the debate is forced onto the ground of a dialectic opposition between chance (equated to a scientific result) and purpose (considered an unrequested anthropomorphic, philosophical category). Any reference, however indirect, to the idea of ends and finality is intentionally qualified as non-scientific because it is not supported by data.²⁷ It is within this context that maneuvered readings of the so-called *Intelligent Design* movement are proposed, whose insufficiency is then easily highlighted. The spearhead of the atheistic interpretation of this autopoietic evolutionary picture is the understanding of the human being as solely a biological species belonging to the genus of the

²⁷ “According to Dawkins and Dennett, one must decide between theological and Darwinian explanations. Each reader must choose one rather than the other. It cannot be both. In issuing this dogma Dennett and Dawkins are simply restating one of the central assumptions of almost all science-inspired atheism. Carl Sagan, Michael Shermer, Steven Weinberg, Owen Flanagan, and Victor Stenger, just to name a few, have made similar claims.” Haught, *God and the New Atheism*, xi.

Higher Primates. Accordingly, the human would be only an animal, without further qualifications. The belief that the existence of mankind on planet Earth must refer to the causality of a personal Creator would be the result of myth and, therefore, date back to a pre-scientific era.

The new atheism is engaged as well in the fields of physics and cosmology. In these cases, naturalism consists of the laws of a self-sufficient, self-contained universe without gravitational singularities or boundary conditions, or of a universe regulated by the laws of quantum mechanics, whose appearance in time would depend on random fluctuations. These *natural* laws—the object of science—would be fully capable of explaining why the cosmos comes into being and possesses the characteristics that we know.²⁸ The debate in favor of atheism is thereby set, reductively and erroneously, by associating the affirmation of a Creator with models of the universe having a gravitational singularity as they would point towards an origin of space-time. These models are then declared outdated in favor of new models capable of removing meaning from this kind of singularity (models of a stationary or quasi-stationary state, cyclical universe, or self-contained universe; quantum models). Any peculiarity of our universe, such as the “fine-tuning” between the numerical constants of fundamental laws of nature and the necessary conditions that make life possible, is removed easily by hypothesizing the existence of multiple, infinite universes (i.e., a *multiverse*). In this way, it is possible to reply to those who affirm that life and intelligent life have not appeared in the universe by chance, by stating that the universe in which we live is, by chance, only one among many.

Authors such as Steven Weinberg, Stephen Hawking, Peter Atkins, and, a few decades before them, Fred Hoyle, have shared and conveyed an atheistic interpretation of contemporary cosmology, looking for a supposed foothold in both classical and quantum physics. In this cosmology “of the very beginning,” the problem of the radical cause of being supposedly is examined. But, in actuality, it is dissolved and misrepresented because it is *reduced* on the empirical level, to avoid its more appropriate setting at the ontological and transcendent levels. In so doing, the “scientific” support for atheism soon derives from the fact that the cosmos does

²⁸ This thesis is endorsed, employing an unconvincing epistemology, by Stephen Hawking and Leonard Mlodinow, *The Grand Design* (London: Bantam Press, 2010).

not need any Creator. For the universe to come into being and to determine its specificity and intelligibility, only its physical, self-founded, and self-founding laws would suffice.

There are areas in which a gnoseological naturalism is certainly legitimate and warranted. To understand the empirical phenomenology of what happens in nature, it is not necessary to invoke causes extraneous to nature. Every causality that governs a natural phenomenon can be reduced to the terms of natural agents. For naturalism to be consistent, however, it is necessary to specify explicitly that one is dealing here with a strictly empirical causality. This is nothing but an *efficient* causality operating in circumstances in which a cause is fully adequate for understanding the effect it causes, and for determining why the effect occurs and how it occurs. When, on the contrary, one wonders about *formal* causes (what makes an entity what it is; that is, its essence or nature) or *final* causes (what intentionality is the ultimate cause for the being of reality and its intelligibility), then a gnoseological naturalism would show its limits. In this case, in fact, a full understanding of a phenomenon would imply a level of intelligibility that would also explain why a material entity exists and why its properties, and not others, are its own. This would require, sooner or later, to ground the intelligibility that transcends the empirical level, since the latter works precisely on those properties *as given* and, therefore, *received*. It is not necessary for the scientific method to address formal and final causes, as it can work with efficient causes. However, if this method is invoked to deny God, then it means that we are abandoning the field of efficient causality and accessing ontological and metaphysical grounds, where the scientific-experimental method turns out to be incomplete or inadequate.

A naturalism that claims to deny God is, after all, a form of *philosophical immanentism*. It can be presented as simple materialism, in which nature is represented only by matter, or as a form of monism. In the latter case, nature may not be matter only, but, nevertheless, it is certainly the only cause of itself. In other words, nature has in itself all that is necessary to be, to exist, and to operate. Moving along the line of immanentist thought, ontological naturalism removes and leaves unresolved the philosophical problem of contingency (i.e., Why does the universe, which is unnecessary, necessarily exist?). It denies the importance of thematizing a necessary Being (God), but it does not justify why our experience speaks to us of a nature that is ultimately contingent.

Immanentism declares that this contingency is resolved by referring it to the totality of the whole and seeing the whole of reality as something necessary in itself. However, in doing so, immanentism must accept a thorn in its flesh when logic and experience remind us that an infinite sum of contingent beings is not equivalent to one necessary being. The supposed opposition of naturalism to theism, therefore, does not concern the field of science and its method, but is, rather, an opposition of a metaphysical nature. In this sense, we should speak of a *metaphysics of naturalism* when the latter reaches the level of ontological immanentism.²⁹ Between theists and atheists, the disagreement is not about God as an object on whose existence one disagrees in comparison with another object—nature—on whose phenomenology all agree and could thus be used as a shared knowledge to deny God. In reality, the disagreement between the theist and the atheist also affects nature. For the theist, nature is radically contingent and, to be fully intelligible, requires an ontological foundation. Instead, for the atheist, nature is self-sufficient and self-intelligible. The atheism of naturalism is not the negation of the proposition *God exists*, but the negation of an entire metaphysical structure based on experience, which qualifies nature as contingent and not self-sufficient. Following this line of thought, Alvin Plantinga has intelligently observed that naturalism subscribes to a vision of nature that leads to epistemological scepticism and its own self-confutation.³⁰ The movement of the new atheism, therefore, is part of a “physicalist” conception of naturalism in which philosophy is absorbed within physics. Better said, there is nothing that can “transcend” the physical-mathematical realm of science—not even human thought or the philosophy it generates.

In practice, to think that a “scientific naturalism” may exist—that is, a philosophical immanentism based on the methods of the natural sciences—and that such a naturalism can justify a “scientific atheism” towards the God of Judaeo-Christian Revelation is the result of a misunderstanding. This misunderstanding arises from

²⁹ Cf. Steward Goetz and Charles Taliaferro, *Naturalism* (Grand Rapids, MI: Eerdmans 2008). According to Mario Micheletti, “The conflict between naturalism and theism does not concern different scientific theories of worldly events, but is a contrast of a metaphysical nature [...]. Theism is certainly not an alternative to science, but to the *metaphysics* of naturalism.” Micheletti, *Nuovo ateismo, ateologia naturale e “naturalismo perenne”*, 106.

³⁰ Cf. Alvin Plantinga, “Introduction,” *Naturalism Defeated?* (ed. J. Beilby; Ithaca - London: Cornell University Press, 2002), 1.

attributing to the Christian God the role of a “criterion for explaining the world” and in sanctioning, immediately afterwards, that the sciences have decreed his death. In reality, as Henri de Lubac earnestly pointed out, such a God does not need to die because he was never born and never existed.³¹ Christianity, along with the philosophical tradition that has sustained its theological teachings, never opposed scientific thought with the aim of presenting its religious view as *an alternative description of the world*. This remains true even when Christian theology decided to marry scientific visions of the cosmos that later proved to be insufficient, as happened in the case of geocentrism. The subject of the discussion was never whether the celestial bodies were moved by natural laws or by the arm of the Creator, but, rather, which biblical exegesis must be employed in order to accord with the most accredited knowledge of the world at the time. The Christian God certainly has to do with the real world, which is also the world of science, but has never been proposed as “the God of scientific explanation.” The latter may be true for some other religious traditions present on the Earth, but certainly not for Judaeo-Christian Revelation. For this reason, the basic procedure of new atheists to charge religion with the task of explaining reality by resorting to unobservable agents, then declaring this explanation obsolete, is not appropriate. Christopher Hitchens’ *ultimatum*, according to which “thanks to the telescope and the microscope, [religion] no longer offers an explanation of anything important,”³² may have an impact on the public, but it does not find in Christianity any veritable basis for application, either in the epistemological domain or in the field of historical research. The purpose of Christian preaching was not to reveal which kind of supernatural forces God employed to move the world, but to announce that God was the Creator of the world, and he loved this world so much “that he gave this only Son, so that everyone who believes in him, might not perish but might have eternal life.” (John

³¹ Cf. Henri de Lubac, “Lo sviluppo della non credenza,” *Religione e ateismo nelle società secolarizzate* (eds. R. Caporale and A. Grumelli; Bologna: Il Mulino, 1972), 258. According to John Haught, this false image of God was actually alive in some theological settings of early modernity, but he declares it dead, as de Lubac did, a long time ago. “The real work of atheism had already been accomplished in the early modern age by careless Christian thinkers who reduced God to a first efficient cause in a physical system. So the new, soft-core atheists have arrived at the scene of God’s murder far too late. On each new page of their manifestoes we find them pummeling a corpse.” Haught, *God and the New Atheism*, 43–44.

³² Hitchens, *God Is Not Great*, 96.

3:16).

On the levels of catechesis and evangelization, confrontation with the new atheism suggests to both pastor and theologian the importance of finding an efficacious communication aimed at overcoming commonplaces, and also the need to answer in a convincing way doubts and perplexities that public opinion raises concerning Christian religion. It is necessary, for instance, to teach how to read those pages of Sacred Scripture that seem to upset common sense or contradict a scientific view of nature. In those episodes of the past that negatively implicated the Church or the Christian faith, historical truth must be highlighted, specifying what relates to objective teachings and what concerns instead the actions and errors of individuals. Theologians and pastors should convey clear messages and plain answers to show the insufficiency of materialism, the truth of human freedom, the transcendence of the human personal *self* in relation to nature and matter, and the legitimacy of human questioning about the meaning of life, in a manner that addresses the farmer as well as the philosopher. In the cultural field, the true image of science must be promoted so as to overcome an instrumental and impersonal conception of scientific activity and, above all, to warn against the ideological drifts and sophistic manipulations often suffered by science.

It is necessary to give voice to the protagonists of scientific endeavors, to those who have patiently built scientific progress and underscored the existential, aesthetic, and sapiential dimensions of the study of nature. This voice should emerge from the mass media din, contrasting those who claim to represent the scientific community and its tradition but, in reality, speak on only a personal basis. Paradoxically, it is by studying science better, and by knowing more closely its limits and its foundations, that the new atheism is better tackled. Once again, it would be very useful to propose testimonial and biographical paths that allow the lives of great scientists to speak in their own words, their feelings towards nature, and their motivations to do science. An important role is played by those believing scientists who are active in mainstream research, and whose greater visibility is essential today for the evangelization of culture and academy. Actually, the philosophical and interdisciplinary formation of these believing researchers depends on a pastoral care that is more attentive to intelligence and culture, sufficiently familiar with the language of science, and aware of the

context in which scientists work and think.³³

Finally, I suggest safeguarding the true meaning of the expression “scientific humanism,” with which the new atheists present science as a source of progress and humanization standing in opposition to religion (and to Christianity, in particular). In reality, the contribution that science provides to human progress is made possible only thanks to the ethical and sapiential dimensions of scientific knowledge, which concern the scientist as human person, not the scientific method. History shows how Christianity did not inhibit scientific progress but, rather, contributed to its birth. Nor has Christianity hampered the humanization of society (consider, for instance, the establishment of hospitals and other charitable institutions), but has supplied and continues to supply specific resources centered on charity and sacrifice, which are capable of transforming scientific progress into authentic *human* progress.³⁴ The Wisdom books of the biblical tradition and the logic of Christ’s Paschal Mystery, centered on sacrifice and self-giving, are fully in tune with the promotion of a “sapiential scientific humanism.” It is in light of such humanism that scientific knowledge is revealed as an essential part of human dignity, and the study of nature can find rescue from the drift of naturalism.

³³ Cf. Alister McGrath, “Bestseller Atheisms. The New Scientism,” *Atheists of What God?* (ed. S. Lefebvre et al.; London: SCM Press, 2010), 11–19.

³⁴ Cf. Christopher Dawson, *Religion and the Rise of Western Culture* (1950) (New York: Doubleday, 1991).

CHAPTER 4. THE QUESTION OF GOD WITHIN THE CONTEXT OF SCIENCE: THE LOGOS OF SCIENTIFIC RATIONALITY AND ITS OPENNESS TO THE ABSOLUTE

In contrast to the way in which new atheists negligently manoeuvre the natural sciences, there are areas in which scientific culture can play, with regard to the question of God, a fruitful and methodologically rigorous role also profitable for theology. The sciences, for example, can (and perhaps must) submit to critical knowledge the notion of God affirmed by religions, at least to the extent that this notion involves, directly or indirectly, aspects that are also the object of empirical analysis. Think, for instance, of the history of the cosmos and of life, the biological origins of the human being and, generally speaking, all natural phenomena of which we have some scientific experience. In order to tackle this criticism and show that the notion of God is not irrelevant, religious thought usually introduces some epistemological clarifications and employs in some cases—as Christianity certainly did—an appropriate philosophical framework, especially in regards to the relationship between God and nature. Intelligently using the insights coming from metaphysics, logic, philosophy of nature, and theodicy, Christian theology has striven to demonstrate throughout history that faith in God who created heaven and earth does not conflict, either ontologically or epistemically, with any scientific knowledge of physical reality. Such argumentation was carried out in a more or less convincing way, but it was always part of the theological agenda. Fundamental Theology benefits from the theoretical acquisitions of those philosophical disciplines, without the need of presenting their results again as part of its specific study program.

However, Fundamental Theology has a task that properly belongs to it alone. In tune with its mission to develop a propaedeutic to faith, a *praeparatio evangelii*, after making clear (against philosophical naturalism) that the notion of God is not irrelevant to those who study nature, Fundamental Theology must show to what extent Christian *kerygma* is meaningful also for those who live embedded in scientific rationality. Being in tune with its

task of listening to the public square, as *auditus temporis*, Fundamental Theology seeks to understand *why* the question of God emerges in books of science popularization or in the philosophical reflections of scientists, and to examine the areas—scientific or existential—where this question is raised.

In scientific culture, references to God sometimes arise in relation to “instances of totality.” That is, they arise with regard to questions about *the whole of reality*, to which scientists today seem to have access in their work. Scientists encounter this kind of question (often indicated as “big questions”) when they tackle the theme of origins, wonder about the existence of finality in nature, investigate the cause of information or the reason for the intelligibility of nature, or consider the ultimate scenarios towards which the cosmos, and life in it, move. A cognitive enterprise that starts from reality, scientific research is, above all, a *personal* activity that inevitably intercepts questions of meaning. References to the notion of God, therefore, do not concern only debate about the possible relevance of this “hypothesis;” they also appear as the horizon of the human quest for meaning. Facing this horizon, the researcher questions himself and, not infrequently, steers his gaze and opens his mind towards this horizon. When we study nature free from ideological conditioning, subscribing to a cognitive realism and adopting a non self-referential view of logic and language, then scientific research experiences true “openings” both in the epistemological and anthropological fields. Such openings are recognized implicitly when science perceives the presence of some threshold and when one speaks, for example, of the “limits of science.”

However, I think that the expression “limits of science,” albeit widely used, could be improved. Actually, in a deeper sense, these limits or thresholds indicate rather *transcendences* of science,¹ “windows” out of which the researcher glimpses. Looking through and beyond the formalism and method of science, he or she perceives a *logos* that does not alter or contrast with scientific discourse, but rather seems to found its rationality. The windows, as such, belong to the house of science; that is, to the empirical method and its formalism. However, the panorama that the researcher, as a

¹ Cf. Mariano Artigas, *The Mind of the Universe* (Radnor: Templeton Foundation Press, 2000). On the problem of ontological and gnoseological foundations in scientific activity, see Alberto Strumia, *The Problem of Foundations. An Adventurous Navigation from Sets to Entities, from Gödel to Thomas Aquinas* (London: Book Depository International, 2012).

human subject, sees beyond the windows transcends what is known inside the house. The theologian could show profitably that these “transcendences” correspond to questions science recognizes as reasonable, but to which science cannot answer employing only its own methodological tools. Such transcendences point towards some specific “areas or horizons of meaning,” and it is precisely within these areas that a philosophical (yet also religious) notion of God proves to be significant. When regarded with philosophical rigor – especially using the framework of analytic philosophy – this notion can support the intelligibility of a theological discourse on God when addressed to men and women of science, paving the way to the Christian message. Philosophers like Alvin Plantinga and Richard Swinburne, using different metaphors or images, have sought to propose such a conceptual approach.

Here, I would like to examine four “openings” shown by science that correspond to four specific transcendences. They are: a) the incomplete character of formal language, indicating the opening of science to a semantics that transcends syntax; b) the ontologically incomplete character of the physical-contingent reality, indicating the opening of science to a metaphysically necessary Foundation of being that transcends the empirical level; c) perception of the rationality and intelligibility of the cosmos, which transcends matter and indicates the opening of scientific research towards the notion of *Logos*, and, finally; d) the openness of researchers’ activity towards the search for truth and ultimate meaning, which transcends science but makes science possible. The first and the second openings concern the scientific method. The third and the fourth pertain to scientific activity, understood as a personalistic-existential activity whose purpose and philosophical presuppositions are necessary to fuel any research. The following considerations will focus mainly on the physical and mathematical sciences, but it would be possible to develop an analogous path starting from the fields of biology and neuroscience.

4.1 The incompleteness of scientific language and the search for its foundation: room for semantics beyond syntax

As we know, one of the major claims of logical Neopositivism was to achieve a scientific formalism – exhaustive, self-consistent, and able to define and know all the entities of the material world (in fact the only possible “world”, in such a view). This program was based on the idea that it is possible to elaborate unambiguous and

formally complete axiomatic languages. In this approach, all meaningful discourse should be based on one of these languages, thus making it possible to separate what has meaning from what does not. Historically, the first important step in this program was the re-conduction of the language of mathematics to logic, started with the axiomatization of natural numbers by Giuseppe Peano (1858–1932). This was followed by the axiomatic theory presented in David Hilbert's work *Foundations of Geometry* (1899) and, above all, by the axiomatization discussed in Bertrand Russell and Alfred North Whitehead's *Principia Mathematica* (1910–1913). Once this logic was recognized as a truly *foundational* and complete theory, mathematics would automatically enjoy these properties and then extend them to all the sciences that work by using mathematics; that is, to all the empirical knowledge typical of the natural sciences, at least as they were being treated in the first decades of the XX century. In the field of the philosophy of language, a similar program was undertaken by the first Wittgenstein, author of the *Tractatus logico-philosophicus* (1922). One of the aims of his *Tractatus* was to verify the objections that logical Neopositivism had articulated concerning metaphysics and religious language. The core of these objections was that any discourse transcending the empirical level (such as a discourse on God) would not possess the characteristics of a universal language, unambiguous and communicable. In this way, the notion of God was also submitted to critical scrutiny.

However, this program proved to be impracticable, both logically and linguistically. Logically, it clashed with the impossibility of defining, in an axiomatic form, a formally complete logical-mathematical system that would account for all the elements necessary for formulating every decision. Within a linguistic context, the conclusion emerged that to make a particular language or the formalism of a system truly comprehensible, it was necessary to incorporate the language or system within a meta-language that was external to the initial one; that is, a meta-system endowed with more general semantics. During the following decades, the analysis was extended as well to specific types of language, such as those regulating computability in computer systems. In all these cases, a similar result always occurred: the search for a complete and self-consistent formalism led to paradoxes and antinomies. In short, we came across an irreducible rapport—manifested on several levels and within different contexts—that in the relationship between *semantics* and *syntax*, one couldn't be reduced to the other. There is

no complete syntactic system (rules to follow) that can prescind from semantics (meaning to be given to objects that follow the rules). If a system is complete from the syntactical point of view, then semantics must be explored on bases external to the system itself. The language-object (the language “of which” we speak) must necessarily be distinguished from the meta-language (the language “in which” we speak).

The authors who highlighted the fallacy of the Neopositivist program worked in different research contexts. Kurt Gödel found this result starting from theorems concerning the incompleteness of axiomatic systems (1931). Alfred Tarski showed the impossibility of defining all the criteria of truthfulness within a closed system to prove it meaningful and the corresponding need for a more general meta-language (1935). Alan Turing highlighted the intrinsic limits of every automatized logical operation (1937), limits later confirmed by Alonzo Church and Stephen Kleene in the context of present-day computer science. Georg Cantor (1845–1918) was also an *ante litteram* witness to such formal incompleteness when, attempting to systematize the numerability of sets and the notions of infinity within them, he came to the conclusion that there should “exist” notions of infinity that “did not belong” to mathematics.

In this respect, the most emblematic itinerary was the one followed by Ludwig Wittgenstein (1889–1951). Primarily committed to founding a language that would remove all ambiguity and nonsense from philosophical discourse by means of a rigid connection between meaningful statements and the world of facts, Wittgenstein ended up implicitly showing that such a language did not exist. To have a fully non-ambiguous language, he had to accept incorporating semantic content and truth criteria coming from what the reality of the world cannot formally say, taking them from the meanings associated with testimony and living experience. Contrary to what the Neopositivists argued, transcendence and the existence of an Absolute were not denied in Wittgenstein’s reflection, but rather grasped, within the philosophy of language, as an “opening” of language itself. Such an opening might be expressed as a reference to the “ineffable”; to a meaning and foundation external to any formal system, without which language itself would have been impossible. When one seeks a criterion of truth to confer meaning upon the concepts of our language and, more generally, when ethics calls into question the reasons for our living (including the reasons for engaging in philosophy), then space emerges for something that

transcends the empirical order. For the Wittgenstein of the *Tractatus*, it is impossible to deny the problem of meaning. But the fact that it cannot be expressed “within the world of facts” makes it, in scientific terms, a pseudo-problem. If only it were possible to distance ourselves from the logical world of facts, from the empirical world of the sciences, then we would become aware of meaning, being able to indicate it as “something mystical”:

The sense of the world must lie outside the world. (6.41)

We feel that even when all *possible* scientific questions have been answered, the problems of life remain completely untouched. (6.52).

There are, indeed, things that cannot be put into words. They *make themselves manifest*. They are what is mystical. (6.522)

It is not *how* things are in the world that is mystical, but *that* it exists. (6.44)

My propositions serve as elucidations in the following way: anyone who understands me eventually recognizes them as nonsensical, when he has used them – as steps – to climb up beyond them. [...] He must transcend these propositions, and then he will see the world aright. (6.54)²

From the point of view of the openness of the sciences towards meaning, it is interesting to note that reference to the “ineffable” comes from an analysis internal to the scientific method. It is from within, not without, that science comes across the foundations of its knowledge. That is, the need for a meta-language arises as a matter of the limits of language, recognized within the language itself. The window that allows the researcher to see beyond the house is built together with the house. And precisely in the house, questions arise that lead researchers to look out towards wider panoramas. The use of the analysis of language for critical assessment of the notion of God simultaneously encounters *both the limits and the transcendence* of our knowledge: man is more than his language. The analysis of language, in touching the limits of human rationality, reveals its ineffability.³ The fact that the philosophy of *Tractatus* contained an

² Ludwig Wittgenstein, *Tractatus Logico-Philosophicus* (London - New York: Routledge, 1974).

³ “We are in fact something more than our language, and for this reason we cannot enter completely into the language to allow it to express us entirely. Misunderstanding cannot but fall on us and religious ineffability is, at the root, human ineffability. Analytical research, in touching the linguistic limitations of the human rationality, reveals us what is human.” Luciano Baccari, “Ateismo

implicit openness towards transcendence (although excluding a language for it) is confirmed by the criticism directed toward Wittgenstein by the exponents of the Vienna Circle. Russell, in particular, harshly criticized the *mystical* outcomes of the *Tractatus* as a barrier that would prevent his disciple from continuing to think. In reality, thanks to Wittgenstein's work, a significant current of contemporary analytic philosophy – represented by authors like S. Toulmin, J. Austin, G. Ryle, N. Malcolm, R. Swinburne and F. Kerr – has abandoned Neopositivism and moved towards the study of the conditions of possibility of a meta-language, in which the question of God is again a legitimate object of linguistic philosophizing. Wittgenstein scholars, such as Elisabeth Anscombe and John Haldane, also provide a meeting point between the analysis of language and some aspects of the metaphysics of Thomas Aquinas.

Many authors agree, therefore, that the semantics of scientific language is not exhausted by the formalism of the empirical sciences. Rather, there is significant room for notions that belong to a meta-language transcending empirical analysis. Those who have shown the incompleteness of logical-mathematical formalism – as well as Wittgenstein's intuitions about the possibility, or rather the necessity, of transcending language – converge in pointing out that those who maintain an openness to meaningful notions beyond the empirical order, such as that of a logos about God, have a reasonable attitude, accredited by a practicable philosophical itinerary.

4.2 The quest for the foundation of reality: the ontological incompleteness of the physical universe and the ultimate understanding of the world's existence

The logical impracticability of a self-referential science has its equivalent at the ontological level. Scientific formulations that intend to be based upon axiomatic-logical language cannot manage all the criteria of truth and meaning they need. Such is the case also for the empirical analysis of physical reality as a whole, which requires the extra-empirical, ontological assumptions that things *are* (i.e., they *have a being*) and *are in a certain way* (i.e., they *have an essence or nature*). Both existence and the formal specificity of each material entity, which the experimental method presupposes, are expressions of a *metaphysical substratum* that science does not create, but rather

semantico, fede razionale, fideismo," *Rassegna di Teologia* 37 (1996): 483–504, here 503.

receives. At the base of all the natural sciences lies a philosophy of nature, and at the base of all philosophy of nature lies an ontology. Since science deals only with transformations between entities, it cannot justify fully and exhaustively why they exist, nor why they are the way they are and not otherwise. More radically, science seems unequipped to explain what *being* is; that is, the ultimate reason for existence. In other words, the ontology on which every philosophy of nature is based and which, in turn, supports the work of the natural sciences, will encounter sooner or later the problem of the contingency of being. Namely, for science to be able to study its objects, these objects must be received as *entities* (in Greek, things that have a being). Acknowledging this state of affairs opens scientific knowledge towards the perception of an *ontological foundation*. To avoid the problem of contingency is possible, but it ends by attributing to matter the properties of a philosophical Absolute (eternity, necessity, and the first uncaused cause, among others), even though experimental science cannot confirm all these attributes of matter but seems, rather, to convince us of the contrary. When the problem of contingency is apparently solved in this way, one flows into the philosophical position of materialism—only matter, without beginning and forever—which is not required, as such, by any scientific theory.

To deny the existence of an ontological foundation as the cause of the being and formal specificity of all things (which provides from outside the “physical world system” precisely what, by analogy, semantics would provide from outside of syntax) leads to paradoxes and problems of incompleteness similar to those that have emerged in the field of logic. This issue is especially evident in physical cosmology, for example when we intend to attribute to a coherent mathematical formalism (which is purely *descriptive*) the value of reason sufficient to explain the existence of the cosmos described or represented by that formalism. We encounter this question again when we seek to give reason for the existence and very nature of time from within time itself. Finally, this problem arises when cosmology endeavors to “give reason for the whole,” in search of a law or a totalizing formulation that could explain all of reality, that is a “theory of the whole” (TOE - *Theory of Everything*). In all such cases, antinomies and problems of incompleteness inevitably arise. We find these philosophical positions in some works of science popularization—such as some books by Stephen Hawking—and especially through the materialistic reading provided by Carl

Sagan's original presentation.⁴ From the epistemological point of view, we also must remember the overcoming of reductionism and the determinist mechanism provided by the physics of the second half of the 20th century. These approaches show the impracticability of a scientific analysis in which all natural phenomenology is regulated by criteria of rigorous decomposition and predictability. In biology, but now also in chemistry and physics, we come across systems for which the whole is greater than the sum of its parts (thus leading to a reappraisal of the philosophical notion of “form”), while the discovery of complexity confronts us with physical or biological systems whose development remains mathematically unpredictable over time. Also for these reasons, a “theory of everything” is impracticable.

When cosmology seeks to investigate what has caused the coming into being of the entire cosmos, its analysis necessarily must start from some measurable quantity implicitly assumed – a specific topology, space-time, physical vacuum, or virtual energy, as examples – that already exists, and from which may be derived the probability that some other entities have to exist. Paul Davies recognizes it with simplicity:

However successful our scientific explanations may be, they always have certain starting assumptions built in. For example, an explanation of some phenomenon in terms of physics presupposes the validity of the laws of physics, which are taken as given. But one can ask where these laws come from in the first place. One could even question the origin of the logic upon which all scientific reasoning is founded. Sooner or later we all have to accept something as given, whether it is God, or logic, or a set of laws, or some other *foundation for existence*. Thus ultimate questions will always lie beyond the scope of empirical science as it is usually defined.⁵

It is noteworthy that, a century earlier, James Clerk Maxwell had spoken, using almost identical words, in a scientific period when general relativity and quantum mechanics were still unknown.⁶ This

⁴ Cf. Carl Sagan, “Introduction,” to Stephen Hawking, *A Brief History of Time* (London: Bantam Books, 1988), x.

⁵ Paul C. Davies, *The Mind of God. Science and the Search for Ultimate Meaning* (New York: Simon & Schuster, 1992), 15. Italics are mine.

⁶ “Science is incompetent to reason upon the creation of matter itself out of nothing. We have reached the utmost limit of our thinking faculties when we have

shows that the great philosophical questions represent kinds of historical and conceptual “invariants,” which cross the scientific knowledge of all times and open towards that which transcends science.

The much-discussed “problem of the origin” of the universe – which a clumsy debate would see as a “test” for the hypothesis concerning God, depending on whether we are dealing with cosmological models that predict a Big Bang or not – reveals both a logical incompleteness and the need for an ontological foundation. In fact, one realizes that it is impossible to give a reason for the existence of time while acting from within time itself. In the *standard* cosmological models that predict an initial space-time singularity, the equations that describe the state of the “system-universe” cannot be extended to time $t=0$, simply because they are not mathematically defined on that origin. Even in those cosmological models that eliminate dependency on time, as with some quantum models, there is always a need to introduce some previous physical or mathematical quantities, such as a geometry that describes probability functions. This *philosophical* incompleteness already was highlighted centuries ago by Thomas Aquinas when he made clear that the origin of all things is not a passage from power to act, and time cannot be a measure of that radical origin: “Things are said to be created in the beginning of time, not as if the beginning of time were a measure of creation, but because together with time heaven and earth were created [...]. But creation is neither movement nor the term of movement.”⁷

Why does contemporary cosmology, more than other disciplines, perceive the need for meta-physical presuppositions that make possible the scientific analysis of physical reality? This depends on the tension it experiences towards the conceptualization of the entire universe as if it were *a single intelligible object*. Such

admitted that because matter cannot be eternal and self-existent, it must have been created. It is only when we contemplate, not matter in itself, but the form in which it actually exists, that our mind finds something on which it can lay hold. That matter as such should have certain fundamental properties – that it should exist in space and be capable of motion, that its motion should be persistent, and so on, are truths which may, for anything we know, be of the kind which metaphysicians call necessary. We may use our knowledge of such truths for purposes of deduction, but we have no data for speculating as to their origin.” James Clerk Maxwell, *Scientific Papers* (1890), 2 vols. (ed. W.D. Niven; Cambridge: Cambridge University Press, 2011), 2: 375.

⁷ S.Th. I, q. 46, a. 3, ad 1 and ad 2.

conceptualization is now favored by a global evolutionary understanding of the cosmos and a better understanding of its phenomenology on a large scale. This prompts cosmology to move from the plane of efficient causality to that of formal and final causalities, thus perceiving the need for wider levels of abstraction and ultimately encountering the “problem of foundations.” In registering its ontological incompleteness, the scientific representation of the cosmos also may yield to some *a priori* assumptions, idealistic in character. This happens when, instead of remaining open to reality and learning from reality, the theoretical elaboration of cosmological models converts this discipline into a mathematical game. Any search for the reality of things is then replaced by the search for coherence and consistency in the models, no longer concerned with binding the theory to physical observables. Such are, for example, those cosmological models that postulate the existence of infinite universes, independent and unable to communicate with each other, or those theoretical statements that could never have an experimental counterpart and nevertheless are presented as if they were scientific evidence of something real. In this respect, cosmology is not only the science of the universe, but also the science of the assumptions that must be made in order to have a science of the universe.⁸ The issue at hand concerns on what basis to ground such assumptions: whether to opt for a philosophical perspective that allows science to remain faithful to its realistic and empirical vocation or, instead, to adopt an idealistic and self-referential perspective. In the first case, it is necessary to postulate an ontological foundation, thus allowing science to show an opening towards an area of meaning in which a discourse on God, as the uncaused cause of the whole of reality, turns out to be meaningful also for the person of science. In the second case, this semantic issue can be disregarded at the ontological level, but the

⁸ More than 50 years ago, one of the first university textbooks on cosmology admitted in its introduction: “An individual scientist may perhaps believe that he pursues his work without considering philosophical questions, but this belief is illusory and arises simply because the scientist has unconsciously acquired some particular metaphysical outlook”. George C. McVittie, *General Relativity and Cosmology* (Urbana: University of Illinois Press, 1963), 3. And later on, another more recent textbook concurred: “Subtle influences of personal philosophy, cultural, and in some cases, religious background lead to very different choices of paradigm in many branches of science, but this tendency is particularly noticeable in cosmology...”. Peter Coles and Francesco Lucchin, *Cosmology. The origin and Evolution of Cosmic Structure* (Chichester: Wiley and Sons, 1995), xii.

attempt to close science within only syntax will sooner or later encounter troubles at the logical level. That is, some problems of logical-formal incompleteness remind adherents of the scientific method once again to reflect upon its own foundations.

Those who study physical reality free from ideological conditioning or anti-metaphysical prejudices have no difficulty in admitting that any scientific formulations must rest conceptually on two basic metaphysical notions, those of being and of nature. In order to be studied scientifically, things need to be (*being*) and be something (*nature*). These notions refer to a substratum that transcends scientific rationality, but is nevertheless perceived by those who work within that rationality. In the end, this is why the metaphysical and theological notions of "creation" and, therefore, the idea of a "Creator," neither hinder the scientific method nor inhibit its autonomous development. A Creator who is the cause of the being (act of existing) and nature (formal specificity) of each entity does not interfere with a scientific description of the world. Such a description is consistent with evidence that the universe exists, and exists with properties that science does not totally deduce from the inside of its method. These make science possible, but their ultimate cause is outside science. In short, we need metaphysical assumptions that precede and ground any observable, formal determination.

4.3 The recognition of order and rationality: acknowledging the existence of a *logos ut ratio*

Scientists willingly reflect on for the rationality of the universe, ask for the cause of the intelligibility of physical reality and the stability of the laws of nature. The universe can be understood in terms of mathematics; its laws are constant in time and space; elementary particles are all strictly identical, and the physical properties of different chemical elements follow precise and ordained structures. Pointed out by James Clerk Maxwell, the enigma of intelligibility was discussed by Max Planck, Louis De Broglie, and especially by Albert Einstein. More recently, it was examined attentively by Paul Davies, John Barrow, and Roger Penrose, among others. The physical universe manifests a sort of "rational fundament" that researchers inevitably encounter during their work and whose lawful behavior they extend to the status of a general and unquestionable assumption of their analysis of nature. Louis De Broglie found it surprising that to make scientific inquiry

was ultimately possible – that is to say, our reason provides us with adequate means to understand what is happening around us, in nature. ⁹ Albert Einstein evinced the same perception in a well-known letter to his friend Maurice Solovine:

You find it strange that I consider the comprehensibility of the world (to the extent that we are authorized to speak of such a comprehensibility) as a miracle [*Wunder*] or as an eternal mystery [*ewiges Geheimnis*]. Well, *a priori* one should expect a chaotic world which cannot be grasped by the mind in any way. One could (yes *one should*) expect the world to be subjected to law only to the extent that we order it through our intelligence. Ordering of this kind would be like the alphabetical ordering of the words of a language. By contrast, the kind of order created by Newton's theory of gravitation, for instance, is wholly different. Even if the axioms of the theory are proposed by man, the success of such a project presupposes a high degree of ordering of the objective world, and this could not be expected *a priori*. That is the 'miracle' which is being constantly reinforced as our knowledge expands. There lies the weakness of positivists and professional atheists who are elated because they feel that they have not only successfully rid the world of gods but 'bared the miracles'.¹⁰

In recent decades, the debate on the status and meaning of the laws of nature has been raised and kept alive especially by authors directly involved in scientific research, rather than by philosophers of science. "The concept of law," Paul Davies observes, "is so well established in science that until recently few scientists stopped to think about the nature and origin of these laws; they were happy to simply accept them as 'given.' Now that physicists and cosmologists have made rapid progress toward finding what they regard as the 'ultimate' laws of the universe, many old questions have resurfaced. Why do the laws have the form they do? Might they have been otherwise? Where do these laws come from? Do they exist independently of the physical universe?"¹¹ Encouraged by increasingly satisfactory formulations of a global and coherent evolutionary framework, scientists are surprised about the universality and reciprocal connection of the laws of nature, able to

⁹ Cf. Louis De Broglie, *Physics and Microphysics* (New York: Grosset & Dunlap, 1966), 208–209.

¹⁰ Albert Einstein, *Letter to M. Solovine*, March 30, 1952, *Letters to Solovine* (trans. W. Baskin; New York: Philosophical Library, 1987), 132.

¹¹ Davies, *The Mind of God*, 73.

link the physics of the microcosm with that of the macrocosm. They wonder why we have been so successful at expressing them in mathematical form and look for what might be hidden mysteriously in the values of their numerical constants.¹² Although endorsing different epistemological perspectives, the majority of scientists underscore the *given*, objective, and fundamental character of the rationality of the universe and its laws. Scientists can recognize and understand the action and validity of these laws on a universal, cosmic scale. It is not by chance, then, that comments about the order and rationality of the cosmos sometimes evoke the notion of “God,” as Albert Einstein and Paul Davies demonstrate:

Certain it is that a conviction, akin to religious feeling, of the rationality and intelligibility of the world lies behind all scientific work of a higher order. The firm belief, which is bound up with deep feeling, in a superior mind revealing himself in the world of experience, represents my conception of God.¹³

Through my scientific work I have come to believe more and more strongly that the physical universe is put together with an ingenuity so astonishing that I cannot accept it merely as a brute fact. There must, it seems to me, be a deeper level of explanation. Whether one wishes to call that deeper level ‘God’ is a matter of taste and definition.¹⁴

¹² For a more detailed discussion of the laws of nature in the framework of the relations between science, philosophy, and theology, see Giuseppe Tanzella-Nitti, *Laws of nature* (2008), INTERS, DOI: 10.17421/2037-2329-2008-GT-3. Most scientists, aware of the revisable and provisional character of the laws they use, underscore their descriptive, rather than explanatory, capacity. In order to highlight how the “legality” of natural entities points to a basis of rationality, however, it is useful to underscore the difference between *scientific laws* and *laws of nature*. While the first are expressed in a mathematical form that can be revised and improved, the second are not subject to any formalization as they constitute the metaphysical basis for the rationality of scientific and mathematical laws. For example, we can express the action of the law of gravity or the property that a mass has of attracting other masses (law of nature) using different formulations, which are only approximate and revisable (scientific laws) according to our different representations of mass, space, and time from Newton to Einstein. In light of this difference, we can read and better understand the statements of Richard Feynman, *QED. The Strange Theory of Light and Matter* (Princeton: Princeton University Press, 1985), 10; and those of Paul Davies, *The Mind of God*, 81.

¹³ Albert Einstein, “Principles of Scientific Research” (1918), Albert Einstein, *The World as I See It* (London: J. Lane, 1955), 131.

¹⁴ Davies, *The Mind of God*, 15.

The contemporary debate on the rationality of cosmic structure includes reflection and criticism on the so-called “Anthropic Principle.” In its experimental approach (Weak Anthropic Principle)—which is quite different from its philosophical and somewhat idealist approach (Strong Anthropic Principle)—this principle points out the coherence and delicate coordination existing among the numerical parameters that govern the physics and chemistry of our universe on a large as well as on a small scale. Some experimental evidence shows that only a universe having laws of nature and physical-chemical properties as ours could have produced within it conditions suitable for hosting intelligent observers. The laws and properties of the cosmos—such as the numerical constants that rule the mutual ratios existing among the four fundamental forces (gravity, electromagnetic, weak nuclear, and strong nuclear)—seem to be set by not by chance, but *finely tuned* to the conditions that make life possible. If the appearance of life in the universe were accidental, without any cosmic privilege, there would be no reason *a priori* to expect a correspondence between our existence, the constitution of our intellect, and the physical structure of the physical world. The possible implications associated with such correspondence can be removed only by postulating the existence of infinite universes, of which ours alone would be the *right one* because of the observational selection caused by our same questioning.¹⁵ However, it should not be forgotten that the scientific method cannot demonstrate whether rationality, intelligibility, or order correspond to a “planned design.” In fact, the empirical sciences cannot infer the existence of a final, intentional causality. They merely can highlight the lower levels of this finality, perceiving it as “coherence” and “rationality,” or even as “teleonomy” (in biology). Consequently, the “rational foundation” that science envisages in its research work may not refer to anything (or better said to Anyone) beyond the laws themselves. This explains the frequent use of expressions such as “cosmic code,” “intelligent cosmos,” “cosmic mind,” and “theory of everything” (understood as

¹⁵ The bibliography on the Anthropic Principle is very broad. The most exhaustive treatment still remains today in the monograph by John Barrow and Frank Tipler, *The Anthropic Cosmological Principle* (Oxford: Clarendon Press, 1986); cf. also Paul Davies, *The Cosmic Jackpot. Why Our Universe Is Just Right for Life* (New York: Orion, 2007). Philosophical and theological aspects are summarized in Giuseppe Tanzella-Nitti, *Anthropic Principle* (2005), INTERS, DOI 10.17421/2037-2329-2005-GT-1.

a kind of totally immanent, universal law). According to some authors like Freeman Dyson, the perception of rationality does not refer to a notion of God, but simply to some form of Intelligence: "I conclude from the existence of these accidents of physics and astronomy that the universe is an unexpectedly hospitable place for living creatures to make their home in. Being a scientist, trained in the habits of thought and language of the twentieth century rather than the eighteenth, I do not claim that the architecture of the universe proves the existence of God. I claim only that the architecture of the universe is consistent with the hypothesis that mind plays an essential role in its functioning."¹⁶ In this case, we are faced with an implicit pantheistic position, where the universe and the Intelligence that governs it just coincide. This position can be overcome only by a subsequent abstraction, highlighting the "problem of contingency": If the cosmos has a mind immanent to it, then such a mind would be contingent like the cosmos itself. It seems more reasonable to hypothesize the existence of an Absolute that gives reason for both the rationality of physical reality and the necessity of its own existence as a necessary Being, which is not "one with the world," but "Other from the world."

Beyond the different philosophical perspectives through which scientists face (and express) their perception of ultimates—that is, the existence of some transcendent Foundation that gives reason for the being and intelligibility of all reality—what lies at the very core of this insight? Although some theologians hastily could label this experience as something colored by pantheism or deism, it does open to meaningful and radical questions: Why is the universe rational? Why are its laws intelligible? Why is there a fine-tuning between the structure of the cosmos and the laws that make life possible? When we look closely, all these questions seem to escape the scientist's grasp. They transcend the method of science, but researchers cannot avoid posing them as they arise precisely within the context of their work. They indicate room for an ultimate meaning, a rational area where some secret message perhaps dwells; a "logos" then, which scientists deem worthwhile to ponder.

The natural world's wonder concerning the aesthetic dimension, which is usually associated with the perception of order and rationality, can be added as well to the aforementioned

¹⁶ Freeman Dyson, *Disturbing the Universe* (New York - London: Harper & Row, 1979), 251.

questions. Beauty involves the existential level, but also the very concrete level of mathematical formulas, the symmetrical properties of elementary particles, the structure of crystals and molecules, and the morphologies of living beings. The quest for beauty points beyond the empirical order and is then available, as within all the other philosophical dimensions of scientific research, to host a discourse on the Foundation of being.

4.4 Scientific activity as a dialogue with the Absolute: the perception of a *logos ut verbum*

Another aspect of scientific work can be considered in relation to the question of the Absolute: The scientist understands physical reality—its objectivity and otherness—not only as a source of rational information (*ratio*), but also as a source of the meaning (*verbum*), a meaning that deserves to be investigated, made explicit, and sometimes only contemplated... A meaning whose research justifies why a scientist commits himself with effort and sacrifice *to make science*. The natural world, then, seems to have the character of a “dialogical otherness,” that is, it conveys a “word” that must be listened to carefully and decoded with great care. Werner Heisenberg intended to admit explicitly such “otherness” when he affirmed that the scientist reaches the central order of things or events as directly as one can reach the soul of another human being.¹⁷

As it is easy to notice, the opening towards this new area of meaning presents an anthropological dimension more marked than in the previous cases. As in the perception of the logical, ontological, and rational foundations of scientific knowledge, this fourth “transcendence” is perceived by the scientist as a human person, not by scientific method as impersonal procedure. Scientific method, however, confirms the reasonableness of this transcendence because of the logical incompleteness and ontological openings recognized at an empirical or formal level. Faced with the dialogical nature of reality, the scientist feels involved because he realizes he has to “respond” to the appeal that nature makes to him. And he responds affirmatively precisely *by accepting to do research*, acknowledging the value this work possesses in itself, and affirming the dignity of scientific knowledge in relation to personal flourishing and the

¹⁷ Cf. Werner Heisenberg, *Physics and Beyond. Encounters and Conversations* (trans. A. Pomerans; New York: Harper, 1971), 215.

promotion of humanity in general. The dialogue between man and nature stemming from the perception of a *logos ut verbum* operates at the existential level: it goes far beyond an accord, operating at the epistemological level, between nature's availability to be interpreted by mathematical language and human mind.¹⁸

The answer by which the researcher "says yes" to the meaning brought about by natural reality possesses a moral value. Namely, nature is recognized as being worth studying and capable of motivating corresponding intellectual effort because it is capable of binding the knowing subject to the truth, to a meaning whose ultimate source is outside of the subject himself. It is the ideal motivation and the moral responsibility that Max Planck placed at the origin of his scientific activity: "It is of essential significance that the external world represents something independent of us, something absolute which we confront, and the search for the laws valid for this absolute appeared to me the most beautiful scientific task in life."¹⁹

We could consider many more quotations—from Maxwell to Cauchy, from Cantor to De Broglie, from Brouwer to Einstein—susceptible of developments in various directions, including the possibility of comparing scientific activity to a kind of "revelation", to an experience of the sacred.²⁰ Here I simply wish to point out that scientific activity is consistent with the existence of a semantic area outside scientific formal language, appropriate to a *logos* which indicates not only rationality (*logos ut ratio*), but also a word other-than-human—a word that motivates and challenges those who do research (*logos ut verbum*). The psychological process through which

¹⁸ The classical reference is to Eugene Wigner, "The Unreasonable Effectiveness of Mathematics in the Natural Sciences," *Communications in Pure and Applied Mathematics* 13 (1960): 1–14. "Physicists laboriously master mathematical techniques because experience has shown that they provide the best, indeed the only, way to understand the physical world. We choose that language because it is the one that is being 'spoken' to us by the cosmos." John Polkinghorne, *One World. The Interaction of Science and Theology* (Princeton NJ: Princeton University Press, 1986), 46.

¹⁹ Max Planck, *Wissenschaftliche Selbstbiographie* (Leipzig: J.A. Barth, 1948), 374, cited by Stanley Jaki, *The Road of Science and the Ways to God* (Chicago: University of Chicago Press, 1978), 167.

²⁰ Cf. Enrico Cantore, *Scientific Man. The Humanistic Significance of Science* (New York - Rome: ISH Publications, 1977), 116–132. Cf. also Giuseppe Tanzella-Nitti, *Mystery* (2002), INTERS, DOI: 10.17421/2037-2329-2002-GT-5. Further reference to this theme will be made in chapter 6 of this volume when discussing God's revelation in nature.

the knowing subject encounters the dialogical alterity of physical reality, recognizing it as source of meta-empirical meanings, cannot be qualified as mere intuition. Perceiving natural reality as a word addressed to the researcher is much more than an intellectual insight that allows the subject to organize better and clearly the experimental knowledge he already possesses. It is not merely a cognitive experience of intelligibility or coherence coming from within the subject. It is, rather, the perception of an otherness outside oneself, an otherness having its source in the *res* facing the researcher. Such otherness has to do with the causes, motivations, and existential echoes of scientific knowledge. The perception of this word-logos not only indicates that researchers recognize the existence of information, rationality, or beauty, but rather the fact that they now question the very cause of information, rationality, and beauty.

Within a more philosophical context, we may note that the perception of a logos-word offer scientists a resource for overcoming the pantheistic position (against which the perception of a *logos ut ratio* alone would not be able to protect), by emphasizing that the natural world includes the dimension of an objective and dialogical alterity. The only way to overcome the “problem of contingency” is precisely by admitting it is not nature that pronounces this word, but someone of which nature is the effect, someone who is, at the same time, facing nature and humanity and, therefore, is distinct from them. In this way, acknowledging the *givenness* of physical reality—something that science does not create but receives—a passage from *logos ut ratio* to *logos ut verbum* becomes possible by considering *data as given*. Physical reality is a gift, the effect of a personal donor. The world manifests itself with a surplus of meaning, as a mystery, then conferring epistemic reasonableness to the radical question of whether the world may have a deeper explanation. The search for this further explanation inevitably leads to confronting a notion, or an area for meaning, that cannot be dismissed as nonsense. It is this process, I think, that justifies the possibility of questioning about God even within the context of scientific rationality. This is what Max von Laue—a historian of science who worked in close contact with the leading researchers of the first half of the XX century—wanted to highlight. At the beginning of his *History of Physics*, he wrote about the protagonists of modern science: “The tenet that scientific experience of truth in any sense is ‘theoria,’ i.e., a view of God, might be said sincerely

about the best of them.”²¹

By virtue of the previous four “transcendentals,” scientific knowledge seems able to point towards “ultimate questions,” thus manifesting a “quest for totality”: the search for an explanation of everything, analogously to what myth, religion, and philosophy have already proposed in their respective hermeneutical realms. As scientific knowledge participates in a true search for meaning, this search for a global explanation is not surprising because the adequate horizon of meaning can only be the whole. Originating from the meta-empirical transcendentals illustrated above, such longing is very different from that expressed by the Neopositivist claim, which was committed to providing an exhaustive but immanent and self-sufficient vision of reality. In contemporary science, the instance of totality guided by this search for meaning lies instead in the desire to reach the most fundamental causes on which intelligence can finally rest. However, reductionistic or naturalistic trends are not excluded, especially in cosmology and biology, when intending to offer self-founded cosmovisions of the whole, that is, a “complete history” of the cosmos and of life, including its own foundation. While passionately thematizing the accounts of origins and ultimate purpose, such trends may appear when the scientific method is erroneously declared to be competent in dealing with the problem of the whole and of ultimates. In this case, the quest for totality would cease to be an opening towards transcendence, a quest for truth and meaning. Rather, it closes instead within a monist and, lately, idealistic worldview.

It is thus legitimate to ask: In which aspects could an instance of totality belong to the activity of the natural sciences?²² It cannot be so, obviously, with respect to the *method* or *empirical models* science employs, as these are all measurable and formalized, and due to the well-known problems of self-referentiality and incompleteness raised by criticism internal to the sciences themselves. Ignoring these theoretical constraints would be tantamount to making science fall back into the trends just mentioned. The element of totality can, instead, legitimately belong *to the subject who carries out science*. It is the human subject who understands that truth and meaning must dwell in the whole. If you

²¹ Max von Laue, *History of Physics* (New York: Academic Press, 1950), 4.

²² Cf. Giuseppe Tanzella-Nitti, “Religion and Science as Inclinations towards the Search for Global Meaning,” *Theology and Science* 10 (2012): 167–178.

really seek the truth, you cannot stop merely halfway. Thomas Aquinas had spoken of a “natural” inclination of human beings to know the entire order of the universe, with all its genres, species, and energies.²³ The desire to know the founding causes of everything is the manifestation of a *natural desiderium cognoscendi veritatis* in which the sciences also participate in their own right. The cosmologist who investigates the origin of the universe and its final scenarios; the physicist who explores the forces and fundamental properties that govern the behavior of matter and energy in space and time; the biologist who questions the very nature of life and the language that codifies it, or seeks the unifying reason for its evolutionary processes and its morphological and functional richness. These practitioners each study natural reality, trying to make it a single object of intelligibility and, by their mode of work, express awareness of the fact that the human spirit may be satisfied only by pointing to ultimate causes.

In this way, the natural desire to know the truth and to know the whole, when nourished by a cognitive realism and by sincere openness to the exceeding transcendence of Being, can become an implicit and perhaps unconscious manifestation—for the scientist too—of the most important research: the search for God. This *desiderium naturale videndi Deum* of which Aquinas frequently spoke is the ultimate end of the intellect’s desire, a desire that every human being hosts in the most intimate sanctum of his spirit and in which the scientist also participates when carrying out his intellectual research. “‘The end and good of the intellect are the true’ [cf. *Ethics*, II, 2, 3]. Consequently, the first truth is the ultimate end. So, the ultimate end of the whole man, and of all his operations and desires, is to know the first truth, which is God. Besides, there is naturally present in all humans the desire to know the causes of whatever things are observed. Hence, because of wondering about things that were seen but whose causes were hidden, humans first began to think philosophically; when they found the cause, they were satisfied. However, this search does not stop until it reached the first cause, for ‘then do we think that we know perfectly, when we know the first cause’ [*Metaphysics* I, 3, 1].”²⁴ As proof that we are faced not

²³ “Now, the natural appetite of the intellect (*appetitus naturalis*) is to know the genera and species and powers of all things (*omnium rerum genera et species et virtutes*), and the whole order of the universe; human investigation of each of the aforementioned items indicates this.” C.G. III, ch. 59.

²⁴ C.G. III, ch. 25. Quotations reported by Aquinas are from Aristotle’s works.

with simple hypothetical considerations but rather with an itinerary that many intellectuals have undertaken also in the context of their scientific work, we may be reminded of Antony Flew's experience of the "pilgrimage of reason," as elucidated in his lively and profound self-testimonial book *There is a God* (2007). A philosopher who, for decades, attested the position of a well-argued and consolidated atheism, Flew decided to embrace a deism open to transcendence by alleging, as the turning point of his itinerary, the quest for meaning coming from the activity of the natural sciences.²⁵

Aquinas' text continues as follows: "Moreover, for each effect that he knows, man naturally desires to know the cause. Now, the human intellect knows universal being. So, he naturally desires to know its cause, which is God alone, as we proved in Book Two. Now, a person has not attained his ultimate end until natural desire comes to rest. Therefore, for human happiness which is the ultimate end it is not enough to have merely any kind of intelligible knowledge; there must be divine knowledge, as an ultimate end, to terminate the natural desire. So, the ultimate end of man is the knowledge of God." C.G. III, ch. 25.

²⁵ Cf. Anthony Flew and Roy Varghese, *There Is a God: How the World's Most Notorious Atheist Changed His Mind* (New York: Harper & Collins, 2009)

PART II
GOD'S SELF-REVELATION THROUGH THE CREATED WORLD

Human religious and existential aspirations can be fulfilled only through relationship with a personal being. No answer to our ultimate questions about life and the world satisfies us if this answer is not pronounced by someone – a word that the human being understands and by which he feels understood. The yearning toward the Absolute is a yearning toward a personal being. It is the search for a face, the search for a heart. When philosophy aims at the meaning of the whole and seeks answers that do not admit further references, it flows naturally into religion and leaves room for prayer. The awareness of our self-transcendence, our looking upwards, gradually turns into prayer – into an openness to dialogue, an expectation of a Word, a hope in Someone who hears us, and a hope that He may reveal Himself to us and reveal us to ourselves.

Despite the limits and uncertainties that the notion of “revelation” brings about and the complex hermeneutics – philosophical and religious – that characterize it, it remains true that “personal being” and “revelation” are intrinsically related notions. Revelation is the name of a relationship, and the action of revealing is never limited to the objective content of what is transmitted through the vehicle or intermediary that conveys a message. Revelation is fully accomplished *only when it reaches its addressee*. Only then is it authentically “revelation”, acknowledged as the communication of a personal subject to another personal subject. Revealing is a dialogical term, and even more: since a personal subject can be known only to the extent that he himself desires to communicate – giving himself to others –, then revealing is a way of loving. Wondering about the meaning of existence, wondering if at the origin and foundation of all things there is Someone whose revelation I await ... This is to wonder whether or not there is a personal Word capable of encountering me. It is to hope that there is Someone whose love for me I know and whom I can love. The religious history of mankind has shown that these questions were posed first to nature. *Homo sapiens* formulated them from the outset of his cultural evolution, *precisely as sapiens* and not simply as *erectus* or *habilis*. A Fundamental Theology developed within a scientific context necessarily must address the issue of God’s revelation

through nature, as it is from nature that the human being (who is also part of nature) has wondered about the existence of God and because nature is in itself the object of the natural sciences. Fundamental Theology within a scientific context also must be able to explain the relationship between a revelation of God in creation and other modalities of divine revelation. The Judaeo-Christian religious tradition tells us that God reveals himself in history and through history. The personalistic dimension of revelation—a dimension that looks clear and immediate when considering the mystery of God, who takes on a human nature in Christ—should also be brought into light when we speak of God’s revelation in creation. In both cases, a “theology of revelation” will be the character of a “theology of the Word.” It is through the Word that God created the world (cf. John 1:1-3), and it is also the Word that became flesh and revealed what in God is, and still remains, invisible (cf. John 1:14 and 1:18).

CHAPTER 5. REVELATION AS THE PERSONAL SELF-GIVING OF THE BLESSED TRINITY TO THE WORLD

5.1 Approaching the notion of Revelation

The religious experience of Judaism, and its extension into Christianity, asserts that God's Word truly has entered the history of human beings. Indeed, that history itself, the world, our being, and our personal selves all are effects of this personal Word: a Word coming out of silence; a creative Word that desired to have before it other personal beings capable of listening to it; a Word of which the human being is the image, created as God's interlocutor. From the vocation of Abraham to that of the disciples of Jesus of Nazareth, the Judaeo-Christian faith is born from listening to this Word and lives thanks to this Word—a Word believed to be the ultimate source of knowledge on the Absolute, on the Foundation of the world; the ultimate source of knowledge on God, but also on the human being and its ultimate end. This Word blesses, promises, and saves, a Word entering history and exposing itself and, for this reason, a Word scrutinized, judged, and then crucified.

By virtue of this Word, Judaeo-Christian Revelation can propose, through theology, its own *logos* on God, similarly to religion and philosophy, thus allowing a comparison between a revealed *logos* (theology) and a *logos* invoked (religion), between a *logos* offered to us (theology) and a *logos* conceived by us (philosophy). Drawing from these comparisons it is possible to evaluate implications and entanglements, and to specify domains of competence and claims of universality. However, the gain in intelligibility that such comparisons bring about at a theoretical level also raise new and more radical questions at the personal and existential levels: From where does this revelation come? In which ways, in which eras, and with which intermediaries? Why was it delivered, once and for all, in time and space, and why does it not resound with continuity and novelty in everyone's heart? Why was it entrusted to a people and its history, obliged to marry the destiny of that people, have to suffer its weaknesses and accept the fragility of its oral and written mediations? Why is it not visible to everyone

on the world stage, as a word recognizable by all? At first glance, the logic of the Incarnation of the Word would seem to surpass these questions as it illustrates God's decision to make himself accessible to man, to the point of becoming man himself by establishing canons of communication that show the word of God coming to meet us through human words. Yet, when examined in greater depth, the logic of the Incarnation also opens up new and even more demanding interrogations: Why was the epiphany of God in Christ reserved for so few witnesses? Why could only some people listen to his voice and see his works? Why should the extraordinary proclamation that Jesus the Christ brought to fulfillment in order to renew the cosmos fall on the shoulders of the few eyewitnesses of the flesh of the Risen One? Ultimately, how can the universality of Revelation plunge into the concreteness of the historical event of Jesus of Nazareth?

The Ancient and Mediaeval Ages indicate a certain familiarity with the idea that the gods, or God himself, spoke to men through canons of communication culturally established and acknowledged by all, and operative in nature and history. Modern and contemporary times, on the contrary, have lost this awareness. The gods are silent. They seem to have fled. The Enlightenment convinced us that we could do everything without them. Criticism of divine revelation was one of its key points, claiming the capacity of reason—*sapere aude!*—to know with its forces only (i.e. “from below” all that we expected before receiving “from above”).¹ If the issue of God is still alive, it is because man speaks of it. The rationality of Enlightenment and post-Enlightenment modernity does so only within the limits of reason, reflecting on moral commitment (searching for a foundation of ethics) or on a possible rational design at the origin of the cosmos (deism and neo-deism). Modernity, consequently, brings about a long period of “absence of revelation,” whose final conclusion becomes the “absence of God” or even “God's death.” God is no longer evident, and there is doubt

¹ This change of perspective, which continues until today, is recognized with simplicity and clarity in one of the programmatic pages of *Gaudium et spes*: “Through his labors and his native endowments man has ceaselessly striven to better his life. Today, however, especially with the help of science and technology, he has extended his mastery over nearly the whole of nature and continues to do so. Thanks to increased opportunities for many kinds of social contact among nations, a human family is gradually recognizing that it comprises a single world community and is making itself so. Hence many benefits once looked for, especially from heavenly powers, man has now enterprisingly procured for himself” (n. 33).

that His words can reach us. Contemporary man wonders where the gods have fled and if we can do anything to bring them back to earth.

Over the span of a few decades, the silence of God seems to have caused rapid, largely contradictory, and still not fully clarified consequences. Here are a few: from the affirmation of a triumphalist atheism and nihilism (Feuerbach and Nietzsche) to the torment of a suffering existentialism (Sartre and Heidegger); from forms of humanism that attempt to serve man without speaking any longer of God (Comte, Sartre, Bloch) to a theology that could be developed precisely on the basis of God's silence (Cox, Robinson), or even on the cultural admission of His death (Altizer, Hamilton); from programs of founding human society on the systematic cancellation of any public reference to God (state atheism, postmodern relativism), to a deconstructed and not infrequently irrational research of the divine or of manifestations of the sacred (postmodern pseudo-religions), or sometimes only of the esoteric (New Age, UFO movements and related topics). God's commandments are feared as a source of violence or intolerance and therefore sterilized or boycotted, yet many people continue to feel nostalgia for a Word of God. Contemporary man seeks faraway places where this Word could still resound and submits himself to laborious practices, both physical and mental, so as to make it re-emerge. The judgments that the prophet Amos addressed to the Kingdom of Israel during an era of prosperity are not far from the existential situation of our opulent society: "See, days are coming – oracle of the Lord God – when I will send a famine upon the land: Not a hunger for bread, or a thirst for water, but for hearing the word of the Lord. They shall stagger from sea to sea and wander from north to east in search of the word of the Lord, but they shall not find it" (Amos 8:11-12).

5.2 Revelation of the Logos and theology of the Word

Unlike other religious traditions and their own forms of revelation, the Judaeo-Christian tradition delivers to the world the unprecedented message that *God has spoken to man*.² The dominant

² On the Theology of the Word see: Karl Barth, *The Word of God and the Word of Man* (London: Hodder and Stoughton, 1957); Gerhard von Rad, *Old Testament Theology* (New York: Harper & Row, 1965), 2: 80–98; Gerhard Ebeling, *God and Word* (Philadelphia: Fortress Press, 1967); René Latourelle, *Theology of Revelation* (New York: Alba House, 1987), 315–328; Louis Bouyer, *The Eternal Son. A Theology of the Word of God and Christology* (Huntington, IN: Our Sunday Visitor, 1978). Among the documents of the Church's Magisterium, see the development and implications of

form of divine revelation in the economy of the Old Testament, which accompanies the entire history of Israel, is that of the “word.” The various signs God provides to manifest his presence and his will, such as dreams, visions, or theophanies, are all oriented towards listening to the word. Unlike idols, which do not speak and do not act, the God of Israel is the Living One, a God *who speaks and acts* (cf. Isa 40:18–26; Jer 10:10; 1 Sam 17:26–36; Dan 14:4–5:23–27). The economy of divine revelation through the word reaches its plenitude and fulfillment in the mystery of the Incarnation of the Word-Logos (cf. John 1:14). The authors of the books of the NT clearly state that *it is the same God’s Word*, and no other, that has become flesh and accessible in Christ. God’s self-communication to the world irreversibly takes on the traits of the face of Jesus of Nazareth.

The claim of familiarity that Judaism (first) and Christianity (later) have with the Word of God is, in certain ways, incredible and might disconcert reason. Hasn’t this state of affairs led man to lower God to a human level, making Him just one interlocutor among others? Can the mystery of the Totally Other become so close to man as to dialogue with him, face to face? Can God become accessible through human words, which are no longer divine words given to other human beings, as the prophets were, but the divine Word itself that entered into history? Israel is perfectly aware of the peculiarity of its relationship with God – whose uniqueness and transcendence it worships – and of the privilege of being able to listen to His word: “Ask now of the days of old, before your time, ever since God created humankind upon the earth; ask from one end of the sky to the other: Did anything so great ever happen before? Was it ever heard of? Did a people ever hear the voice of God speaking from the midst of fire, as you did, and live?” (Deut 4:32–33) Similarly, the living experience of encountering the Word made flesh as testified by the NT does not flatten the relationship between God and man. The conclusion of the prologue to the fourth Gospel shows the same awareness as the Deuteronomic writer: “No one has ever seen God. The only Son, God, who is at the Father’s side, has revealed him” (John 1:18). The authors of the gospels are aware of what it means to listen and see that many kings and prophets wanted to hear and did not hear, wanted to see and did not see (cf. Matt 13:16–17; Luke 10:23–24). John’s astonishment at the accessibility of transcendence

a theology of the Word in *Verbum Domini*, nn. 6–16.

remains unaltered, and the privilege that this entails is understood without concessions: "What was from the beginning, what we have heard, what we have seen with our eyes, what we looked upon and touched with our hands concerns the Word of life, for the life was made visible; [...] what we have seen and heard we proclaim now to you" (1 John 1:13).

Which implications might we draw from the fact that the "word" is presented by the Bible as the essential modality of divine revelation and the primary form of God's donation to the world? What do we deduce from this economy? The first aspect to clarify concerns the very notion of "word." It must not be considered here in a restrictive way. If understood reductively, as indicating a "concept," then a word does not express the fullness of communication. Art, gestures, and affectivity conveyed by empathy, are forms of language that prescind from the word and can express much more than what is contained in a concept. In reality, it is not the idea of a conceptual word that biblical Revelation delivers to us, but that of a *personal word*, with all the vital richness that surrounds it. It is above all a *performative* word that personally commits the subject, and not only informative communication. The word is certainly not the only way in which a personal subject reveals himself. But it reflects, better than other ways, the dignity of a personal being; that is, his freedom and his commitment. As the expression of a free personal subject, the word manifests a subject's initiative and can be understood as a movement aimed at creating a relationship. This movement is intrinsic to the idea of "message" (from the Latin *mitto*, to send) and therefore expresses a "mission" (*missio*), as shown for instance, by the images of a messenger (*missus*) and spokesperson, someone who brings a word, both being aspects that the notion of word as a concept undoubtedly is lacking.

The difference with respect to a merely conceptual meaning of the term "word" emerges even more clearly from a theological perspective. It is not the concept, the definition, or the expression of content that we must think of when we say that God communicates to humanity through the word, but rather the Trinitarian relationships of which the Verbum-Son is a protagonist. These relationships bring us back to the ineffability, unfathomability, and eternity of God's immanent life, not to pre-established content. Also from a theological perspective, we can recognize that the divine Word possesses a necessarily Trinitarian structure: pronounced by the Father and coming out of the silence of His mystery, it is revealed

to the world by the Son and through the Son, and is made present in history by the gift of the Holy Spirit. It is through the Spirit that the Word enters history, and it is still the Spirit that makes the Word eternal in the time of creation. From this point of view, the knowledge brought by the Trinitarian mystery becomes decisive for understanding what revelation in the Word is and what it actually means.

A basic phenomenology of the word can help us better to understand that it consists of a self-communication of God through this form of expression. The word is *free* and *gratuitous*, and it is precisely with these characteristics that God's initiative is manifested in creation, such as in the election of Abraham and in the Promise, in the offering of the covenant and in the fulfillment of salvation history. The word is always *revealing of the subject*: it is those who pronounce the word—and not others—who decide to manifest themselves to their interlocutor, calling the latter to take part in their interiority. We understand, then, why it is by His word that God reveals to the human beings the mystery of His personal life, inviting them to enter into a Trinitarian divine communion. Since the word manifests the most intimate and sincere intentions of the subject, we are enabled to know the "intentions" of God. His word is not (and never could be) an expression of needs, and there is no need for God to establish relationship with any creature. Rather, in its deepest and most qualifying essence, this word is a gratuitous word of love. It is precisely for this reason that God's word mainly takes the form of the *Blessing* and the *Promise*, as God blesses those who love; that is, he says good things in favor of others and promises his gifts. All the tremendous force of this love is manifested in the Word made flesh and its Paschal Mystery. However, the subject is more than his words—the interiority of the person is greater than what any word can make evident from the outside. The word thus safeguards the "mystery" of the subject, being unable to express the personal subject completely, rather only in a partial, mediated, limited form. Thus, God, by revealing himself through the word, does not dissolve the mystery of his personal life. Rather, he dispenses it according to a divine economy that he himself projects and realizes.

The word also *tends to establish a dialogue*, to encourage an encounter. For this reason, having recognized God's word as meaningful and intercepting their existential situation, human beings feel challenged by the divinely revealed word as addressed

and cannot remain indifferent. The human creature was created for such dialogue: humanity's deepest dignity is that of being *God's interlocutor*. Indeed, our happiness depends on our openness to talk with God and on living in a way consistent with such a dignity. Like every word, the word (Ger. *Wort*) of Revelation also demands a free and personal answer (Ger. *Antwort*)—it involves a responsibility (Ger. *Verantwortung*). Humanity's response to God, consequently, is based on this responsibility, both before the gift of life and the mystery of being, known through a word that resounds in creation and before the historical events of salvation, first and foremost the paschal events of Jesus of Nazareth that resound in apostolic preaching.

Communicating through the word also implies *exposing oneself*. It involves the risk of an intimacy that is offered and revealed and, for this reason, can also be misunderstood, rejected, and ignored. The word needs to be explained, clarified, and often interpreted, thus running the risk of being betrayed. The word then shows its fragility, which further appeals to the freedom of those who receive the word and are called to respond to it, of those who must safeguard the word and transmit it. Herein lies the mystery of sin, as the failure of a freedom that takes no care of the Word, thus rejecting divine Revelation. Herein also lies the contrast between light and darkness, which the Prologue of the Gospel of John describes dramatically and precisely within the context of the incarnation of the Word.

Finally, choosing to communicate through a personal word manifests the divine intention to entrust to *testimony* the role of the primary criterion of truth. In the realm of personal relationships, the truth does not (only) follow the canons of evidence, nor is it mere conformity (Lat. *adaequatio*). Truth refers, above all, to the sincerity and authority of the speaker, to the coherence of the life of the witness, to his or her holiness. This is why testimony appears as a constituting category of Revelation. Sacred Scripture describes the revealing activity of the Trinity in the form of mutual witnesses: the witness that the Son gives to the Father, that which the Father gives to the Son, and that which the Spirit gives to the Son obedient to the Father. The apostles are witnesses of all that Jesus did and taught: they are witnesses of what they lived with him and of the truth and sincerity of his person. This implies that the community of Jesus' disciples—the Church—in keeping and transmitting the word, cannot ignore the logic of witness: what is believed, in order to be

transmitted, must also be coherently lived.

Turning now to the relationship between the Word and the revelation of God in creation, two important implications are worthy of explanation. The first is that the “revealing” dimension of creation is based precisely on its original link with the Word: God creates through his Word and, therefore, the created cosmos—the effect of God’s *logos*—embodies a rationality, carries meaningful information, and expresses a message whose origin is the personal intentionality of its Creator. This philosophical perspective has multiple consequences for our approach to the study of nature, scientific thinking, and research. It is within a culture inspired by Christianity—and, therefore, within a theological vision of creation—that the idea of laws of nature was affirmed in the Modern Age and developed a corresponding confidence in the rationality and intelligibility of physical reality as a necessary prerequisite for the activity of the natural sciences. As we pointed out at the end of Part I of this volume, it is in tune with this perspective that those who study nature first perceive the natural world as the place of a *logos* conveying a *ratio* and then—if they are operating within a philosophical framework open to transcendence and ready to see reality as a dialogical otherness—recognize this *logos* as also conveying a *verbum*.

The second implication concerns precisely the exceeding character of a personal word that transcends nature. In fact, the word also resonates in the history of a people—a history of salvation—and is manifested through a living dialogue between God and humanity. Revelation that would take place *exclusively* through cosmic elements could run into the ambiguity of pantheism, failing to account for the truth of the Absolute. Revelation through a word pronounced also in history—being an expression of thought and intentionality—is always available to clarify, explain, and even to deny, if necessary, elucidating what God is and what God is not. Choosing to reveal himself through the word, God does not remain imprisoned in the laws of the world, nor is he limited by the testimony of natural elements—which are ultimately impersonal if examined only at an empirical level—but transcends them through language, being able to affirm or deny, accept or refuse, approve or prohibit.

In summary, the idea that God has unveiled himself through his Word confronts us with the *personal nature* of that revelation. The dialogue, encounter, and communion of life that this Word desires

to establish with human beings disclose the free and condescending motive that presides over God's communication to us, beginning with creation. They show us the love that guides the promise and the covenant. They proclaim the salvation offered to those who embrace the preaching of the Kingdom. They testify to the fidelity of an obedience ready to go as far as accepting the cross. Finally, the Word shows us its purpose: to arouse the accountability of all those who, understanding a divine word resounding in nature and history, are called to take a stand before God and before themselves.

5.3 The personalistic dimension of God's revelation and its relationship with the Trinitarian missions of the Son and of the Holy Spirit

The term "revelation," as noted above, is primarily the name of a *relationship*. It is one that binds a personal subject to someone else, to whom he communicates or gives something of himself. The notion of revelation includes subjective and objective aspects, a personalistic dimension and a content-based component. However, it should not be forgotten that both perspectives have a precise articulation. The objective dimension depends on the personalistic dimension. The truth of the transmitted contents refers to the truth and credibility of the personal subject who reveals. The personalistic dimension of revelation, even generally understood, is not exhausted by the fact that he or she who communicates something is a free and personal subject but indicates, above all, that the subject *reveals himself to someone else*. Revealing something personal to another person is much more than communicating between two poles (transmitter and receiver) when information flows from one to the other. Because of the initiative of the revealing subject, the idea of personal revelation also expresses a dynamism. It is the mission of a personal being who comes out of silence and manifests himself to one or more addressees. Both the notion of *revelation* and that of *word*, therefore, are understandable in terms of a "personal mission." Within the framework of Trinitarian theology, this immediately makes us think of the missions of the Son and of the Holy Spirit in history—an *ad extra* extension of the two immanent Processions (generation and spiration) that constitute the *ad intra* life of the One and Triune God.

As we know, Trinitarian theology speaks of the "visible mission" of the Son in the Incarnation, and of the Holy Spirit in his descent upon Christ's apostles and disciples. It distinguishes them

from the “invisible missions” that the Son and the Spirit carry out in the life of grace and within the liturgical-sacramental action of the Church. It is easy to see how visible missions fully fit into a theology of Revelation. The Incarnation of the Word is, in fact, the fullness and fulfillment of Revelation as a whole. That is, the many words that God communicates to humans find their best and foremost expression in the Word made flesh. The transmission of Revelation through history (i.e. the Holy Tradition [cf. DV, 8]) is made possible thanks to the living presence of the Spirit in the Church, through the many dimensions that have the third Divine Person as their protagonist: preaching, teaching, Magisterium, and faithful witness, among others. Upon closer inspection, these invisible missions also manifest an intimate link between Trinitarian missions and God’s Revelation *ad extra*. In fact, one can speak of God’s presence and *revelation* in charity and holiness; that is, in the gift of grace and of the possibility of encountering Christ and his Spirit in the sacramental action of the Church. In reality, concerning the revelation of the divine Trinity, the difference between the visible and invisible missions of the Son and Spirit has minor relevance, as the divine Persons who have entered history remain forever until the eschatological consummation (cf. Matt 28:20; John 14:16). God’s revealing activity in history resounds in a Word that now has become eternal, delivered once and for all to the Church thanks to the joint action of the Son and the Spirit.

Following Augustine, Thomas Aquinas specifies that the mission of a divine Person involves his origin from the sender and a new way of being somewhere, in order to manifest the Person who has sent him.³ The revealing action of the Son is related closely to his origin from the Father and to his new way of being, which consists of the assumption of a created humanity that “places” the Word-Son within space and time. Likewise, the Spirit makes the Word present and guides the faithful to understand its content because he is sent by the Father and the Son and because he, too—starting from the

³ “The concept of mission includes two elements: the first is the relationship between who is sent and the sender; the second is the relationship between who is sent and his destination. For that one is sent, it appears (*ostenditur*) that he proceeds in some way from the sender. [...] The mission on the one hand imports habitude from the sender, and on the other hand a new way of being somewhere. And so it is said that the Son was sent into the world, because by the command of the Father he began to be there visibly (*esse in mundo visibilter*) for the assumption of human nature.” S.Th. I, q. 43, a. 1 resp.

Paschal Mystery of Jesus Christ—will have a new way of being present in history. This way of being present preceded that of speaking through the prophets (who proclaimed Christ); now it is that of being the soul of the Church (who is the body of Christ). The missions operate on the prolongation of the eternal Processions but now involve a specific space and time, that of the creature who receives the mission—every believer and the Church as a whole.

A sent Person does not reveal through his presence in a lonely or individual way, but he brings with him the relationships that bind him to the other two divine Persons. It is a *real* presence—Augustine and Thomas insist—such that the creature can benefit from it. In the case of the invisible missions in the soul, this divine presence takes place by virtue of sanctifying grace.⁴ “One is sent to be in a new subject, and one thing is given,” Aquinas says, “so that someone can begin to possess it.”⁵ For Bernard of Clairvaux, Revelation and personal gift are correlative.⁶ In Augustine of Hippo, we again find an expression that alone would be enough to summarize the meaning of the relationship between revelation and missions: To be sent is to be known (Lat. *mitti est cognosci*).⁷ Missions, therefore, should be understood in terms of manifestation and knowledge. We say that a divine Person is sent to someone—Augustine observes again concerning the mission of the Word—when that Person is known and perceived by him to whom he is sent (Lat. *cognoscitur atque percipitur*).⁸ And Aquinas comments further: “Here perception implies a certain experimental knowledge.”⁹

It might cause surprise that the relationship between the theology of divine missions and the theology of Revelation is nowadays still so underestimated despite the Trinitarian and historical-salvific perspective now taken on by contemporary theology, which implicitly should have favoured that link.

⁴ Cf. S.Th. I, q. 43, aa. 1-3; Thomas Aquinas, *In I Sententiarum*, d. 16, q. 1, a. 1. Cf. Camille de Bello, *La visite de Dieu. Essai sur les missions des personnes divines selon saint Thomas d'Aquin* (Gèneve: Ad Solem, 2006); and Giles Emery, *La théologie trinitaire de saint Thomas d'Aquin* (Paris: Cerf, 2004).

⁵ S.Th. I, q. 43, a. 2 resp.

⁶ “By giving the Spirit, the Son reveals: by giving he reveals, and by revealing he gives (*dando revelat et revelando dat*).” Bernard of Clairvaux, *Sermones in Cantica Cantorum*, Sermo 8, n. 5.

⁷ Cf. Augustine of Hippo, *On the Trinity*, IV, 20, 29.

⁸ Cf. Augustine of Hippo, *On the Trinity*, IV, 20, 28; cf. also S.Th. I, q. 43, a. 5, ad 1.

⁹ S.Th. I, q. 43, a. 5, ad 2.

Certainly, the theology of the Incarnate Word dominates today's understanding of Revelation, while pneumatology dominates the understanding of its transmission through the Church. However, they do so—at least so it seems—regardless of the dynamism inherent in the condition of the Person *insofar as sent*, thus overlooking the greater intelligibility that such a condition would bring about. In order better to highlight this dynamism, it would be necessary to emphasize the idea that the revealed divine Person *is the sending divine Person*, and that he is revealed precisely by the Person sent; that is, by the Trinitarian logic of divine missions in history. Thus, to affirm that the Son reveals is to affirm that the Son is the *revealer of the Father*, and essentially so *because he is sent by the Father*. Likewise, to affirm that the Holy Spirit reveals is to affirm that the Spirit is *the revealer of the loving bond between the Father and the Son*, and essentially so *because he is sent by the Father and the Son*. Scripture does not fail to confirm this perspective. It is enough to think of the way in which the Gospel of John insists on the manifestation of Jesus the Son as the revealer of the Father, of the merciful love and of the salvific plan of the latter, or how the Pauline epistles insist on divine sonship—that is, on the bond between the Father and his children adopted in the Son—as a revelation brought about by the Holy Spirit.

The Trinitarian life is not only the *cause* of divine revelation but also its *formal principle*. God reveals Himself by extending the Fatherly-Filial relationship into the world and history out of Love. The salvific plan revealed by the Father is the filial adoption to which all the human beings are called, and it is also the communion of all believers in one Spirit, called to form one Church, the body of Christ. The Father's eternal plan revealed to us in Christ is that everything may be recapitulated and brought back to Him, in the Son, by the Holy Spirit. What is revealed *ad extra* are precisely the relationship between the Father and the Son and that which they both have with the Holy Spirit. God's self-revelation extends these relations into the world through the missions of the Son and of the Holy Spirit. Revelation remains an *ad extra* divine work, jointly carried out by all the Persons of the Holy Trinity, yet a work aimed at placing *ad intra* within the divine life according to the specific relationships shared between these Persons. The personal-salvific aspect of divine revelation, that is, God's invitation to take part in His intimate life, demonstrates the Trinitarian dimension that necessarily characterizes revelation, and its vital reference to each individual

divine Person. God's revelation then is aimed at placing the creature to whom it is addressed within a nexus of relationships similar to that existing among the divine Persons.

Thus understood, the theology of Revelation, as a whole, becomes a "prolegomenon" of the theology of grace. The latter finds its very beginning in faith's response to the Word, in what favors it, accompanies, and follows it. The divine Persons dwell in the faithful who have affirmatively answered and accepted the divine word and reveal, through the life of grace, the mutual relations binding them together. Through their joint activity, the divine Persons replicate *ad extra* a mark of their *ad intra* relationships, basically through the salvific works of the Incarnation and of sanctifying grace. In these works, the revelation of the Holy Trinity rightly can be considered as *real*, since they extend into the world the eternal Processions and the relationships existing among the three Divine Persons. These two salvific works are carried out precisely in the missions of the Son and the Holy Spirit, either in their visible and accomplished aspect (Incarnation of the Word) or in their invisible and continuous one (Trinitarian dwelling and the life of grace, sacramental action of the Church), as these missions convey *ad extra* the logic of the eternal Processions, of which they constitute a prolongation in history.

Ultimately, what is the dialogue between Creator and creature that revelation establishes? What is the realism of this incredible encounter of salvation? Can we truly affirm, with Thomas Aquinas, that "love leads to the revelation of secrets?"¹⁰ Mysteriously, dialogue is that which the divine Persons, in their Trinitarian articulation, entertain with the human being. The encounter is that which originates from the sending of the Son and the Spirit into the world and into history; indeed, it is an encounter with the creature, the personal end of the mission. Truly, the divine Persons place their tents among us—throughout the history of humanity and in the hearts of believers—bringing us into their relationships. The relationship between humanity and God that takes place in the history of revelation and salvation does not lose its intrinsic mysteriousness, nor does God lose his transcendence. Rather, the intimate intelligibility of that relationship is grasped better through a *reductio ad mysterium gratiae* – where revelation fully participates in the realism of the supernatural relationships established by the life of grace within the faithful. The relationship between God and the

¹⁰ Cf. Thomas Aquinas, *Super Iohannem*, XIV, lect. 4, 14, vv. 16-17.

creature as instituted by God's revelation thus differs from the one between a creature and its Creator as established by the mere causation of the creature's being. Unlike creation, revelation is not a merely *ad extra* operation of God. Revelation, like grace, only can be understood as an operation of God *ad extra* to place creatures *ad intra*, that is in a living relationship with the divine Persons.

5.4 Sophia, the mediating wisdom of God's personal revelation to creation

When we speak of *Sophia*, the Wisdom of God, many think immediately of the sophiological movement of Orthodox theology and of its precursors in German mysticism, idealism and romanticism. In reality, theological reflection on the Wisdom of God is a much broader matter and involves particularly the relationship of the One and Triune God with creation: "The central point from which sophiology proceeds – Sergei Bulgakov affirms – is that of the relation between *God* and the *world*, or, what is practically the same thing, between *God* and *humanity*."¹¹ Starting from a sound biblical foundation, the theology of *Sophia* encompasses all Judaeo-Christian thought, albeit not always with univocal religious and literary categories. It was mainly authors of the Christian East between the 19th and 20th centuries who elaborated "sophiology" as a specific reflection on the biblical image of Wisdom. The aim of this reflection was to deepen knowledge of the nature and essence of God, especially with regard to the relationship between the Trinity and creation. *Sophia* is created but precedes the world. Namely, it is the imprint of divine nature and glory as "turned" towards creation, of which *Sophia* contains and expresses the prototypes of ideas and beauty. Authors of significance include Vladimir Solov'ëv (1853–1900), Sergei Bulgakov (1871–1944), and Pavel Florenskij (1882–1937). Their writings sought to show how sophiology functioned as an extension of patristic thought, presenting contents that were familiar even to Christian thinkers of the Mediaeval and Modern Ages.¹²

¹¹ Sergej Bulgakov, *Sophia. The Wisdom of God. An Outline of Sophiology* (Hudson NY: Lindisfarne Press, 1993), 14.

¹² Works of reference for a basic study of Sophiology include: Vladimir Solov'ëv, *Sophia. The Eternal Mediating Wisdom between God and the World* (1876); Pavel Florenskij, *The Pillar and Ground of the Truth* (1914); Sergej Bulgakov, *Sophia. The Wisdom of God. An Outline of Sophiology* (1937). Judgments on Russian Sophiology usually highlight a link with the mystical romanticism of F. von Baader and the

We must clarify immediately that the aforementioned authors, when speaking of Sophia, do not refer to the more general topic of divine revelation through the “sapiential word,” as presented by the sapiential books of the Old Testament. There, Israel listens to the word of wisdom through the philosophical meditation of the wise man and his moral exhortations, attributing to this revelation a certain specificity when compared to what this people had received from God through the experience of liberation and the prophets. Sophiology, rather, indulged the notion of Wisdom-Sophia (Heb. *Hokmah*; Gr. *Σοφία*), understood as a “manifestation” of the divine *ousía*. Sophiology is interested in what Sophia can tell us about God’s nature, the design of creation that she keeps and safeguards, and God’s will of self-giving to the world that she expresses. The association of Wisdom-Sophia with the divine essence—that is, Sophia’s pre-existence prior to the world, in God and beside God—is based on some classic biblical passages of the Old Testament: Prov 8:22–31, Wis 9:1–4, Sir 24:1–22 and Job 28:20–27. Sophia is related to the Glory of God (Heb. *kabod*: cf. Exod 16:7–10; 40:34–34; Num 9:15–23, among others), understood as its sign and manifestation within history. Moreover, Sophia also is known implicitly in the NT: when the sacred text speaks of the predestination and election of all believers in Christ; when communicating the mystery of God’s presence in the human being and in the created world as an effect of Christ’s glorious resurrection; and when announcing the revelation of the heavenly Jerusalem (cf. Matt 7:23; 25:34; John 10:14; Rom 8:21; 2 Cor 5:1–2; Eph 2:4–7; Col 3:1–4; Heb 12:22; 1 Pet 1:4; and Rev 21:2 among others). The Fathers of the Church seem also to speak of Sophia when writing on the relationship between God and the created world, explaining our vocation to participate in God’s life, and presenting the Church as the eternal sacrament of the union between God and human beings. According to sophiologists, some pages of the Pastor of Erma, Clement and Athanasius of Alexandria, Gregory of Nyssa, and Maximus the Confessor are quite explicit in this regard.

idealism of J. Böhme and F.W. Schelling. However, this opinion is quite reductive. We must not forget the specificity of Orthodox theology and its own sources, which willingly refer to patristic, late mediaeval mysticism and the theology of icons. I mainly refer here to Sergej Bulgakov, *Sophia. The Wisdom of God. An Outline of Sophiology* (Hudson NY: Lindisfarne Press, 1993). English quotations from Florenskij’s *The Pillar and Ground of the Truth* are translations from the Italian edition *La colonna e il fondamento della verità* (Milano: Rusconi, 1998).

As we know, the theological-interpretative framework proposed by scholars of Sophia has been a subject of discussion mainly within Trinitarian theology because of its strong dogmatic implications, thus leading to suspicions of a gnostic or heretical drift. Bulgakov himself had to defend his thought against the charge of having introduced a “fourth hypostasis” of God.¹³ Less debated – but also less developed and investigated – have been the relations between the theology of Sophia and the theology of Revelation, despite the fact that sophiology frequently handles two great biblical concepts, those of “Wisdom” and “Glory,” that are characteristic of God’s manifestation in salvation history. It is the relation between sophiology and the theology of Revelation, then, that merits being recalled here and better explored as possible, also with the aim of examining the realism of the *personal* relationship that divine revelation establishes with the creature. I do not intend here to recount the history of the biblical concept of “wisdom,” nor to highlight the sources of sophiology that are quite clear in classical thought – Platonic and Neo-Platonic in particular – but also in some mediaeval and modern authors. On all these subjects, a specific, copious bibliography already exists.¹⁴ I will confine myself to examining only what contribution two of the authors mentioned above, Bulgakov and Florenskij, could bring to a contemporary theology of Revelation.

Sophiology reads the biblical notion of Wisdom – as presented in the Book of Proverbs and in the Wisdom books in general – not as a simple attribute of God, but as a coherent representation of the divine essence (*ousía*). Even though it starts from the biblical datum, sophiology is not an exegetical proposal. Rather, it is an attempt at a large-scale philosophical-theological understanding of God’s plan, desiring to provide a complete vision of the relationship between God and the created world. In particular, Sophia would express the

¹³ For this reason, Bulgakov was judged as heretical by Russian Orthodoxy, a charge from which he intended absolutely to free himself in his writings. In Catholic thought, judgments towards sophiology are less severe, even if this movement is qualified at times as a kind of “gnostic doctrine.” Cf. Bulgakov, *Sophia. The Wisdom of God*, 36.

¹⁴ Cf. Louis Bouyer, *Sophia ou le Monde en Dieu* (Paris: Cerf, 1994); Maurice Gilbert et al., “Sagesse,” *Dictionnaire de Spiritualité* (Paris: Beauchesne, 1990), 14: 72–132; Sergej Bulgakov, *The Unfading Light* (Grand Rapids, MI: Eerdmans, 2012); *La Sagesse dans l’Ancien Testament* (ed. M. Gilbert; Leuven: Leuven University Press, 1990); *La Sagesse biblique. De l’Ancien au Nouveau Testament* (ed. L.J. Trublet; Paris: Cerf, 1995).

divine essence as custodian of the eternal ideas and projects that always have been present in God and from which the world originates. Sophia-Wisdom, therefore, is prior to the world. She is with God and in God. One in God, Sophia is manifold in creation, where she is perceived as God's reflection and image. According to Pavel Florenskij, "Sophia is the Great Root of the total creature (cf. Rm 8:22, that is, the whole integral of creation, and not simply the whole). For her and through her, creation penetrates the depths of triadic [Trinitarian] life and obtains eternal life from the only Source of life. The Sophia is the original essence of creation, God's creative Love 'which has been poured into our hearts through the Spirit' (Rm 5:5)."¹⁵ Besides having in common their one and only life and one and only essence, the Persons of the Holy Trinity also possess a unique "Sophia."¹⁶ The three divine Persons have created the world jointly *on the basis of the Wisdom* shared by the whole Trinity.¹⁷ The theology of Sophia thus aims to highlight the "transparency" of the beauty of eternal divine wisdom in creatures, developing a doctrine that can embrace the various dogmas of Christianity and give them particular light. These dogmas find a natural connection with Sophia and are enlightened by her: creation and revelation, Christology, ecclesiology and Mariology, but also sacramental theology and anthropology.

Wisdom-Sophia belongs first and foremost to the Father in that He is, in a original way, the "First Principle." She also belongs to the Son-Logos as she expresses the exemplarity of the second Trinitarian Person in being turned towards creatures. As the Son is the image of the Father, Sophia is the image of the Son, in particular his divine-humanity as expressed in creatures. Finally, she belongs to the Holy Spirit as the manifestation of the Trinitarian Love between Father and Son, directed and offered to the world. "From the point of view of the Father's hypostasis" – Florenskij affirms – "Sophia is the ideal substance, the foundation of creation, of whose being she is the power or the strength. From the point of view of the Word, Sophia is the reason for creation, its meaning, its truth and justice. From the point of view of the Hypostasis of the Spirit, Sophia is the spirituality of creation, its holiness, purity and immaculateness; that is, its

¹⁵ Pavel Florenskij, *La colonna e il fondamento della verità* (Milano: Rusconi, 1998), 388.

¹⁶ Cf. Bulgakov, *Sophia. The Wisdom of God*, 53.

¹⁷ Cf. Bulgakov, *Sophia. The Wisdom of God*, 67.

beauty. In our rational and sinful intellect, this triune idea of foundation-reason-sanctity is divided, presenting itself in the three aspects, which are mutually exclusive, of foundation, reason and holiness."¹⁸

For Bulgakov, Sophia's role in understanding divine revelation is absolutely central: the Son and the Holy Spirit "reveal" the Father-Principle in the divine Sophia. Indeed, Sophia *is* the divine revelation, as revelation of the Trinity brought about by the Son and the Holy Spirit.¹⁹ However, the revelation that Sophia expresses and represents does not leave God-Father on the sidelines. "The dyad of the Son and of the Holy Spirit constitutes the revelation of the Father, so that their self-revelation is at the same time revelation of the Father himself working in them and through them. Hence Sophia belongs to the Father, for he is her initial and ultimate subject. She represents the disclosure of his transcendence, of the silence and mystery of the Godhead."²⁰ And Bulgakov adds, more precisely: "The revelation of Sophia to the Second and Third Persons of the Holy Trinity is immediate, insofar as she expresses the image of the hypostatic being of each. The relation of Sophia to the Father is mediated through his relation to the other hypostases, who disclose him to Sophia."²¹

For those who are accustomed to considering divine revelation centered on the Word as the way better to understand the relationship between God and creation, the question spontaneously arises as to how *Sophia* differs from the *Logos* in that dynamic. Bulgakov and Florenskij agree that, while serving as subject of a relationship with the Logos-Verbum (as well as with the other Persons of the divine Trinity), Sophia does not duplicate what Western theology has elaborated concerning the role of the Logos in creation, that is, its exemplary causality in relation to creatures. The Word, like Sophia, expresses the rationality and pre-existence of creatures, and the eternal ideas and *lógoi* belonging to God's original plan, yet there is a difference between them. While the second Person of the Trinity plays an exemplary role as image of the Father, Sophia does so as the comprehensive image and glory of divine

¹⁸ Florenskij, *La colonna e il fondamento della verità*, 411–412.

¹⁹ "The di-unity of the two revealing hypostases, the dyad of the Son and of the Holy Spirit, manifests the divine Sophia. In this sense we can say that their own self-revelation *is* Sophia." Bulgakov, *Sophia. The Wisdom of God*, 51.

²⁰ Bulgakov, *Sophia. The Wisdom of God*, 51.

²¹ Bulgakov, *Sophia. The Wisdom of God*, 52.

nature, displaying the harmonious articulation of all three divine Persons. It is true, however, that part of what Western theology develops from the Word-Logos, sophiology believes should be ascribed more pertinently to the divine *ousía*, and, therefore, to Sophia, rather than to the Person of the Son. It is in this light, for example, that sophiologists suggest reading again some of Thomas Aquinas' considerations regarding the Word, when he affirms that all things have existed in God from all eternity, and in God are present all ideas of what does not yet exist within created reality.²² The doctrine of Sophia makes it clear that the exemplary nature of the Logos towards the world is never isolated but always must be seen united with the Spirit, because Sophia belongs to both as the revelation of the complete, eternal plan of the Father. Truth is never without love, rationality is never without meaning, and exemplarity is never without union. In the economy of divine revelation, if the Son-Logos expresses in himself the essential "content" conveyed by divine Wisdom, the Holy Spirit expresses the "way" in which this content is bestowed. Sophia, as the gift of divine wisdom addressed to the world, contains both dimensions, expressing how the Spirit—as the Trinitarian love of the Father and the Son—acts as reality's "principle of transformation", forging all things with the seal of the Son-Verbum.²³

What contribution could sophiology offer us regarding the realism and personalism through which divine revelation encounters humanity? Thanks to Sophia's "revealing mediation," the relationship between Creator and creature is seen neither

²² "Whatever is contained in the Father's knowledge is necessarily and entirely expressed by His only Word and in the very same manner in which all things are contained in His knowledge. In this way it is a true word, whose intellectual content corresponds to that of its principle. Through His knowledge, moreover, the Father knows Himself, and, by knowing Himself, He knows all other things. Hence, His Word chiefly expresses the Father and, as a result, all other things which the Father knows by knowing Himself. Therefore, because the Son is a word that perfectly expresses the Father, the Son expresses all creatures." Thomas Aquinas, *De veritate*, q. 4, a. 4, sol. "On the other hand, the Word is directly related to God, whom the Word expresses first, and then, as a consequence, expresses creatures. Because all creatures are one as they exist in God there is only one Word for all of them." *De veritate*, q. 4, a. 4, ad 5; cf. also q. 4, a. 8, sol. and S.Th. I, 34, 3, resp. Consider the possible understanding of the "science of the Father" as the "science of God" throughout *De veritate*, q. 4, and the understanding of the "science" of God in terms of "wisdom" of God in *De veritate*, q. 2. Cf. also C.G. IV, ch. 13. See on this point, see Bouyer, *Sophia ou le Monde en Dieu*, 126–132.

²³ Cf. Bulgakov, *Sophia. The Wisdom of God*, 46–48.

dualistically nor dialectically; ontological separation on the level of being does not mean incommensurability at the level of love. The Totally Other is not the Totally Foreign. God has always known his creature and, in a certain way, “he bears it in himself.” God’s revelation to his creature is a manifestation in history of the loving relationship the Creator always had intentionally with it, as he knew and loved it from the beginning. God’s revelation to the creature is not the Infinite’s coming to encounter the finite, but rather making known to the creature an everlasting love that God always kept in himself. The “novelty” of revelation is not the movement with which God unexpectedly turns towards other personal subjects, who are eventually extraneous to him, but rather the disclosure of a perennial relationship in which the life of grace will show itself to be filial in scope. The human person listens to God and can respond to God because he or she feels at home in this conversation (cf. Phil 3:20), having been chosen and loved before the creation of the world.

One understands, then, why creation does not represent any “novelty” in God, as creation cannot cause any form of self-revelation in him. God does not lack anything, and nothing ever has been missing in him. The Sophia-Ousia of God is like a “prototype” of creation. God is pleased in it, since Sophia is the expression of his wisdom and beauty, his harmony and rationality (cf. Wis 9:9; Prov 8:22-23; Job 28). This perspective enjoys clear resonance within the field of Christology but also has interesting implications for Mariology and Eschatology. The humanity of Christ was eternally willed and loved by God, and so was that of Mary. The *eschaton* has been eternally present in God, being the project towards which creation moves since the beginning of time.

As already mentioned, Sophia should be considered from two points of view: as “created” when seen from the side of divine life, and as “uncreated” (being eternal in God) when seen from the side of the world.²⁴ The creation of the world, however, is not a kind of “duplication” for Sophia as Sophia is present, both in God and in creatures, in two different ways. Respectively, she is present as divine essence and as a participation in such an essence, as a simple yet simultaneous possession of eternity, and as becoming in time. This twofold dimension of Sophia, uncreated and created, founds

²⁴ Florenskij cites, among others, Athanasius of Alexandria, who distinguishes between the uncreated Logos and created Wisdom, explaining how the latter is the image of the former in creation: cf. Athanasius of Alexandria, *Against Arians*, II, 78-79; cf. Florenskij, *La colonna e il fondamento della verità*, 406-407.

the possibility and the logic of the Incarnation of the Word, as well as the possibility of the human creature's participation in the destiny of Christ and, finally, of Christ's solidarity with every human being.

The emphasis that sophiology brings to our understanding of divine revelation finds its culmination in the Incarnation of the Word as the Sophia herself, next to God, in the place of the mysterious pre-existence of the Word's humanity. The divine-humanity of the Word is the most realistic expression of the harmony between Sophia's two dimensions—uncreated and created—and the norm of all relations between God and humanity, and between God and the world.

The central point from which sophiology proceeds is that of the relation between *God* and the *world*, or, what is practically the same thing, between *God* and *humanity*. In other words we are faced with the question of the meaning and significance of Divine-humanity—not only insofar as it concerns the God-human, the incarnate Logos, but precisely insofar as it applies to the theandric union between God and the whole of the creaturely world, through humanity and in humanity.²⁵

This Christological reference also shows that, when looking at Sophia, creation is mysteriously present and already understood, in God, as a redeemed creation: "Sophia is the germ and the center of the redeemed creature, the Body of the Lord Jesus Christ; that is, the created nature taken on by the divine Word [...]. Sophia is the pre-existing, and in Christ purified, being of creation, the Church in its celestial aspect."²⁶ The various Christian mysteries are thus united within a harmonious and analogical vision, almost a *climax* of the different images of Sophia, from the littlest creatures up to Mary, the predestined mother of God made man:

If Sophia is the whole creature, then humanity, which is the soul and consciousness of the creature, is the Sophia par excellence. If Sophia is all humanity, then the Church, which is the soul and conscience of humanity, is the Sophia par excellence. If Sophia is the Church, then the Church of the Saints, which is the soul and conscience of the Church, is the Sophia par excellence. If Sophia is the Church of the Saints, then the Mother of God, intercessor and mediator of creation

²⁵ Bulgakov, *Sophia. The Wisdom of God*, 14.

²⁶ Florenskij, *La colonna e il fondamento della verità*, 412.

before the Word of God [...] is the Sophia par excellence."²⁷

Sophiology expresses a particular understanding that Christianity has gained within a specific theological and ecclesial context: Russian Orthodoxy. However, reflecting theologically on Sophia, the Wisdom of God, makes it possible to enlighten some central issues of the theology of Revelation. Without dissolving the transcendence of God, sophiology undermines the dialectical reading of the relationship between Creator and creature, mitigating the paradox of an Infinite God who reveals himself in the finite realm of creature reality. This is because the "roots" of the creature, as Florenskij would teach, extend up to God. The deep intelligibility of revelation is not entrusted only to space-time categories, but rather to the logic of a meta-historical and exemplary relationship *based on a personal intentionality* – that of the One and Triune God who loves and creates the world in Christ. Pantheistic drift is avoided by affirming the contingent and finite nature of the creature's being and its dependence, in all and for all, on God. Rather, one can speak lawfully of a quasi-panentheistic perspective. Consonant with the vision brought about by the theology of Sophia, the world is not God, nor is the world part of God; yet the world rightly can be considered as present in Him, for all eternity, in His womb.

This last aspect could justify the interest in sophiology on the part of authors involved in the dialogue between science and theology. Many of them argue that panentheism offers a satisfactory understanding of the relationship between God and nature that is more appropriate for a scientific view of the world.²⁸ The idea that the world belongs to God, and is sustained by him and borne within him, is endorsed by numerous biblical passages. These references are not restricted to the well-known page of St Paul's speech at Athens' Areopagus where, introducing the pagan poet Aratus of

²⁷ Florenskij, *La colonna e il fondamento della verità*, 413.

²⁸ Cf. Philip Clayton and Arthur Peacocke, eds., *In Whom We Live and Move and Have Our Being: Panentheistic Reflections on God's Presence in a Scientific World* (Grand Rapids, MI: Eerdmans, 2004). See also the view endorsed, in the light of a Process theology, by David R. Griffin, *Panentheism and Scientific Naturalism. Rethinking Evil, Morality, Religious Experience, Religious Pluralism, and the Academic Study of Religion* (Claremont, CA: Process Century Press, 2014). Contrary to the idea that Panentheism could be a privileged view for the dialogue between science and theology, see Willem Drees, "Panentheism and Natural Science. A Good Match?" *Zygon* 52.4 (2017): 1060–1079.

Soli, the Apostle affirms that “in him we live and move and have our being.” (Acts 17, 28). The merciful love of God also is imaged by the maternal bosom (Heb. *rehem*) and takes on the feelings of a mother who generates and protects (cf. Exod 34:6, cf. also Nah 1:3; Joel 2:13; Wis 15:1; Ps 86:15; Ps 103:8). God loves us gratuitously, but as what belongs to him. The existential renewal caused by the life of grace (cf. John 3:3–5) and that of the whole future world, eschatologically projected, also resemble a new birth from God, the labor of a human generation (cf. Rom 8:18–23).

CHAPTER 6. GOD'S MANIFESTATION IN NATURE BETWEEN RELIGIOUS EXPERIENCE AND SCIENTIFIC WORLD-VIEWS

The exhortation to divert one's heart away from idols and convert oneself to the one and true God – the Creator of heaven and earth – has accompanied the preaching of the Gospel since its very beginning. In particular, the Apostles' speeches addressed to the pagans formulate a "cosmological anchorage" to the uniqueness of the Creator of all, so as to explain *to Whom* the history of Jesus of Nazareth ultimately refers. In the polytheist city of Listra, Paul appeals "to the living God, who made heaven and earth and sea and all that is in them" (Acts 14:15) in order to pave the way for the proclamation of Christ. This one and only God, St Paul declares, "did not leave himself without witness, for he gave you rains from heaven and fruitful seasons, and filled you with nourishment" (14:17) He intends to rely on shared knowledge of a provident God who is recognizable through nature, a knowledge that he considers to be accessible in the religious experience of all people. And, it is also partially available along a philosophical path, which would suggest the type of interlocutors with whom he had to deal shortly afterwards in his speech at the Areopagus of Athens (cf. Acts 17:18).

We must not forget that Paul carried out this operation in full continuity with his Jewish faith, which reassured him of the existence of God as manifested in creation, as attested by Scripture within historical, poetic, and narrative literary contexts. These biblical passages also inspired many of the Church Fathers, whose pages comment on an itinerary that, starting from creatures, can lead every human being to acknowledge the existence of a Creator. Especially addressed in the pagan context, these biblical and patristic pages gave rise to a *locus theologicus* that has accompanied all Christianity up to the present day, to the point of coining the metaphor of nature as "Book" – an almost inevitable result of believing that the created world is an effect of God's powerful word (cf. John 1:1-3; Col 1:16; Heb 1:1-3). Several philosophical frameworks are available to serve this bottom-up itinerary, from

bottom to top following a rational and theoretical path, and from top to the bottom, following an aesthetic and symbolic approach. Christian readers of Plato and Aristotle, the Greek Apologists and Augustine of Hippo, Bonaventure and Thomas Aquinas, Calvin and Leibniz, the Russian Sophiologists and Teilhard de Chardin, each in their own language provide arguments aimed at showing that things speak of God and that God speaks through things. Max Scheler, adopting a phenomenological stance, even concludes that ignoring an impersonal God is never a moral fault but only a mistake, while not recognizing the whisper of God through creation is, without any doubt, a guilty act.¹ Here, the natural tendency of Christianity is rooted towards realism, in the exhortation to listen to reality outside of oneself, to the testimony of a Word that precedes us and comes to meet us. The mystical and interior dimension, certainly also present in Christian tradition, is always balanced by an objective, dialogical dimension. The subject not only is urged to listen to his or her own conscience, but also is invited to look at his surrounding world, as the world precedes our existence and will continue to exist after us. It is a world of which we are a part.

God's revelation in creation and the possibility of knowing the Creator through his creatures, however, raise some questions. What is the cultural and religious significance of this revelation, and what is its relationship with the revelation of Jahve in the history of Israel? Can such a manifestation guarantee access to the one and true God through mankind's religious experience? The legitimacy of these questions suggests the need for a closer examination of the issue, both to assess its inclusion within a contemporary theology of Revelation and to explore its implications. As usual, in this volume I seek to consider those perspectives that seem most relevant to our contemporary interlocutors characterized by a scientific view of nature.

Thinking about God's revelation in creation certainly enjoys some connection with the philosophical issue of the natural knowledge of God. However, the former refers primarily to religion, while the latter refers to philosophical rationality. The subject has access to *a revelation of the Absolute* in an existential sphere rather than in a theoretical ambit. For this reason, Scripture (and therefore also theology) expresses this revelation with poetic, symbolic,

¹ Cf. Max Scheler, "Warum keine Neue Religion?" *Vom Ewigen im Menschen* (Berne - München: Francke Verlag, 1968), 333.

metaphorical language, not resorting to conceptual syllogisms. We are faced here with transcendental revelation, rather than with categorical knowledge. Although the language used by categorical revelation is always insufficient for speaking about God, nevertheless it can convey teachings, commandments, or precepts. Meanwhile, transcendental revelation, even if expressed through linguistic forms, always goes beyond language and transcends it. Along a philosophical-theoretical itinerary, it is the human being who chooses the routes along which to attempt to reach the Absolute, and later to discuss their reliability. In the logic of revelation, rather, it is the Absolute who chooses the path for encountering humanity. In the first scenario, the human person must not forget that the philosophical images glimpsed of the Absolute are those corresponding to the specific theoretical itineraries he or she has chosen. In the second case, humanity must not forget that every divine revelation comes to us only through the mediation of creatures. The latter, however, cannot be established by humans, as it would lead easily to idolatry or magic. Rather, it must be set in motion by God. It is only the Creator who makes creatures transparent in their reference to the origin, disclosing His rationality, truth, and beauty within them. God's revelation, if it truly is such, surprises humans, surpassing, frightening and fascinating them, even seducing and challenging them.

The phenomenology of religion has taught us that nature has always been the place of hierophanies that have characterized the religious sense of our predecessors and, in part, continue to characterize it even today. Proposing itself as the fulfillment of authentic human religiosity, Judaeo-Christian Revelation is not afraid to maintain that the One and Triune God, the Creator of heaven and earth, and even some of his attributes may be acknowledged through the spectacle of nature. However, for this affirmation also to be meaningful to contemporary scientific people, some clarifications are necessary here. One wonders, for example, whether nature might still be considered a "sign of a mystery" – a sign of its Creator – despite the fact that today the sciences make nature available to us with extraordinary depth and with every richness in detail, without regard to any sacred or religious allusion. Moreover, at first sight, nature does not seem to have a dialogical character but, rather, an impersonal and objective dimension. In order for a personal God to reveal himself in and through nature, it should be clarified, then, whether nature is able to transcend its own

factual dimension, and how. I will attempt to address both objections, one after the other.

6.1 Is there room for divine revelation in nature?

At the end of Part I of this volume, we noted how the universe as a whole poses questions that transcend it, showing the reasonableness of the thesis that, when confining ourselves to empirical analysis, we cannot provide an exhaustive answer to ultimate questions concerning the origin of the cosmos or the meaning of its evolution over time. We also have pointed out that the method of the natural sciences does not seem adequate to support a “scientific atheism.” Indeed, discourse on God does not lose meaning in an epistemological framework that is open to recognizing the ontological, logical, and anthropological foundations of scientific analysis. Scientific activity, being personally motivated by the search for truth and meaning, perceives the presence of a *logos* in nature. Such a *logos* or meaning, grasped when considering the coherence and intelligibility of physical reality, is recognized not only as a source of rationality (*ratio*), but also as witness of a dialogic dimension inherent to nature (*verbum*). Terms such as “mystery” or “miracle,” even in possessing a wide semantic field, continue to be present in the philosophical reflections of many researchers who wonder about the ultimate foundation of nature.

These previous remarks might perhaps be sufficient for considering the *res naturalis* as the place of a “semantic surplus”, which would make it appropriate to host the revelation of the Absolute. However, I would like to propose some further considerations in support of the idea that nature, even within the scientific context that characterizes today's culture, has never lost its enchantment nor its ability to provoke existentially decisive questions. Nature continues to nurture a reasonable sense of wonder, which holds important propaedeutic value for recognizing God in creation.²

At the level of custom and shared sensibility, of primary consideration is how the aesthetic appeal operating in the natural

² Cf. Alister McGrath, *The Re-enchantment of Nature. Science, Religion and the Human Sense of Wonder* (London: Hodder and Stoughton, 2002); and Marco Bersanelli and Mario Gargantini, *From Galileo to Gell-Mann. The Wonder that Inspired the Greatest Scientists of All Time* (West Conshohocken, PA: Templeton Foundation Press, 2009).

world continues to arouse, within all of us, significant wonder and amazement. The most beautiful images of terrestrial fauna and flora, as well as those of celestial bodies and of galactic and extragalactic objects, continue to astound scientists. Likewise, images enhanced by modern technologies are able to penetrate the structures of the infinitely small, and to open horizons to the infinitely large. These are all part of our daily lives in the postmodern era. We are not only surprised at an aesthetic level by the *forms* of the physical and biological world that surrounds us, in large part being the effect of laws of nature and evolutionary mechanisms. We also are surprised at a theoretical level when thinking of the many complex *processes* that have given rise to our habitat in the cosmos and have regulated the wonderful development of life up to the appearance of human beings. Nature amazes and fascinates us, being always more creative than our expectations and hypotheses. And nature reaches beyond our imagination, often challenging our common sense.

A second consideration concerns the unchanged availability of cosmic-natural scenarios to arouse ultimate (and hence religious in character) questions about our origin and our destiny, life and death, good and evil. We have already noted the presence of these questions in popular scientific writings and philosophical reflections of many scientists, especially when aged or at the end of their research activity. We find evidence of this also in various works of literature and cinema, framed within the context of science and science-fiction, often questioning technology and progress while inviting a non-esoteric opening towards the mystery of our existence. At times, novels tell of possible contact with extra-terrestrial intelligence in a quasi-religious atmosphere, as if we were looking away from our planet to seek answers that might improve our lives, make us better, and help us to understand our origins and our destiny, as if waiting for a kind of "revelation." Beyond the subjective and sometimes fantastical aspects of such contexts, it is interesting to note that philosophical or religious questions are set within scenarios of future scientific progress, of new discoveries that open up to ever deeper questions. The rationality of science does not seem to have rejected the idea that nature, and the human study of nature, are still able to refer to something beyond themselves.

In order to understand which constellation of meanings nature seems to convey, it may be significant also to consider some aspects of the phenomenology of scientific work. Testimonies of researchers who compare their work to a "religious" experience are not

infrequent. It would not be reckless to qualify as quasi-religious the motivations that guide their activity in part, based on the search for truth and the study of reality as a source of meaning. Henri Poincaré's words are quite eloquent in this respect: "The scientist does not study nature because it is useful to do so. He studies it because he takes pleasure in such a study; and he takes pleasure in it because nature is beautiful. If nature were not beautiful, knowing about it would not be worthwhile and life would not be worth living."³ Scientists' reflections not only express amazement and wonder, but also culminate in feelings of respect and reverence typical of an encounter with mystery, giving rise to what Enrico Cantore has called "the scientific experience of the ultimates."⁴ George Simpson, one of the fathers of evolutionary biology, affirmed on one occasion: "No poet or seer has ever contemplated wonders as deep as those revealed to the scientist. Few can be so dull as not to react to our material knowledge of this world with a sense of awe that merits designation as religious."⁵ We are not faced with isolated comments, but with a widespread experience shared by first-line authors from Maxwell to Planck, from Einstein to Heisenberg, from De Broglie to Dobzhansky, and today proposed also by best-selling authors such as Paul Davies or John Barrow. Everybody seems to agree that "there is 'something' beyond the surface reality of daily experience, *some meaning behind existence*."⁶

Even those among these individuals who declare not to adhere to any specific religious denomination have no difficulty qualifying their involvement in the study of nature as a "religious commitment" as they are committed to reality and truth. Even scientists known for their agnostic position like Fred Hoyle have recognized it: "Why, in fact, do we do physics? [...] The real motive, of course, is a religious one. [...] Our aim is the same: to understand the world and ourselves, not to make a profit or justify ourselves by producing an endless stream of technical gadgets."⁷ On some

³ Henri Poincaré, *Science and Method* (New York: Dover, 1914), 22.

⁴ Cf. Cantore, *Scientific Man*, 95-132 and the many quotations of scientists reported by this author. Cf. also Langdon Gilkey, *Religion and the Scientific Future* (New York: Harper & Row, 1970), 35-64.

⁵ George G. Simpson, *This view of Life. The World of an Evolutionist* (Harcourt, Brace & World, 1964), 233.

⁶ Davies, *The Mind of God*, 14-15. Italics are mine.

⁷ Fred Hoyle, "Science, Society, Action, Reaction," *Physics Today* 21 (April 1968): 148.

occasions, research work is compared to a sort of “dialogue” between the scientist and nature, a dialogue that develops between questions that the scientist formulates through experiments and answers that nature provides through results. One can go so far as to speak of scientific activity as an “experience of revelation” when a scientist describes the excitement felt during a new discovery. It is an intellectual insight achieved not on purely subjective grounds but sometimes is described as an “encounter with the Other.”⁸ But what *otherness* could we talk about here? It seems to me that we are faced with the idea that nature appears to the scientist in its irreducible specificity and fundamental properties, which ultimately refer to a source of information and meaning that transcends it.

What use could a contemporary theology of Revelation make of the aforementioned points? There is no lack of theologians, I am sure, who suddenly think of a sort of “alternative religion” or hastily observe that someone is transforming science into a religion when a scientist speaks of religion or revelation. However, there are some welcome exceptions. Heinrich Fries, one of the few authors whose *Fundamental Theology* pays attention to the revelation of God in nature, observes: “The anthropological and anthropocentric epochs into which we have entered do not exclude but include the consideration of nature as sign, symbol, and revelation of transcendence, because the human being cannot live without this relationship. The progress of natural science and the growing knowledge of empirical causes connected with it do not supersede the fundamental structure of nature to be symbolic of transcendence; rather, they make it more clear.”⁹ Years ago, the Italian theologian Carlo Colombo already claimed that the intellectual work of the scientist has religious value.¹⁰ If theology wishes to engage in a

⁸ “Sometimes, through a strong, compelling experience of mystical insight, a man knows beyond the shadows of doubt that he has been in touch with a reality that lies behind mere phenomena. He himself is completely convinced, but he cannot communicate the certainty. It is a private revelation.” Edwin Hubble, *The Nature of Science and Other Lectures* (1954), cited by Olaf Pedersen, “Christian Belief and the Fascination of Science,” George Coyne, Robert Russell and Willam Stoeger, eds., *Physics, Philosophy and Theology. A Common Quest for Understanding* (Vatican City: LEV - University of Notre Dame Press 1988), 133.

⁹ Heinrich Fries, *Fundamental Theology* (Washington: The Catholic University of America Press, 1996), 195.

¹⁰ “The natural sciences appear to be a happy application of the general principle that in the organization of the universe the human being must be conceived as a historically necessary collaborator of God [...]. What is said about work in general

courageous dialogue with the sciences, it should enhance the previous insights arising from scientific activity without failing to indicate the ever possible drifts towards pantheism and deism. Whenever declared, deism should be left open however possible to the acknowledgment of a more convincing theism. Theism, in fact, offers a more persuasive answer to the problem of contingency (against pantheism) and better intercepts the expectation of authentic religious experience (against deism). A dialogue between the theology of Revelation and phenomenology of scientific activity could take advantage of a classical reflection on the Western theology of *Logos*. However, it also could make intelligent use of the Orthodox tradition concerning *Sophia* and its corresponding view of the created world—an opportunity favored by the fact that some of the exponents of sophiology, first of all Pavel Florenskij, were also excellent scientists. In the first case, the presence of rationality, logic, and order in nature should be emphasized, suggesting their foundation in the theology of the Verbum-Logos. In the second case, the canons of relationality and unity, and of exemplarity and beauty, should be valued while showing their Trinitarian character.

I am persuaded that, in so doing, the scientific community would be helped to find inspiring categories in the Christian tradition for understanding and interpreting natural reality, without the need to move (as frequently happens) towards questionable religious or pseudo-religious views often colored by exoteric outlooks.¹¹ Within the framework of such intelligent dialogue between science and theology, theologians would be urged to provide further insights into the relationship between the Christian God and the natural world, providing some important clarifications. I will list some of them here.

applies to every human activity, including, first and foremost, intellectual activity: for this reason the intellectual work of scientists has a religious value, and as such it must be considered." Carlo Colombo, "Il valore teologico delle scienze della natura," *Teologia* 9 (1984): 221–230, here 229.

¹¹ It was often the need to interpret apparently contradictory or mysteriously holistic phenomena of nature, especially in the field of quantum mechanics, that attracted the attention of some scientists toward oriental philosophies and neo-pantheistic visions, as happened for example in the "Princeton Gnosis" or when discussing the "Tao of Physics." Cf. Raymond Ruyer, *La Gnose de Princeton. Des savants à la recherche d'une religion* (Paris: A. Fayard, 1974); Fritjof Capra, *The Tao of Physics. An Exploration of the Parallels between Modern Physics and Eastern Mysticism* (Boston: Shambhala, 2000).

A first matter to clarify is to give reason for the fact that nature, if endowed with the role of manifesting the divine, seems to possess a certain ambivalence. Nature is not only the source of wonder and amazement, but also the place of terrible upheavals that endanger human life, overwhelming it to the point of annihilation and disrupting it in ways that dramatically highlight human fragility. How can we understand, before such innate ambivalence, the meaning of God's revelation precisely through creation? This subject has two sides, one religious and one philosophical. Perhaps paradoxically, the religious sense reinterprets the harmful and disturbing aspects of nature as a new manifestation of the sacred, or more precisely of the *numen*, whose double aspects of being *tremendum* and *fascinans* always have characterized encounter with the divine. From this point of view, *homo religiosus* shows a different sensibility from that of our contemporaries, less inclined towards a religious perspective. The religious person does not see suffering and fragility as obstacles that may obscure or even deny the manifestation of God in nature. It is the irreligious person who tends to refute the idea that, if nature really reveals God, it can also turn against human life. When the problem is discussed on a strictly philosophical terrain, the question changes. Philosophers ask whether suffering is compatible with a finalism in nature, and what role should be attributed to *physical* evil—pain and destruction caused by the natural elements—in the elaboration of a contemporary theodicy. I will return to this problem in Part III of this volume when discussing some objections to God's revelation in nature; here, I confine myself to mentioning three essential points. If God is truly the Creator of all, then He alone knows the meaning of the whole, and, therefore, He alone has the capacity to guide everything towards its end, despite the existence of fragility and evil. Analyses carried out at an empirical and quantitative level, like those performed by the natural sciences, cannot affirm or deny the presence of a finality in nature, if finality means an intentional and personal purpose. Finally, theology has no complete and exhaustive answer concerning the problem of evil. Nonetheless, theology clearly indicates the Christological significance of the Paschal Mystery as a necessary cornerstone for understanding the meaning of limit and finiteness in a created universe, a universe that comes from God but is not God.

A second theological clarification concerns the relationship between nature and sacrality. Following a widely shared

conception, modernity would have surpassed the classical and mediaeval views that looked at nature as a harmonious and ordered cosmos—the adequate image of God as Creator and of his perfections. The modern reconstruction of “natural history,” both physical and biological, available thanks to science, would have now manifested a *naked* nature, stripped of its sacredness. Nature would be merely the result of blind cosmic forces, the theatre of a hard struggle for survival no longer suitable for revealing the presence of a Creator. The notion of “naturalism” today summarizes the purpose of such a program. In addition, there is also credit for the view that Christianity itself has contributed to a “desacralization” of nature through a theology of creation that finally has detached God from creatures. In this way, natural knowledge has been freed from a fully deductive Platonism, thus fostering the development of induction based on experimental observation.

If this were the state of affairs, how could we interpret the sacred and revelatory dimension of nature? Let us try to shed some light on this. Christianity certainly has contributed to desacralizing nature, but it has done so only in relation to the *method* of the natural sciences, that is, regarding the way in which the sciences can finally handle nature as their own object. It is not true, however, that Christianity has desacralized the *relationship* between the researcher and nature. This relationship, which the Christian faith considers parallel to that between humans (*imago Dei*) and creation (*vestigia Dei*) in their common reference to the same Creator, operates according to symbolic aspects. These transcend the empirical analysis typical of the method of science and enable access to the semantic level concerning what nature means. For those who have eyes capable of recognizing it, the relationship between humanity and nature continues to be profoundly religious, even today. Its sacredness derives from linking the human beings to reality and from connecting them to the truth, since humans experience their dependence on a Creator in both of these relations.¹² The

¹² Joseph Ratzinger wrote: “I was reminded of some phrases written by Karol Wojtyła in 1976, when he preached the Spiritual Exercises for Paul VI and the Roman Curia. He told of a physicist with whom he had shared discussions at length and who, in the end, told him: ‘From the point of view of my science and its method I am atheist...’. However, a short time later the same scientist wrote in a letter to Wojtyła: ‘Every time I find myself before the majesty of nature, of the mountains, I feel that He exists.’” Joseph Ratzinger, *Presentazione*, in Giovanni Paolo II, *Trittico romano. Meditazioni* (Città del Vaticano: LEV, 2003), 5.

relationship between the human being and nature is a *relatio religionis*. This bond is religious not because of nature—as if nature were the source of sacredness—but because humans are bound to seek truth and meaning starting from nature and in the context of nature. Nature is placed in between two intelligences, the human and the divine, the latter being the very source of the intelligibility of reality.¹³ To affirm God’s revelation through creation, it is not necessary to bestow upon nature any sacredness, something that science would not tolerate. On the contrary, it is sufficient to recognize nature as symbolic, exceeding the place of meanings that transcend it, capable of attracting and motivating human search for truth. These are all things of which science would approve.

Finally, when speaking of God’s revelation in creation, theology must specify that it does not refer (only) to revelation corresponding to the mere existence of things, that is, their “position” into being. This revelation also refers to all that created things realize, operate, and develop according to their nature (Gr. *φύσις*), whose becoming ultimately depends on its Creator. In this respect, the potentialities of processes, the network of natural relations, and the many evolutionary aspects of reality can be rescued and appraised. In their coherence and emergence, all these processes also reflect the perfections and wisdom of the Creator and, for this reason, never cease to amaze and attract. The “revealing” dimension of a nature *in progress* includes particularly the phenomenology of the human person. Human genius, cultural evolution and scientific progress manifest not only human self-transcendence, but also reveal the transcendence of the Creator, toward whom that self-transcendent dynamism is directed. In the evolution of nature (cosmos) and in the history of freedom (human being), God reveals Himself on a universal scale. If creation is understood as *creatio continua*, then God’s revelation through creation must also be understood as a *revelatio continua*. And a “world in becoming,” including humans who build their own future, reveals God as the author of a Promise.

¹³ Natural things (*res naturalis*), Aquinas says, are “constituted between two intellects,” namely the human and the divine, cf. *De veritate*, q. 1, a. 2, sol.

6.2 The personalistic dimension of human enquiry concerning the foundation of natural reality

More than a few philosophers interpret the awareness of one's own being-there and the being-there of the world as a "revelation of Being." From Parmenides to Heidegger, it is easy to find the idea that it is, in the end, reality itself – in which we exist and move – that is unfolding and encountering us. Through such awareness, which requires a certain effort and attentiveness, the subject could grasp the revelation of Being. It would be a primary philosophical experience, prior to any possible form of thought, including religion. We now ask: Is this primary experience, by which we human beings grasp the Being in whom we exist and who comes to meet us, sufficient for theology to speak of a revelation of God through nature? I don't think so. According to a truly metaphysical outlook, it is not the being that reveals itself, as Heidegger thought. What is revealed, rather, is *the meaning that the being carries with it*. Strictly speaking, Being does not need to be revealed because it is supremely intelligible. Following Aristotle (and later Aquinas), Being is the first intelligible from which all further knowledge and specification descend. We come across *being*, while the *meaning of being* must be sought and listened to. Understanding the meaning of things thus implies attitudes of humility, openness, careful meditation, recognizing one's own contingency and understanding one's dependence on a Creator. These anthropological attitudes constitute religious behavior and concurrently express the possibility of opening oneself to divine revelation. When thinkers reflect on the unveiling of being, it is the *unveiling of meanings*, rather, that directs their attention and interest. What is "mysterious," even more than being as a factual event, is indeed the sense and the awareness of our being-there.¹⁴

According to the comments above, the ontological experience of the Foundation and the aesthetic experience are not yet, in the strict sense, religious experiences of revelation: the latter can only develop when entering into the sphere of meanings. It is then that human beings open themselves to a creaturely relationship with the Absolute, leading them to ask: *Who* is revealing to us through nature and what does He disclose of Himself? Is He merely revealing his existence or also his intentions, and are the latter good or bad? And

¹⁴ Cf. Christophe Theobald, *La Révélation ... tout simplement* (Paris: Les éditions de l'Atelier, 2001).

again: is the human being alone, abandoned to himself, or is our face always known to Someone? It is easy to notice that in all of these questions, the subject migrates from a purely philosophical reasoning to a religious terrain, passing, so to speak, from a cosmological to an ethical dimension. Indeed, as Remi Brague observes, it is cosmology that awakens ethics, giving rise to a dialogue between humanity and nature.¹⁵ When we begin by questioning nature, we end by questioning ourselves. This is how the Italian existentialist poet Giacomo Leopardi (1798–1837) expresses it in the verses of his *Night Song of a Wandering Asian Shepherd*:

What are you doing, Moon, up in the sky?
Tell me, what are you doing, silent Moon?
Rise at night, and go,
contemplating the deserts; then you rest.
Aren't you paid yet
to go around along the eternal paths?
Still you do not shy away,
to wander and see these valleys again?
His life looks like yours, the life of the shepherd.
He rises at the first dawn,
Moves the flock beyond the field,
and sees flocks, fountains and herbs;
Then, weary, he rests in the evening:
He never asks for anything else.
Tell me, O Moon, what is the pastor's life worth?
And what is your life worth to you?
Tell me, where does it tend
this short wandering of mine,
your immortal course?¹⁶

¹⁵ Cf. Rémi Brague, *La sagesse du monde. Histoire de l'expérience humaine de l'univers* (Paris: Fayard, 1999).

¹⁶ Giacomo Leopardi, *Canto notturno di un pastore errante dell'Asia* (1829), vv. 1–20, *Tutte le poesie e tutte le prose*, (eds. L. Felici and E. Trevi; Roma, Newton-Compton, 1967), 160–161. The above translation into English is mine. Here is the original Italian text: “Che fai tu luna in ciel? dimmi, che fai, / silenziosa luna? / Sorgi la sera, e vai, / contemplando i deserti; indi ti posi. / Ancor non sei tu paga / di riandare i sempiterni calli? / Ancor non prendi a schivo, ancor sei vaga / di mirar queste valli? / Somiglia alla tua vita / la vita del pastore. / Sorge in sul primo albore, / move la greggia oltre pel campo, e vede / greggi, fontane ed erbe; / poi stanco si riposa in su la sera: / altro mai non ispera. / Dimmi, o luna: a che vale / al pastor la sua vita, / la vostra vita a voi? dimmi: ove tende / questo vagar mio breve, / il tuo corso immortale?”

God's revelation in creation is also man's "revelation" to himself, that is, revelation of his free personal being, of his existential condition and of his demand for meaning. When we acquire this awareness, our questioning transcends the impersonal dimension of nature and its mere being, and begins questioning the *information* that nature contains. This enquiry can be intense and passionate to the point of invoking, and indeed praying to, another personal being on Whom we feel that we depend, so that He might reveal to us the reason for our being in the cosmos, should such a reason exist. Revelation is a personal category and the name of a relationship. However, the issue of recognizing the personal character of the Absolute when starting from nature is not obvious; therefore, we must explore if and how this acknowledgment is possible. Is the world displaying itself as God's *creation* or, rather, are we the ones who experience the world as such, after God the Creator has revealed himself to us?¹⁷ Philosophical questions like the following ones maintain all their value: Is natural being, humans included, the effect or work of a personal being? And again: Which characteristics would a natural being have if it were really the effect or work of a personal being? When we affirm that nature reveals something, we are in fact asserting that behind nature, at its very foundation, there is Someone. In my opinion, there are two reflections that, from a bottom-up itinerary, can favor knowledge of a personal God's revelation in creation, almost representing its "conditions of possibility." I refer to the perception of nature as *gift* and as a *work of art*. In both perceptions, we do not confine ourselves to grasping the being of nature around us, but we recognize the meaning that reality brings with it, thus accessing the canons of revelation from person to person.

Experiencing the world as a gift—like the gift of one's life—seems to admit two aspects, one logical-formal and the other existential. The first requires an epistemological approach, the second operates according to a spontaneous philosophy.

The first aspect, whether and how the world can be qualified as a "gift," is not foreign to the empirical experience of reality as developed by the sciences. Nature presents itself to us with its "givenness" (Lat. *quidditas*), having all material realities with their

¹⁷ Cf. Jürgen Moltmann, *God in Creation. An Ecological Doctrine of Creation* (London: SCM Press, 1997), 53.

formal properties. These properties are the source of scientific knowledge, as they are the basis for the regularity and stability of all material objects and for their lawful physical or biological expression. The dynamism of the transformations and the interweaving of the relations that give rise to all complex natural realities do not render naïve or superfluous terms such as *quidditas*. It is a metaphysical substratum that holds regardless the variety of processes and the multiplicity of changes. Actually, each material entity comes to our experience having its “being” and its “nature,” both known *a posteriori* and not posed *a priori*, discovered and not preordained. In metaphysical terms, not only the being but also the properties of being are offered to our experience, not only matter but also form. To acknowledge reality as “given” means to admit the possibility of a source of meaning, a source for the form—or, if you prefer, a source for information; in short, the possibility of a *giver*, someone who offers.

The second aspect begins from the existential experience of one’s self and one’s place in the world. We realize that life and nature are contingent, and thus *gratuitous*. A reason that is free from ideological conditioning and educated to a metaphysical reasoning, being capable of inferring non-material causes that transcend empirical effects, recognizes that such gratuitousness recalls an “otherness.” Reference to some otherness is supported by aesthetic and moral experience, by wonder before beauty, by the peace of the good once reached, and by the satisfaction of love once possessed. Being, the world’s being and our personal being, is understood as a gift coming from Someone. Someone who is not seen yet who is there. We find here, once again, the dynamics of veiling and unveiling, familiar to the phenomenology of gift: gift often hides the donor, who withdraws to the sidelines.

The two facets, logical-formal and existential, present a precise articulation. For the first not to remain suspended in mid-air, it must flow into the second: givenness must be understood as gift.¹⁸ This

¹⁸ “It should not be forgotten that the semantic value of the term ‘given’ [Lat. *datum*] is complete only when we understand the linguistic meaning of its causal value. It is a ‘given by’ and not simply a ‘given that.’ It can be understood, both in a purely logical-analytical sense and in an existential sense; that is to say, in both a scientific and a philosophical sense. In both cases, the term ‘given’ does not mean simply *it is here*, but *it is here with a question about the why of its being.*” Luciano Baccari, *Miracolo e legge naturale* (Città del Vaticano: Urbaniana University Press, 2005), 19.

articulation is nothing but a different way of considering the passage from a philosophical to a religious dimension. It is along a religious dimension that the world is experienced as a gift from a donor, and the revelatory character of reality is clearly realized. The ultimate basis on which reason finally can rest is, again, a personal being.¹⁹

Talking about the natural world as a “work of art” is more difficult than talking about the world as gift. However, it could be done in a heuristic way. If it were to be done formally and rigorously, complicated questions would arise: To what work of art are we referring – the world as a whole or some specific creatures? Within which space-time boundaries do you think these “artistic” creatures should be identified: the shape of an atom (if any), a crystal, a cell, or the contours of a much more complex organism such as the human being? Are we dealing with a finished work or rather with a work in progress? In addition, many uncertainties exist in defining which works are or are not *art*, what a work of art should look like, or what it should be even though it doesn't look to be so ...

However, some general canons could guide us. A work of art is recognized as such by its *universality*, as something praised and esteemed by a wide public; by its ability to *communicate emotions and feelings* (such as joy, sadness, peace, anguish, gratitude, praise, contemplation, or ecstasy), that the author intends to arouse in those who observe his or her work; by the *mastery* the author employs in building and fashioning with a great talent all the elements that work includes; and, finally, by its *power to transcend* the matter of which it is made, directing the observer's gaze towards the discovery of some innermost meaning. A work of art, when declared as such, is certainly a work whose author is a personal subject. The aesthetic and rational dimensions are less distant from each other than one might think: the harmony between the parts and coherence of the whole conspire together to highlight the author's intentionality. Order and beauty, understanding and contemplation do not oppose each other. The necessary presence of mastery – we use the expression *workmanlike* (made according to the best rules of a specific art) to indicate the competence with which said work must be carried out – also communicates that the work of art contains and manifests precision, research, attention, care, and provides new solutions. We associate to works of art terms such as “masterpiece,” “splendor,” “spectacle,” and “charm.” It is for these reasons that the

¹⁹ Cf. Luciano Baccari, *Episteme e Rivelazione* (Roma: Borla, 2000), 169–170.

notion of “revelation” seems well-suited to a work of art, wanting its author to communicate content that looks universal, transparent, and intelligible. Such characteristics do not need a complex hermeneutics to be highlighted, but simply arise from careful contemplation of a work of art. They are all captured by a single insight that, in revealing them, discloses at the same time the *personal* nature of its author. The work of art, therefore, reveals a personal subject, being capable of reproducing in those who contemplate it something that belongs to its author. It generates feelings, transmits sensibility, conveys a specific vision, and communicates through a universal language.

The aforementioned considerations can be applied to the natural world, in whole or in part, albeit valid only heuristically. Consider, for example, that human language over the centuries assigned to nature precisely the same adjectives that we use when speaking of a work of art: beautiful, wonderful, fascinating, surprising...²⁰ It is important not to forget that to perceive nature as a work of art we need to look at it with a *recta ratio*, that is, with a mind free from ideological conditioning and open to the mystery of being. If a subject observes nature in this spirit, then he or she is in a position that enables appreciating the plot of meanings that nature transmits, while experiencing once again the feelings it arouses. Meanings and feelings are conveyed through a symbolic language available to all, experiencing what we could legitimately call a “revelation” of a personal author. “This world” –G.K. Chesterton observes– “does not explain itself. It may be a miracle with a supernatural explanation; it may be a conjuring trick with a natural explanation [...]. There is something personal in the world, as in a work of art; whatever it means it means violently.”²¹ Romano Guardini emphasized the need to go beyond the impersonal idea of nature inherited from Greek culture and widely present in modern times, something from which everything comes and to which everything returns, something which simply is, without any further cause:

²⁰ On the world as a “work of art” and on the meaning that this expression gains within the context of a phenomenology of religion, see Max Scheler, “Die Wesenphänomenologie der Religion,” *Vom Ewigen im Menschen*, 162-163.

²¹ Gilbert K. Chesterton, *Orthodoxy* (Garden City NY: Doubleday, 1959), 65.

The first conversion, the fundamental reshaping of thought, consists in thinking of the world not merely as nature, but as a work, as a work of God. It's not easy. The thought of the Modern Age, even the most spiritual, the finest and the most powerful, has become naturalistic in character. The Modern Age thinks of the whole of nature as something which simply "is"; something from which everything comes, from which everything receives its course and to which everything returns. But the world is not like that, the world is a "work." Of course, God's work. So immense in size, so abysmal in depth, so exact in its laws, so perfect in every point, that it convinces in every way. Indeed, it threatens to overwhelm the human spirit, which runs the risk of taking nature simply for what it is, forgetting that the world is created, that it is a personal work.²²

Christian thought should not be afraid to cross the philosophical itineraries here sketched, reading in a wise manner the recent discoveries about the structure and functioning of the natural world, and the incredible depths to which they gain access, now illustrated with so much wealth and so much beauty in details by science. If theologians and philosophers do not comment on the aesthetic and spiritual import of such a new perspective of nature, scientists will do it anyway, in their popular works, using the philosophy they have at their disposal, the one they consider most appropriate to their world-view. It is the symbolic value of nature, the capacity creatures have to incarnate information and meaning, that Christian theology should examine once again more deeply, in accordance with Scripture and tradition.

One last remark is important here. To maintain that the natural world has the characteristics of a personal work is not the same as believing that the Creator is an Architect, an Engineer or a Clockmaker. Such metaphors would cause a sense of disapproval in many scientists because the vision of nature they endorse is almost always a mechanistic one, now abandoned by both science and common feeling. Christian thought originally developed other metaphors. The Church Fathers willingly compared the entirety of creatures to a symphony of voices and instruments, to the letters and words that make up a book, and to a ship that moves along a route

²² Romano Guardini, "Über der christlichen Sinn der Erkenntnis" (1951), *Unterscheidung des Christlichen* (Mainz - Paderborn: M. Grünewald - F. Schöningh, 1994), vol. 1, 284.

and on which everything cooperates for the good of those who sail. For Origen, explicitly, the world's creation is the result of divine art, manifested in the diversity, richness and form of created things; in them, there really is something "artistic."²³ Basically, nature is seen as a *sign*, something that leads beyond itself up to the original reference to the goodness of a Creator, as expressed well by Francis of Assisi. Mediaeval and renaissance thought often has indulged in portraying the human being as a "microcosm" in which the whole universe is reflected and reproduced, and by whom it also is transcended.

By recovering this tradition and adapting it to contemporary language, Christian theology has the opportunity to indicate a way of thinking that overcomes the temptation generated by two common views of nature. The first one, animistic and mythical, personifies natural elements and forces while surrendering to superstition, in the past as in the present, considering as a mystery what really is not so. The second temptation looks at nature in an impersonal and instrumental way, without any reference to the One who can found it and give it a meaning; consequently, nature results unlimitedly available to the human technical activity of transformation and manipulation. Only an authentic religious sense can keep away adequately from both temptations, realizing that all things speak of God without being God, that nature is not the true subject of this dialogue, but rather *where* the dialogue between God and the human being takes place. In this sense, theology should not refer only to ontology, but also turn to anthropology and personalism. In fact, to say that creation is a work of art—the work of a personal being—is much more than saying merely that the world is the *effect* of a First Cause. This causal relationship is undoubtedly a necessary statement, but on its own it is not enough for developing a true theology of God's revelation through a created world.

²³ Cf. Origen of Alexandria, *Selecta in Psalmos* I, 4 (This commentary to the Psalms was authored probably by Evagrius Ponticus).

CHAPTER 7. THE METAPHOR OF THE TWO BOOKS: AN INTRIGUING HISTORICAL PATH

The contemporary dialogue between science and theology is often presented in terms of a comparison between the “Book of Nature” and the “Book of Scripture.” There are basically two ways in which this metaphor can be used. More generally, the metaphor of the Two Books refers to the comparison between the knowledge of nature achieved by science and that obtained from Judaeo-Christian Revelation, which reads and understands nature as creation. In this case, it is nothing but a different way of referring to “Science and Religion” as a topic under debate. However, we also can refer to the term “book” in a specific and definite manner. In this case, the metaphor of the Book of Nature is used to emphasize the parallel between nature and a “written document,” that is, a document written by someone and addressed to someone else; a document intended to convey intelligible content; a text that might require a certain effort to be interpreted properly and explained according to its author’s original meaning. However, if everyone understands what is meant when speaking of Scripture as a book, it might be less clear what is intended when comparing the cosmos to a book. Is this *analogy* truly meaningful? While any metaphor is certainly a form of analogy, it is quite a weak similarity and admits degrees and nuances. The main question becomes: Are we permitted to consider nature as a book and, more specifically, how has such a metaphor been employed throughout history?

When speaking of the relationship between the Two Books, one first thinks of what happened from the 17th century onward, that is, from the era when the scientific revolution began to place into question some of the relevant beliefs expressed by the theological establishment. It was within this context that a possible “conflict” between the Two Books emerged. However, the image of nature as a “book” enjoyed wide literary usage well before the era of Galileo and Kepler. It is worthwhile, then, to investigate what happened before the scientific revolution, in order to shed light on how the main philosophical ideas concerning the Two Books (readability,

harmony, conflict, mutual interconnection, etc.) have evolved through history.

7.1 The theological import of the metaphor of the Two Books

Recent times have witnessed theology's remarkable interest in the metaphor of the Book of Nature for expressing the created world as a *locus* of divine presence and revelation. In the recent Magisterium of the Catholic Church, the metaphor has been mentioned by John Paul II in *Fides et ratio* (cf. n. 19), Benedict XVI in *Verbum Domini* (cf. nn. 6–21) as well as in other documents (cf. for example *Caritas in veritate*, n. 51) including Francis in *Laudato si'* (cf. nn. 12, 85, 239).

Indeed, interest in the metaphor extends far beyond the theological domain. For many centuries, it has attracted continuing fascination across a range of contexts including literature, art, and particularly the natural sciences. This metaphor, however, is far from having an established meaning, having been employed across a broad range of cultural, philosophical and theological contexts for very different purposes. In patristic and mediaeval literature, nature as a book was seen in harmony with Sacred Scripture, whereas from the early Modern Age onwards it also has been presented as a book autonomous from biblical Revelation.

In general terms, linguistic and literary studies seem to have dominated this research field. The classic reference is to Curtius' *European Literature and the Latin Middle Ages* (1948), which includes a chapter on the metaphorical uses of *book* in the history of literature, quoting various (mainly mediaeval) instances of nature as a book. The metaphorical approach is applied more systematically in Rothacker's *Das Buch der Natur* (1979), which is, however, only a collection of citations, the majority of which are from the age of Romanticism. A third major contribution is Blumenberg's *Die Lesbarkeit der Welt* (1981), which uses both of the previous studies as well as other sources to provide a more systematic analysis of the history of the idea that the world is *readable*. Yet Blumenberg's methodology is decidedly "metaphorological" (his term), and little attention is paid to the issue's theological dimension.¹ More recently,

¹ Cf. Ernst R. Curtius, *European Literature and the Latin Middle Ages* (Princeton: Princeton University Press, 1990), ch. 16; Erich Rothacker, *Das Buch der Natur. Materialien und Grundsätzliches zur Metaphorengeschichte* (ed. W. Perpeet; Bonn: Bouvier, 1979); Hans Blumenberg, *Die Lesbarkeit der Welt* (Frankfurt: Suhrkamp, 1981).

a range of new studies has been presented, particularly the two-volume series that includes historical surveys and analyses of the metaphor edited, respectively, by Vanderjagt and van Berkel (2005–2006), and van der Meer and Mandelbrote (2008).² There are important contributions in these volumes, although their focus is overwhelmingly on mediaeval and modern sources and pays less attention to the Classical and Patristic Ages, when the metaphor was born.

7.1.1 Historical steps and some hermeneutical clarifications

As stated earlier, intellectuals are still far from reaching a common view on many aspects of the metaphor. For instance, regarding its very historical origin, Curtius and Blumenberg provide some indications that the underlying idea could be found in ancient Mesopotamia and possibly (yet with doubt) in ancient Greece. However, almost all of the patristic literature is ignored, with the exception of some references to St. Augustine (354–430).³ Drecoll (2005) has argued that the specific expression *liber naturae* (that is, the typical mediaeval and modern expression) is not found before Augustine,⁴ but he studies only a specific combination of words, whereas the concept of *book* certainly is applied metaphorically to created nature before Augustine, at least by Anthony, Ephrem the Syrian (c. 306–373) and Evagrius Ponticus (c. 345–399). Blowers has argued quite convincingly that the beginnings of the analogy between Scripture and cosmos as “Two Books” should be traced back to Origen (184/185–253/254).⁵ All of these arguments may be

² Cf. Arie J. Vanderjagt and Klaas van Berkel, eds., *The Book of Nature in Antiquity and the Middle Ages* (Leuven: Peeters, 2005); Arie J. Vanderjagt and Klaas van Berkel, eds., *The Book of Nature in Early Modern and Modern History* (Leuven: Peeters, 2006); Jitse M. van der Meer and Scott Mandelbrote, eds., *Nature and Scripture in the Abrahamic Religions: Up to 1700*, 2 vols. (Leiden: Brill, 2008); Jitse M. van der Meer and Scott Mandelbrote, eds., *Nature and Scripture in the Abrahamic Religions: 1700–Present*, 2 vols. (Leiden: Brill, 2008). See also my short essay: Giuseppe Tanzella-Nitti, “The Two Books prior to the Scientific Revolution,” *Annales Theologici* 18 (2004): 51–83.

³ Cf. Curtius, *European Literature and the Latin Middle Ages*, 302–311; Blumenberg, *Die Lesbarkeit der Welt*, chs. 3–4.

⁴ Cf. Volker H. Drecoll, “‘Quasi Legens Magnum Quendam Librum Naturae rerum’ (Augustine, *Contra Faustum* 32:20). The Origin of the Combination *Libri Naturae* in Augustine and Chrysostomus,” *The Book of Nature in Antiquity and the Middle Ages* (eds. A. Vanderjagt and K. van Berkel; Leuven: Peeters, 2005), 35–48.

⁵ Cf. Paul Blowers, *Drama of the Divine Economy. Creator and Creation in Early Christian Theology and Piety* (Oxford: Oxford University Press, 2012), 318–319; See

valid even in terms of the parameters set by each of the studies. But then, their variety reveals the need for a detailed and systematic analysis of the origins and gradual development of the metaphor.

As far as the Middle Ages are concerned, the way in which the metaphor is transmitted and received by the previous patristic period raises some questions. In the secondary literature, the mediaeval Book of Nature is routinely associated with Augustine.⁶ However, it is quite probable that while this concept is rooted in Augustine, being the greatest of all patristic authorities in the Latin Middle Ages, the underlying theological insights actually originate elsewhere. It seems that a key role was played by John Scottus Eriugena (c. 810–877), who transmitted to the Latin environment the ideas of the Greek Fathers: the Cappadocians, Pseudo-Dionysius, and, most importantly, Maximus the Confessor. Concerning the subsequent development of the mediaeval metaphor, pride of place conventionally has been given to Bonaventure (1221–1274), although he was using ideas common in the 12th century, especially those contained in the writings of Hugh of Saint Victor (1096–1141).

Between the patristic and mediaeval authors, significant continuities persist, suggesting already a well-established tradition that would have undergone only small changes in emphasis or perspective. On the other hand, the Middle Ages bring about at least three important novelties. First, we perceive a growing skepticism with respect to the intrinsic value and readability of nature due to the weight of sin. This issue was not entirely new at the time, as Augustine himself had spoken of this. But it then acquired more explicit expression, enriching the metaphor with a third book, the *Book of the Cross*. Second, while the patristic metaphor was conceptualized predominantly in terms of the *spoken word* (based on the divine Logos, with creatures being the *logoi*), the mediaeval Book of Nature (and the various sub-metaphors to which it gives rise) is presented increasingly as something that *must be seen, not only heard*, according to the attention this period paid to images and symbolic language. Third, in each period, this metaphor reflects the framework offered by the corresponding theology of the time: God's

also Rick Benjamins, "The Analogy between Creation and the Biblical Text in Origen of Alexandria," *The Book of Nature in Antiquity and the Middle Ages* (eds. A. Vanderjagt and K. van Berkel; Leuven: Peeters, 2005), 13–20.

⁶ Cf. Blumenberg, *Die Lesbarkeit der Welt*, ch. 5; Heribert M. Nobis, "Buch der Natur," *Historisches Wörterbuch der Philosophie* (ed. J. Ritter; Basel: Schwabe Verlag, 1971), 1: 957–959.

call to salvation, the relationship between creation and redemption, and the role of the Incarnate Word are all subjects on which the Fathers of the Church and the Middle Age authors did not share the same, identical perspective. It is known, for instance, that the theological emphasis of the Middle Ages was mainly on redemption and Christology, while language became more symbolic and rational compared to that employed by the Fathers.

Leaving aside the understanding of this metaphor during the revival of naturalistic studies experienced during the Renaissance, the more intriguing period for studying the contents and implications of the Book of Nature remains the Modern Age. First of all, it must be stressed that many of the consequences that later come into light in the 17th and 18th centuries were prepared surprisingly by Raymond of Sebond's (1385–1436) *Liber creaturarum*, a text that the Italian scholar Lino Conti was merited to have underscored and commented in recent years.⁷ Secondly, the Modern Age is witness to very different views concerning the readability of the Book of Nature. A Neo-Platonic perspective – inherited by the Academies of the Renaissance – confines the usability of the Book to those who know the languages of mathematics and geometry, thus being opposed to the perspective that considers Nature as a public book, readable by everyone. However, in this last view two different attitudes coexist: one stating that the Author of Nature's Book is the same Author of Sacred Scripture, and another quite critical with respect to specific divine Revelation in history. In the Modern Age, the Book of Nature could be used either to give rise to a religion of nature or to reinforce the religion of the Judaeo-Christian tradition. Peter Harrison⁸ must be referenced among scholars who analyzes this intriguing period, while a systematic and exhaustive study at the moment is still lacking.

⁷ Cf. Lino Conti, *L'infalsificabile libro della natura alle radici della scienza* (Assisi: Porziuncola, 2004).

⁸ Cf. Peter Harrison, *The Bible, Protestantism, and the Rise of Natural Science* (Cambridge: Cambridge University Press, 1998); "The 'Book of Nature' and Early Modern Science," *The Book of Nature in Early Modern and Modern History* (eds. A. Vanderjagt and K. van Berkel; Leuven: Peeters, 2006), 1–26; *The Fall of Man and the Foundations of Science* (Cambridge: Cambridge University Press, 2007).

7.1.2 *The role of the metaphor within the framework of Fundamental Theology*

The interest of Fundamental Theology is not, primarily, in focusing on the metaphor as a linguistic phenomenon, but to highlight the theological content that the metaphor seeks to express. Moreover, if theology studies why and how nature was seen as a book, it is not for the sake of historical curiosity but rather as a way of illuminating present-day questions and discussions concerning the relation between faith and reason. In this respect, consider for instance the import of a number of issues which may be associated to the metaphor, such as: the salvific value of contemplating of nature; the revelation of God through creation; the interrelation between creation and redemption; biblical exegesis and the natural sciences; or, finally, interreligious dialogue starting from nature. Concerning more properly *theological* questions, one of the first points to clarify is the underlying *foundation* and *vision* that gave rise to the metaphor. Was the metaphor triggered by a theology of the Logos, by the using of allegorical exegesis, or by a sacramental theology attentive to symbolic language? Only after this analysis can theology address its more relevant questions and implications, such as whether the Book of Nature has any moral and/or salvific relevance for those who read it, or what it reveals about God and his attributes, his will and his salvific plan for humanity. In answering these questions, theology is highly interested in investigating the *Christological dimension* of the “book.” In other words, what does the metaphor mean and to what extent can it be used, or is it expected to depend in its deeper and ultimate levels, on the Christological understanding of creation, of the Scriptures and of the human being.

A number of elements in patristic theology seem to provide a solid theological basis for the grounding and further development of the metaphor. The most important of these is the correspondence between the cosmological *logos* of Greek philosophy and the biblical idea of the *divine word of creation*. Other ideas, such as the existence of a natural law (understood both cosmically and morally), the contemplation and beauty of nature as a work of God, and the practice of allegorically interpreting of Scriptures, also may have contributed to the success of the metaphor. Although we cannot determine definitively the role and influence of each author, nevertheless we can state without doubt that the theology of the divine Word—that is, the role of *Logos* in the work of creation—is central to the patristic and mediaeval idea of nature as “book.” It is

found repeatedly within the context of the theology of creation and, over time, it becomes more and more clearly expressed in the idea that creatures themselves are God's *logoi*. In contrast, the significance of other elements is more varied. For instance, the natural law is particularly important to Maximus, and it plays a role in Ephrem; but it is quite marginal in Bonaventure, probably because his extensive doctrine of the natural law was confined mainly to its interior dimension. The notion of the contemplation of nature, on the other hand, is found in numerous texts, and it is important to most of these thinkers. Allegory is present in some cases, but many times the metaphor is not based on any allegory at all. Rather, it is derived from the parallelism between Scripture and creation, which is much more than allegory, Scripture and creation having the same origin and finality in the divine Logos. Even the theologians of the Middle Ages, who leaned toward symbolic language, as Scottus Eriugena, Hugh of St. Victor and Bonaventure, do not derive the metaphor merely from symbolic considerations.

If we consider pre-Christian texts, they certainly provide some preparation for the Christian metaphor of the Book of Nature but confine themselves to heavenly characters. The religiosity of many ancient cultures spontaneously attributed a certain sacrality to the heavens, which were understood as the place for dialogue between god(s) and human beings. However, it was the Christian doctrine of the Incarnate Logos that enabled understanding that the divine presence and communication may have been sought and found in all created realities, without any loss of divine transcendence. The Christian understanding (and transformation) of the cosmological *logos* of Greek philosophers was fundamental for this new vision as it provided the conceptual tools for distinguishing between the transcendent (non-immanent) Logos and the created *logoi*, the latter of which are not identified with the Logos but are inseparable from him and, therefore, are related intrinsically to all the creative, revelatory and redemptive activity of the divine Logos, Jesus Christ.

Concerning the implications of this metaphor for today's theology, it should be noted that some of them are intrinsic to the view of nature as a "book," while others refer to the idea of having two books—Nature and Scripture—authored by the same God. In the first case, considering nature as a book is a fruitful image because it easily associates to the created world all the characters of a truly divine revelation. In fact, a book manifests the person and personality of its Author; transmits a Word and expresses an

intentionality; contains an intelligible message; is communicable and universal even though requiring a certain work of interpretation; is able to raise the interest of the addressee and demands his response; and has its origin in a person and is directed to a personal interlocutor. All these characteristics are important for understanding the cosmos as the place of a truly divine revelation and would suffice for justifying the interest of theology toward those approaches and authors, in the past and in the present times, who have employed or still use this metaphor.

7.2 The development of the metaphor within Christian tradition

7.2.1 *The Fathers of the Church and early Christian writers*

Although we cannot exclude the presence in ancient cultures of the attitude of looking at Nature as if it were a book—for writing techniques were widespread throughout the Mediterranean area beginning from 3500 BC—this view first began to be recorded clearly in the early Christian literature. The Fathers of the Church employ it in two main ambits: the so-called cosmological argument, by which they invited acknowledgment of a provident God-Creator beginning from an observation of the order and beauty of creatures; and the cosmic dimension of liturgy, for God had to be celebrated and praised in His glory also within the context of Nature. By the same words of Anthony the Abbot (III century), in probably the first example of hermitage, “my book is created nature, one always at my disposal whenever I want to read God’s words.”⁹ As pointed out later by Isaac of Nineveh, Nature was given to human beings prior to them receiving the sacred Scriptures.¹⁰ Among the Church Fathers, explicit references to the Book of Nature may be found, among others, in Basil of Caesarea, Gregory of Nyssa, John Chrysostom, Augustine of Hippo, John Cassian, Ephrem the Syrian, and Maximus the Confessor. If we also were to include those authors who only implicitly refer to the Book of Nature—for example, those who convey the idea that God speaks to us through creation—the list would become much larger. It is enough, for our purposes, to offer a selection of quotes here.

According to the Greek father Basil of Cesarea (329–379), “We were made in the image and likeness of our Creator, endowed with

⁹ Cf. Socrates Scholasticus, *Historia Ecclesiastica*, IV, 23; PG 67, 518.

¹⁰ Cf. Isaach of Nineveh, *Sermones ascetici*, V.

intellect and reason, so that our nature was complete and that we could know God. In this way, continuously contemplating the beauty of creatures, through them as if they were letters and words, we could read God's wisdom and providence over all things."¹¹ Among the Latin Fathers, it is Augustine of Hippo (354–430) who dedicates various passages to the Book of Nature, including interesting comparisons with the Book of Scriptures: "It is the divine page that you must listen to; it is the book of the universe that you must observe. The pages of Scripture can only be read by those who know how to read and write, while everyone, even the illiterate, can read the book of the universe."¹² "Some people" – we read in one of his *Sermons* – "in order to discover God, read a book. But there is a great book: the very appearance of created things. Look above and below, note, read. God whom you want to discover, did not make the letters with ink; he put in front of your eyes the very things that he made. Can you ask for a louder voice than that?"¹³ In a page of his *Confessions*, the metaphor of heaven as a book is combined with the biblical image of the starry sky stretched over us like a skin (cf. Isa 34:4; Rev 6:14). God clothed our naked first parents with a skin just after they sinned, thus showing His mercy for us. The heavens, likewise, are a skin that also shows God's mercy so that, reading them as a book, human beings might know the will of God and behave in a virtuous and honest way.¹⁴

Maximus the Confessor (580–662) exerted remarkable influence over the centuries that followed, especially during the Middle Ages. Commenting on the event of Christ's Transfiguration, he compares Nature and Scripture to two garments with which the Incarnate Logos was endowed; the natural law being his humanity, and the divine law, revealed by Scripture, being his divinity. These two laws were presented to us by means of two different books, Nature and Scripture. They both veil and reveal the same Logos, have the same dignity, and teach the same things. Maximus is even more explicit: the two books have more or less the same content, and one who desires to know and carry out God's will needs them both.¹⁵ In reading the Book of Nature, the deep mystery of the Logos does not

¹¹ Basil of Caesarea, *Homilia de gratiarum actione*, 2; PG 31, 221C–224A.

¹² Augustine of Hippo, *Enarrationes in Psalmos* 45, 7; PL 36, 518.

¹³ Augustine of Hippo, *Sermons*, 68, 6; PLS 2, 505.

¹⁴ Cf. Augustine of Hippo, *Confessions*, XIII, 15–18.

¹⁵ Cf. Maximus the Confessor, *Ambigua*, 10; PG 91, 1128 C.

vanish, nor is it destroyed: “Natural law, as if it were a book, holds and sustains the harmony of the entire universe. Material bodies are like the book’s characters and syllables; they are like the first basic elements nearer to us, but allow only a partial knowledge. Yet such a book also has more general and universal words, more distant from us, whose knowledge is more subtle and difficult to reach. The same divine Logos who wrote these words with wisdom, is likewise embodied in them in an ineffable and inexpressible way. He reveals himself completely through these words. But after their careful reading, we can only reach the knowledge that he is—exactly because he is none of those particular things. It is by gathering with reverence all these different manifestations of his that we are led toward a unique and coherent representation of the truth, and he makes himself known to us as Creator, by analogy from the visible, created world.”¹⁶ Maximus the Confessor shows great equilibrium here. On the one hand, he affirms the need to know the natural law and maintains that all things contained in the Holy Scriptures are also contained in Nature (a statement that some centuries later led to some critical consequences). On the other hand, faithful to the Greek tradition, Maximus is aware that the knowledge of God through the Book of Nature remains veiled, deficient, and certainly inferior to that provided by the Bible.

John Scottus Eriugena (circa 810–877) observed that, at the very beginning of salvation history, Abraham was invited to recognize God not by looking at the Scriptures, which did not yet exist, but by looking up at the starry sky.¹⁷ In the works of this Celtic theologian, the idea that God reveals himself through the two Books is also present. Nature and Scripture both can be considered as God’s theophanies: “The eternal light manifests it to the world in two ways, through Scripture and through creatures. In no other way is the knowledge of God renewed in us but in the characters (Lat. *apices*) of Scripture and in the forms (Lat. *species*) of creatures.”¹⁸

Concerning the relationship between the knowledge of God achieved by observation of the natural world and that derived by faith in Scriptures, the Fathers of the Church offer some useful insights. Basil of Caesarea affirms: “Which is first: knowledge or

¹⁶ Maximus the Confessor, *Ambigua*, 10; PG 91, 1129 A.

¹⁷ Cf. John Scottus Eriugena, *De divisione naturae*; PL 122, 723–724.

¹⁸ John Scottus Eriugena, *Homilia in prologum S. Evangelii secundum Johannem*, ch. XI (Sources Chrétiennes n. 151; Paris: Cerf, 1969), 254.

faith? [...] In our faith concerning God, the thought that God exists goes before, and this we gather from His works. We recognize by observation His wisdom and power and goodness and all His invisible attributes from the creation of the world.”¹⁹ On the same subject, Tertullian proclaims: “We state that first we know God through nature and after we recognize Him in the doctrines. Knowledge through nature comes from His works; knowledge through doctrines, from preaching.”²⁰ This same view may be found in John Paul II’s encyclical *Fides et ratio* (cf. n. 36).

Taking also into account the patristic view on faith and reason, the leading ideas on the usage and implications of the metaphor during this period may be summarized as follows: a) Within the cosmological argument, employed to infer the existence of the Logos – that is of God, from nature – the image of nature as a book given by God to men is clearly present. Creatures may be compared to letters, words, or voices, but it is beyond question that God speaks to us and reveals himself through nature. b) The Book of Nature is as universal as the Book of Scripture, and the content of each is equivalent to some extent. At times it transpires that the Book of Nature is even more universal and comprehensible than the Book of Scripture. Creation is before everyone’s eyes as a source of a moral and spiritual appeal. c) The knowledge of the Book of Nature seems to be relevant and, for some authors, even necessary for a correct understanding of the Book of Scripture, for the knowledge acquired by observing and studying natural things precedes the knowledge of God’s revealed words. d) With regard to morality, there is a strong analogy between moral natural law (i.e., moral commandments that humans read in their hearts) and the revealed divine law. The first is written by God in the world and in human conscience, while the second is written by the same God in the Scriptures.

7.2.2. *Authors of the Middle Ages: the cases of Hugh of St. Victor and St. Bonaventure*

The metaphor of the Two Books survives among the Christian authors of the Middle Ages. However, it seems to remain foreign to the Islamic tradition. An overall look at the content of the Koran shows that the term “book” never refers explicitly to nature but is always used to indicate the same Koran and its laws, which is seen

¹⁹ Basil of Caesarea, *Letters*, 235, 1; PG 32, 872B.

²⁰ Tertullian, *Against Marcion*, I, 18; PL 2, 266.

as the book *par excellence*. Some Islamic authors have noted that the Koranic verses are called *ayat* (“signs”), as are the phenomena of nature, indicating that the Koran could be seen as the counterpart to a natural text translated into human words.²¹ Within Christian tradition, references to the Book of Nature may be found—with different nuances and to different degrees—in Bernard of Clairvaux (1090–1153), Hugh of St. Victor (1096–1141), Bonaventure of Bagnoregio (1217–1274), Thomas Aquinas (1225–1274), Thomas of Chobham (about 1255–1327), Dante Alighieri (1265–1321), and later in Thomas of Kempis (1380–1471) and Raymond of Sebond (1385–1436).²²

During this period, two authors deserve more sustained attention: Hugh of St. Victor and Bonaventure. Both emphasize that the universal understanding of the Book of Nature is weakened by human sin. The Book of Scripture exerts a kind of “healing action” over the Book of Nature: after the original fall and because of our sins, to recognize God in the spectacle of nature is not an easy task to accomplish. Thus, a “third” book comes forth, the *book of the Cross*. Christ himself—his Incarnation and his redemption—is compared to a great book whose reading is necessary for a proper understanding of the other two books. In this respect, Jesus Christ seems to play quite an interesting, twofold role. He acts indeed like a hinge between the Two Books. When considered as uncreated Wisdom, he shows a special relationship with the Book of Scripture; when considered as the Incarnate Word, he is associated mainly with creation.

Hugh of St. Victor indicates that in order to read the Book of Nature properly, one needs to have a spiritual and not merely natural (that is material) attitude: “For this whole visible world is a book written by the finger of God—that is, created by divine power—and the individual creatures are as figures in it, not derived by human will but instituted by divine authority to show forth the wisdom of the invisible things of God. But just as some illiterate man who sees an open book looks at the figures but does not recognize the letters, just so is the foolish natural man who does not perceive what pertains to the Spirit of God [cf. 1 Cor 2:14]. He sees the form and the beauty outside creatures without understanding their inner

²¹ Cf. Seyyed H. Nasr, *Religion and the Order of Nature* (New York: Oxford University Press, 1996).

²² Cf. Jesse M. Gellrich, *The Idea of the Book in the Middle Age. Language Theory, Mythology, and Fiction* (Ithaca - London: Cornell University Press, 1985).

meaning. On the contrary, the spiritual person can judge everything, and when looking at the beauty of the works, soon realizes how the Creator's wisdom has to be much more admired."²³ According to this Mediaeval Master, God's Wisdom is also a unique book, written inside (Holy Scripture) and outside (the works of creation). Nature is compared to a first scripture, and the Bible to a second scripture. The Incarnation of the Word is a third scripture, seen as a book that also has an inner and outer side; the first because of his invisible divinity and the second because of his visible humanity.²⁴ All these images recall that book *written on both sides*, of which both the prophet Ezekiel and St. John's Book of Revelation speak (cf. Ezek 2:9-10; Rev 5:1). In a work titled *De Arca Noe Morali*, Hugh of St. Victor speaks of three books and of three words, but with a different meaning. The first book or word is all of what is made by human activity, while the second book/word is creation made by God. The third book/word is Wisdom himself, that is, the Increate Word. In this case, Jesus Christ as Incarnate Wisdom plays the role of Sacred Scripture, of which he is the fulfillment.²⁵

In the works of St. Bonaventure, the metaphor of the Book is used widely such that expressions like *liber naturae*, *liber mundi*, or *liber creaturae* are synonyms for nature, the world, and creation.²⁶ At the same time, the necessity of knowing God through Sacred Scripture and not only through nature, and the demand for a third book, the book of Christ Redeemer, nevertheless is explicit. Two outstanding texts illustrate these references: "Before sin, man had the knowledge of created things and through their images he was led to know God, to praise, to worship and to love him. The purpose for which living beings exist is to lead us to God. When human beings fell because of sin, they lost such knowledge and so there was no one who could bring all things back to God. Thus, this book, that is the world, seemed dead and destroyed. Therefore, there was a need for another book through which the previous book had to be enlightened in order to acknowledge the true meaning of things. This book is nothing but Sacred Scripture, which contains metaphors, images, and teachings about the book of the world. In this way, the book of Scripture restores the whole world and allows

²³ Hugh of St Victor, *Eruditiones Didascalicae*, Book VII, ch. 4; PL 176, 814B.

²⁴ Cf. Hugh of St Victor, *De sacramentis*, Book I, Pars VI, ch. 5; PL 176, 266-267.

²⁵ Cf. Hugh of St Victor, *De Arca Noe Morali*, Book III, ch. XII, *De tribus libris*, and ch. XIII, *De tribus verbis*; PL 176, 643-644.

²⁶ See, for instance, *Itinerarium mentis in Deum*, I, 14.

the latter to again lead us to know, to praise and to love God."²⁷ Additionally, St. Bonaventure states:

If we want to contemplate spiritual things, we need to take up the cross as if it were a book. [...] Christ himself is this book of wisdom, who is written inside by the Father, as he comes from the power of God, and outside, when he took on a bodily form. However, this book was open on the cross, and it is this book that we have to read in order to understand the depths of God's wisdom.²⁸

The Book of Scripture and the Book of the Cross, therefore, seem to have a kind of priority with respect to the Book of Nature, at least with regard to our ability to recognize God clearly. However, Bonaventure does not deny the chronological priority of the Book of Nature over that of Scripture, as shown by this passage from the *Breviloquium*:

The first Principle is made known to us through Scriptures and creatures. By the Book of Nature it shows itself as the principle of power and by the Book of Scripture as the principle of restoring. And since the restoring principle cannot be known without first knowing the principle of power, though the Bible tells us mainly about the work of redemption, it must also tell us about the work of creation.²⁹

Other passages of the Franciscan Master recall the image of a book written both inside and outside, an image that works at different levels. All things are as a book written outside, insofar as we confine ourselves to reading them as merely effects of God's power. Here is the step where natural philosophers seem to stop. Yet creatures are written inside, when we recognize them as traces or images (*vestigia*) of God. At a secondary level, material and irrational creatures are a book written outside, while rational and spiritual creatures, like humans and angels, are a book written inside, in the depths of their conscience.³⁰

Thomas Aquinas seems to use the metaphor quite a few times. One explicit reference can be found in *Super Epistolam ad Romanos*,

²⁷ Bonaventure of Bagnoregio, *Collationes in Hexämeron*, XIII, 12.

²⁸ Bonaventure of Bagnoregio, *Sermones de Tempore*, *Feria VI in Parasceve*, sermo II, n. 2.

²⁹ Bonaventure of Bagnoregio, *Breviloquium*, Pars II, ch. 5.

³⁰ Cf. Bonaventure of Bagnoregio, *Collationes in Hexämeron*, XII; cf. also *Breviloquium*, ch. XII.

ch. I, lect. 6. The image of the book also appears in two other works, *Expositio in Apocalypsim*, ch. 3 and *Sermo V de Dominica secunda de Adventu*, but their authenticity remains dubious. Nevertheless, it is worthwhile to recall that, generally speaking, Aquinas' thought provided a synthetic formulation of the relationship between the knowledge of God that we acquire by looking at nature and the one we are taught by reading the Scriptures. With a sentence that would be quoted through the centuries in many documents of the Catholic Church, he affirmed that natural reason is able to reach certain knowledge about spiritual realities, such as the existence of God, the immortality of the human soul, and the existence of a moral responsibility before a provident Creator. However, God himself also willed to reveal these same truths through the pages of Holy Scripture, so that in this present condition of the human race they might be known readily by all, with firm certitude and with no admixture of error.³¹

To summarize, the Middle Ages introduced a certain *theological realism* to the question of the Two Books. Human reason is able to read the Book of Nature to ascend to God, but we have to take into account the wounds suffered by our intellect due to sin. This great Book continues to bind us to our Creator,³² but a spiritual and clear sight is required to recognize such a link.³³ Authors of the Middle Ages do not lose optimism, but rather seem to gain realism. Christian writers now realize, in the words of John Abbot of Ford (d. 1220), that "there is the book of creatures, the book of Scripture and the book of Grace."³⁴ The Book of Nature does not lose its universality, but instead is framed within a strong christological perspective and so demands other theological categories, such as Incarnation and redemption, fall and grace. The Mediaeval Masters thus extend the metaphor of the book to Christ and to God. God himself, according to the beautiful verses of Dante's *Comedia*, is the book, the volume, whose pages are scattered through the world, and which also allows Creation to be a book in itself: "In its depths I saw ingathered, bound by love in one single volume, that which is

³¹ Cf. S.Th. I, q. 1, a. 1. Aquinas' doctrine is recalled by the First and Second Vatican Councils: cf. *Dei Filius*, DH 3005 and *Dei Verbum*, n. 6.

³² Cf. Bernard of Clairvaux, *Sermones, De Diversis*, IX, 1; Thomas of Chobham, *Summa de arte praedicandi*, ch. 7.

³³ Cf. Thomas of Kempis, *Imitatio Christi*, II, 4.

³⁴ Cf. John Abbot of Ford, *Super extremam partem Cantici canticorum sermones*, Sermo 104, 1.

dispersed in leaves throughout the universe: substances and accidents and their relations, as though fused together in such a way that what I tell is but a simple light.”³⁵

7.3 Raymond of Sebond’s influential *Liber creaturarum*

At the root of the Modern Age’s view of the Book of Nature lies not only the spirit of the naturalistic Academies of the Renaissance, but also the very influential work of Raymond of Sebond (1385–1436) entitled *Liber Creaturarum*. A Catalan-born scholar and Doctor in Medicine and Theology, Sebond served as professor at Toulouse and president of that same university (1428–1435). The title of Sebond’s treatise changes a bit depending on the manuscripts existing in different European libraries: *Liber Naturae sive Creaturarum* (Paris), *Scientia Libri creaturarum seu Naturae et de Homine* (Toulouse), *Liber Creaturarum sive de Homine* (Clermond-Ferrand), etc. The subtitle *Theologia naturalis* was added by the publishers, beginning with its second printing in 1485. The book was remarkably successful, having sixteen editions and many translations, including one in French made by Michel de Montaigne in 1569. Until the beginning of the 18th century, various editors also have rearranged and reorganized the book’s contents for different purposes.³⁶

The aim of the work is clear and explicit within the author’s *Prologue*: The knowledge of the Book of Nature allows us to understand, in a true and infallible way and without much effort, all truths concerning created things, humanity and God. The Book of Nature tells us all that is necessary for our perfection and moral fulfillment so that, by reading this Book, we can achieve our eternal salvation. Moreover—Sebond adds—it is thanks to the knowledge of the Book of Nature that we can understand without error the contents of the Book of Scripture.³⁷ In the Book of Nature, each creature is nothing but a byte and a letter—written by the finger of God—such that all these letters and words together form a kind of

³⁵ “Nel suo profondo vidi che s’interna / legato con amore in un volume / ciò che per l’universo si squaderna: / sustanze e accidenti e lor costume / quasi conflati insieme, per tal modo / che ciò ch’io dico è un semplice lume”: Dante Alighieri, *Commedia*, Paradiso, XXXIII, 85–90.

³⁶ I quote according to the edition: Raymond of Sebond, *Theologia naturalis seu Liber creaturarum*, fac-simile of 1852 publication at Sulzbach (Stuttgart-Bad Cannstatt: Frommann-Holzboog, 1966).

³⁷ Cf. Sebond, *Theologia naturalis seu Liber creaturarum*, Prologus, 27*–28*.

manuscript in which the human creature constitutes the most important word.³⁸

The relationship between the two Books is explained in detail but in a way that deviates, at least on some matters, from the teachings of the Mediaeval Masters. Both books were given to us by the same unique God; we received the first from the creation of the world, while the second was written thereafter. The Book of Nature seems to have a certain priority, for it is said that our knowledge of it precedes and confirms the Book of Scripture. It is like a door for entering the Bible and a light for illuminating its words.³⁹ The knowledge of the Book of Nature is available to everyone, while the Book of Scripture can be read only by clerics. Nevertheless, the Book of Scripture was inspired and written to help us read the book of creatures properly, since without the former we are like the blind⁴⁰ – a consideration that certainly refers to human sins and brings Sebond closer to the theologians of the Middle Ages. With an epistemological optimism that certainly would have amazed many contemporary philosophers of science, Sebond says that we cannot falsify or misinterpret the Book of Nature, adding that when studying it, there is no room for heretics or heresies. Contrary to Scripture, Nature cannot be deleted or lost.⁴¹ We need both books, and they do not contradict each other. They do not differ in their content: all that is present in the first, we also find in the second. They differ with regard to the ways in which such content is taught and proved: the book of Creatures teaches by means of rational demonstration (*per modum probationis*), while the Holy Scriptures are based on God's authority and teach us by means of prescriptions, commands, and exhortations (*per modum praecepti, mandati, monitionis et exhortationis*).⁴²

Raymond Sebond strives to keep balance, but the matter is delicate and somewhat critical. The risk of overevaluating the Book of Nature at the expense of Sacred Scripture is real. One could think, for example, that everything contained in the Bible can be known simply by looking at creatures. Of course he emphasizes in many places that the Book of Scripture is “greater and higher” than that of

³⁸ Cf. Sebond, *Theologia naturalis seu Liber creaturarum*, Prologus, 35*–36*.

³⁹ Cf. Sebond, *Theologia naturalis seu Liber creaturarum*, Titulus CCXI, 311.

⁴⁰ Cf. Sebond, *Theologia naturalis seu Liber creaturarum*, Prologus, 38*.

⁴¹ Cf. Sebond, *Theologia naturalis seu Liber creaturarum*, Prologus, 36*–37*.

⁴² Cf. Sebond, *Theologia naturalis seu Liber creaturarum*, Titulus CCXII, 314–315.

Nature, for to speak with the authority of God is superior to demonstrating something by human reason. However, some of the arguments made by Sebond are precarious and, at times, ambiguous. In an attempt to summarize his thought, we could say from a cognitive point of view that the Book of Nature is primary and more fundamental. Its knowledge is more universal and connatural to us in that it is tailor-made for the human mind. From the point of view of dignity, the Book of Scripture has higher value because of the authority on which the words contained therein are based. Yet, the priority of Nature serves the Scriptures as it is directed to knowledge of the latter. Thus, once again, all matter is counterbalanced, and Sebond finds his way once more.⁴³

It is no surprise that the doctrine of the *Liber Creaturarum* was interpreted and judged in different and sometimes contrasting ways. Some scholars saw in it the danger of reducing the significance of Scripture and weakening the Church's authority in interpreting it. Others saw in the work of Raymond Sebond a nice example of natural theology, in tune with the Christian philosophy of the early centuries and the Middle Ages. Among those who appraised Sebond's work, we find: Nicholas of Cusa, Hugo Grotius, Blaise Pascal, Peter Canisius, Francis de Sales, and Georg Wilhelm Hegel. However, because of the implicit problems it contained, Pope Paul IV included the book within the Index of forbidden books in 1559. A few years later, however, in 1564, Pope Pius IV limited the prohibition to the *Prologue* only, asking that a note of theological clarification be inserted into all later publications of the book.

Beyond the course of events and opinions related to the work of Sebond, there is no doubt that the content of the *Liber Creaturarum* differs somewhat from the theological perspective held during the Middle Ages. For the first time – and probably beyond the intentions of its author – we find an attempt to read a *moral* doctrine in Nature in such a way that, in principle, the consideration of the sacred Scriptures *could be left out*. Consequently, the Book of Nature could be seen as a book autonomous in itself. It is probably from this point that the road was opened for a “modern religion of nature,” capable of conveying moral and spiritual values without necessary reference to the revealed religion based on the Bible. This approach gave rise to at least a couple of philosophical lines of thought. The first

⁴³ Cf. Sebond, *Theologia naturalis seu Liber creaturarum*, Titulus CCXV, 322–324 and Titulus CCXII, 315.

consequence was a kind of “lay sacralization” of nature, different from those spiritual views of nature practiced by Scottus Eriugena, Celtic Christianity, Hildegard von Bingen, and Francis of Assisi. A new natural lay religion then was able to emerge, having its own rites, prayers and moral prescriptions, which in the climate of the Renaissance intersected even with the practice of magic. The second consequence was the possibility to focus on the relationship between God, humanity, and nature while putting the mystery of the Incarnation and the history of salvation in parentheses, thus preparing for the deism of the Western European Enlightenment, a religion of reason and nature that cast aside and often criticized all *revealed* religions.

The patristic and mediaeval periods did not experience a dialectical opposition between the Two Books, although the search for an accomplished and reliable articulation between them remained a problem to be resolved, as shown emblematically in Raymond of Sebond’s thought. Non-conflicting views of the Two Books were still present during the first Renaissance, as shown by authors such as Nicholas of Cusa (1401–1464) and Martin Luther (1483–1546), among others. It seems that the harmony was broken by a controversial naturalist, Philippus Paracelsus (1493–1541). He first endorsed a view in which the Book of Nature came into conflict with other books, namely those of philosophers and theologians. In this view, all the books prior to the direct and careful study of nature lagged behind; finally, the material world could be studied with new instruments, and observed with method and rigor. The scientific and philosophical context in which the Academies operated was indebted mainly to Pythagoras, Plato and mathematical approaches in general. Paracelsus and his students wanted to keep their distance especially from Aristotle’s works, but also from the works of Galen and the other Greek philosophers who authored a *De rerum naturae*. According to Paracelsus: “From the light of Nature must enlightenment come, that the text *liber naturae* be understood, without which enlightenment no philosopher nor natural scientist may be.” One of his students would add: “Let the others read their compendiums, while we study in the great picture book which God has opened for us outdoors.”⁴⁴ Henry Cornelius Agrippa of

⁴⁴ Quotations reported by Curtius, *European Literature and the Latin Middle Ages*, 322; see also Will-Erich Peuckert, *Paracelsus, Die Geheimnisse. Ein Lesenbuch aus seinen Schriften* (Leipzig: Dieterich, 1941), 172–178.

Nettesheim (1486–1535) maintained a similar thesis, stating in his work *De incertitudine et vanitate scientiarum atque artium* that the Book of the Works of God now substituted for books of theology and philosophy. These statements made no direct reference against the Bible, but stated clearly that authorities other than observation and experience now must be placed at a secondary level when speaking of the natural world.

Starting from the beginning of the 16th century, the Book of Scripture—which for philosophers and theologians was the main book—became simply one book among many: the light for understanding the Book of Nature must come only from nature, from that manner of studying and observing it and not from other sources. In such a view, we can approach the natural world without the mediation of Sacred Scripture, theology or Scholastic philosophy, and of course without the mediation of any Church. What is at stake here is not the existence of God, since for the renaissance scientists, it remained clear that God himself had written the Book of Nature. The novelty here, rather, is the “lay turn” now available to the 16th century naturalists: the world *can be read directly* and, thus, the Architect and the Maker of the world also can be praised and worshipped *directly* (that is, without mediation whatsoever). The agreement between natural philosophy and theology, between natural laws and revealed moral laws, and ultimately between Nature and Scripture—an accord that was centered for a long time on the mystery of the two natures of the Incarnate Logos, human and divine—is bound to be broken. A “spiritual” reading of the Book of Nature is still possible, but it is no longer *Christian*, as would be shown by the philosophy of the Enlightenment and by the spirit of Romanticism. Born within a Christian context, the concept of the world as a book now would become secularized and ready to be alienated from its theological origin.

7.4 Who can read the Book of Nature? The understanding of the metaphor in the Modern Age

7.4.1 Galileo Galilei's view of the metaphor of the Two Books

To be honest, we do not find in the works of Galileo Galilei (1564–1642) any statement of an explicit break between the Two Books. However, we observe all the elements of a latent controversy. As it is already known, the most famous viewpoint of the Italian

scientist is that the Book of Nature is written in a mathematical language, with its characters being triangles, circles, and geometric figures, as stated in a well-known page of *The Assayer* (1623). Consequently, only specialists of the natural sciences, and not exegetes or theologians, are capable of reading it. This book can be read only by those who know that language. “Philosophy” – he affirms – “is written in this grand book, the universe, which stands continually open to our gaze. But the book cannot be understood unless one first learns to comprehend the language and read the letters in which it is composed. It is written in the language of mathematics, and its characters are triangles, circles and others geometric figures without which it is humanly impossible to understand a single word of it; without these, one wanders about in a dark labyrinth.”⁴⁵ The metaphor appears again with similar words almost 20 years later in the *Letter to Fortunio Liceti* (1641), where it seems enriched by a polemical vein. The “natural philosophers,” he articulates, stand out because they do not study nature through Aristotle’s books, but rather through scientific observations: “The book of philosophy is now that which stands perpetually open before our eyes; but because it is written in characters different from those of our alphabet, it cannot be read by everybody; and the characters of this book are triangles, squares, circles, spheres, cones, pyramids and other mathematical figures fittest for this sort of reading.”⁴⁶ Therefore, the books employed up to that moment would be considered outdated. The interpretation of nature would be entrusted now to the method of “sensible and meaningful experiences” and to a language – mathematics and geometry – that allows for the avoidance of ambiguities, distinguishing appearance from reality. Nature and its study is a matter for *natural* philosophers, not for theologians.⁴⁷

The key statements of Galileo’s view of the metaphor could be summarized as follows: a) God is certainly the same Author of the

⁴⁵ Galileo Galilei, *The Assayer, Opere* (ed. Antonio Favaro; Firenze: Giunti-Barbera, 1966), 6: 232; Eng. tr. in Stillman Drake, *Discoveries and Opinions of Galileo* (New York: Doubleday, 1957), 237–238. On the meaning of mathematical language in Galileo’s works, see Carla R. Palmerino, “The Mathematical Characters of Galileo’s Book of Nature,” Vanderjagt and van Berkel, eds., *The Book of Nature in Early Modern and Modern History*, 27–44.

⁴⁶ Galileo Galilei, *Letter to Fortunio Liceti*, January 1641, *Opere*, 18: 295.

⁴⁷ Cf. Galileo Galilei, *Dialogue on the Two Chief Systems of the World* (1632), Dedicatory Letter to Grand Duke, *Opere*, 7: 27.

Two Books (cf. *Copernican letters*); b) Nature is written in the language of mathematics, and its characters are triangles, circles, and others geometric figures; it can be read only by those who know this language (cf. *The Assayer*, 1623); c) Nature is the very object of natural philosophy and, therefore, a matter for scientists and not theologians (cf. *Dialogue on the Two Chief World Systems*, 1632); d) The books on nature written or used by the cultural establishment of his time have now been surpassed by the book of nature—that is, by experimental knowledge (cf. *Letter to Fortunio Liceti*, 1641); and, e) Instead of backing each other up through their own books, as philosophers do, it is much more reliable to be supported by the Book of Nature itself (cf. *The Assayer*, 1623).

It is worthwhile to note that from the era of the Church Fathers, the meaning of the metaphor would be, in Galileo's words, surprisingly overturned, remembering that St. Augustine and other authors of the Patristic Age had stated that "everyone, even the illiterate, can read the book of the universe."⁴⁸ According to Galileo, people qualified to read it now belong to a much narrower circle. Even Raymond of Sebond's proposition that the knowledge of the Book of Nature is familiar to everyone while the Book of Scripture can be read only by clerics is overturned here. Nevertheless, the Italian scientist remained convinced that the "Two Books" are in agreement with each other as God is the only author of them, with the sacred Scriptures having been written by the Holy Spirit, and Nature operating according to the orders received by the divine Word.⁴⁹ However, Galileo's view sets forth that the Two Books show a remarkable difference: Revealed truths were dictated by God in the Bible using human language, which remains limited and somewhat ambiguous, while natural truths were written by God with the precise language of mathematics. Upon closer inspection, it is the limits of verbal language as such—when compared with mathematical and geometric languages—that Galileo seems to desire to highlight in his *Copernican Letters*, without reducing the authority of the revealed divine Word.

Galileo thus did not set the Book of Nature against Scripture, but rather reaffirmed the autonomy and self-consistency of the natural world. The "walls" for protecting the autonomy of nature

⁴⁸ Cf. Augustine of Hippo, *Enarrationes in Psalmos* 45, 7; PL 36, 518.

⁴⁹ Cf. Galileo Galilei, *Letter to P. Benedetto Castelli*, December 21, 1613, *Opere*, 5: 282.

are built through a restriction of the language in which nature is written, thus regulating access to its proper domain. For the first time, the readability of nature here seems to lose its universality. While for the Fathers of the Church obstacles to reading Nature's book were the absence of a contemplative spirit and the lack of humility, and while mediaeval theologians emphasized the role of human sin, Galileo detailed that the true obstacle is now ignorance of geometry and mathematics. Consequently, the impediment to reading nature properly is no longer the consequence of a moral cause, but the consequence of a defect in education.

Yet it should not be forgotten—and this point is of utmost importance—that such a change becomes possible because the different dimensions corresponding to a polysemic concept of “nature” now ranked according to a hierarchy different from that of the past. The aesthetic-contemplative dimension, being the only one available to the Fathers of the Church and to the authors of the Classical Age, is no longer the first one to be grasped. This dimension or meaning does not disappear, but it requires a *supplement of reflection*. The most important meanings that modern scholars of nature now associate with their objects of study are measurability, mathematization, and experimentation. In other words, an important semantic shift has transpired between readability and mathematization, one that will have further repercussions. In fact, there is a conceptual difference between a natural phenomenon read as a page or as a letter in a book and a natural phenomenon interpreted as (or thanks to) a mathematical formula. Even though the encrypted form of a natural phenomenon could serve as an object of contemplation (consider Maxwell's equations of the electromagnetic field), we don't understand a mathematical formula simply by reading it but rather by accepting its operativeness and character of legality. Because of the gradual growth of mechanisms, made possible by mathematization, natural realities no longer are *read* but rather *analyzed and reproduced*. The symbols that represent these realities, like those described by a formula, begin to express “our way of controlling” those same realities. At an aesthetic and contemplative level, the room for God's revelation in nature becomes increasingly thinner unless we identify the Creator with formulas, the Logos with a computer. If it is true that undergirding mathematical equations and scientific laws there exist “laws of nature”—that is, a metaphysical substratum which grounds the readability of the Book and transcend any

mathematization—it remains also true that, to bring this substratum to light, science is not enough, and we need a “philosophy of nature.”

Concerning Galileo’s understanding of the metaphor, one last question must be posed. Was the new reading that he proposed really a restrictive reading theoretically based on Platonism (although Platonic mathematics has the criteria of universality and not of Hermeticism), or was it rather a merely rhetorical stratagem? The extent to which the Platonic root of mathematics is responsible for this change is, with regard to the history of our metaphor, not an easy problem to resolve. The Platonic cosmos, we must not forget, is not a book: one must go not to words to know the cosmos, but to ideas and memory. The very belief that the created world can be read has Christian roots and, as we have sought to demonstrate, rests upon the theology of the Word. If Neo-Platonism is able to capture the image of a *book* and lead to its understanding, it is due to the “rationality” that the metaphor expresses, rather than to any idea of “readability.” The reasons for the success of the metaphor, which from Galileo onwards accompanies the scientific culture up to our present day, seem to lie above all in the fact that it conveys very well the vision of a nature that had become an autonomous and consistent “source of study”—a book open before the eyes of the observer whose reading, like that of any other book, requires order, scrutiny, and application. However, it must be noted that mathematical language is not foreign to the dimension of universality. From Galileo onward, scientific activity is nothing but the work of those who discover “laws” (whose etymology still can be traced back to one of the meanings of the Greek verb *léghein*), those who decipher content and then remain, at least in principle, capable of recognizing its Author. All these aspects will be present in the use of the metaphor made by people of science throughout the 17th century and for much of the 18th century, even if reference to the “second” book—that of Scripture—would become increasingly implicit or even absent.

7.4.2 Some different perspectives coexisting in the Modern Age

The references to the metaphor—occasional or systematic—made by authors of the Modern Age who were related in some way to the activity of science are quite numerous. Among the authors who speak of the Book of Nature, we find Francis Bacon, Matteo Ricci, Edward Topsell, William Harvey, Thomas Browne, Johannes

Kepler, Robert Boyle, and George Berkeley. Moreover, not a few works were written for apologetic purposes by clerics familiar with the sciences, whose titles were inspired precisely by the metaphor. Such is the case of Noël Antoine Pluche's *Spectacle de la Nature* (1732) and John Toogood's *The Book of Nature* (1802). Similar views are present in the works of John Ray, William Derham, and William Paley. More than a few of these authors endorsed the view that creation should be considered "our first revelation." Other authors, such as René Descartes, Balthasar Gracián, and Federico Cesi, emphasized the role of the "Book of the world," that is, what we can learn by travelling and through our own experience, as opposed to the learning of traditional education as entrusted to printed books and traditional rules.

Because of its scientific authority, the thought of Robert Boyle (1627–1691) is of special interest. The image of the book is readily noticeable in his last work, *The Christian Virtuoso* (1690), which contains his scientific and sapiential meditation. Referring to the method employed by scientific research, Boyle affirms that the Book of Nature is a large and beautiful rolled tapestry that we cannot see all at once. We must be content to wait for the discovery of its beauty and its symmetry, little by little, as it gradually unfolds, showing itself more and more.⁵⁰ In a short essay entitled *Of the Study of the Booke of Nature*, written between 1640 and 1650, Boyle mentions the wonders observed with a telescope (one he thought to be superior to Galileo's) and considers the celestial phenomena to be a revelation of God, a testimony to His greatness and wisdom.⁵¹ If nature is the place of the Creator's revelation, then the scientist is a privileged recipient of this revelation thanks to his sophisticated instruments and the deeper observations he can make. The scientist does not keep this divine revelation privately to himself, as if it were a kind of hermetic knowledge. Rather, he has the responsibility to communicate it, praising the Creator on behalf of all men, a kind of "priestly" function that we find explicitly also in the work of Johannes Kepler (1571–1630).

We also discover the metaphor in another of Boyle's work, entitled *Some Considerations Touching the Usefulness of Experimental Natural Philosophy* (1663). Boyle is convinced that knowledge of the

⁵⁰ Cf. Robert Boyle, *The Christian Virtuoso*, Part II, proposition VI, aphorism XXI.

⁵¹ Cf. Michael Hunter, Edward B. Davis, eds., *The Works of Robert Boyle*, 14 vols. (London: Pickering & Chatto, 1999–2000), 13: 147–172.

Book of Nature does not hinder the Christian faith, but rather favors it. To this end, he does not promote naive concordisms as the Physico-Theology movement would later embrace, but rightly maintains that Christian virtues illuminating a relationship with God, such as humility, gratitude, and reverence. For Boyle, these virtues are fostered by a deeper encounter with the works of the Creator—an encounter now promoted precisely by science. The great balance, as Boyle describes the relationship between the two Books is surprising. On the one hand, the Book of Scripture is superior, for if the “naturalist” contemplates many attributes of the Creator as reflected in his works, there still exist many more important attributes, such as love and mercy, about which the Book of Nature is silent. On the other hand, in his work *The Excellency of Theology compared with Natural Theology* (1674), Boyle specifies that the study of Scripture far from renders the study of Nature superfluous. The ultimate truths revealed by God do not deprive the scientist of the joy of investigating the natural world but, instead, drive him to devote himself to this activity with all his strength.

With regard to the readability of the Book of Nature, at least three different traditions seem to coexist in the Modern Age. The first is one contained in works having an apologetic or theological-catechetical character, even if written by people of science (as in Boyle’s case). According to this first tradition, Nature is a public book to which everyone has access. Following a second tradition, the book is still public, but this openness is precisely what renders Scripture superfluous. Such is the perspective of Deism. Finally, a third tradition, having a naturalist and Neo-Platonic character, affirms that the book is no longer public. Such a restriction is often associated with a polemical vein: it preserves the idea that only specialists—that is, “natural philosophers”—can read this book. In this latter case, careful observation and the study of nature is reserved for those who know the formal language of science, a terrain on which metaphysical philosophers and theologians wouldn’t know how to act properly. This third view is endorsed, for instance, by the Italian physician Giovanni Alfonso Borelli, admirer and follower of Galileo and founder of a school of medicine called “iatro-mathematics.” In his work *De motu animalium* (1679), Borelli tried to interpret living beings by means of mechanism and mathematical interactions.

It is interesting to underscore that many scientists of this era, especially those belonging to a Protestant cultural environment,

proposed their “own,” personal reading of Scriptures, without any worry of reconciling this direct reading as their own biblical exegesis with any theological school or church. In so doing, the priests of the Book of Nature end up being priests also of the Book of Scripture. Galileo himself, although he intended to refer back to Church Fathers to justify the use of non-literal exegesis, presented to theologians his own exegetical solutions in his *Copernican Letters*, but not without argumentative deficiencies and some contradiction.⁵²

Different currents of thought also coexist regarding the capability of human reason to read and understand the Book of Nature. For some authors (likewise most of the mediaeval authors), the role of sin would prevent the recognition of the Creator when starting from creatures. For others, the exaltation of reason and scientific knowledge inexorably migrates the metaphor towards the use later made by the deists of the Enlightenment. For the latter, the Book of Nature still manifests a character of universality, however no longer the universality of God’s aesthetic and salvific appeal, but rather the universality of reason. Even if the term “God” does not disappear, Samuel Reimarus (1694–1768) and other deists subsequently replaced the reading of the Book of Nature for every possible divine revelation: “God in his wisdom and goodness, if he wants to make all men blessed, cannot make necessary and unique means for bliss what is impossible for the vast majority of them to achieve; it follows that [supernatural] revelation must not be necessary, nor must man be made for revelation [...]. Therefore there remains only one way by which one thing can truly become universal: the language and the book of nature, the works of God and the traces of divine perfection that are clearly shown in them, as in a mirror, to all men, to the learned as to the unschooled, to the barbarians as to the Greeks, to the Jews as to the Christians, in all places and in all times.”⁵³

Here, the idea gradually coalesces that nature possesses a certain “redemptive” value, a vision that will acquire both romantic and radical tones in J.-J. Rousseau. Already in the Middle Ages,

⁵² Cf. Ernan McMullin, “Galileo on Science and Scripture,” *The Cambridge Companion to Galileo* (ed. P. Machamer; Cambridge: Cambridge University Press, 1998), 271–347; Rinaldo Fabris, *Galileo Galilei e gli orientamenti esegetici del suo tempo* (Vatican City: Pontificia Academia Scientiarum, 1986), 43–44.

⁵³ Samuel Reimarus, *Apologie oder Schultzschrift für die vernünftigen Vereher Gottes*, reported in Gotthold E. Lessing, *Gesammelte Werke* (ed. P. Rilla; Berlin: Aufbau Verlag, 1954–1958), 7: 686–734, here 734.

despite a greater realism in judging reason as wounded by sin, this idea was slowly coming to light. Hildegard of Bingen thought that learning from nature could even “restore” a correct knowledge of things. Raymond of Sebond stated that the cognitive priority of the Book of Nature also had some moral consequences. For Boyle, the role of nature is at least “propaedeutic”, for it educates toward humility and those other virtues necessary for understanding biblical revelation and receiving it fruitfully. For Edward Topsell, an Anglican priest and naturalist, the universal language of the Book of Nature would be able to recompose the fragmentation of human language caused by the confusion of Babel.

Over the course of subsequent history, the apologetic and catechetical use of the metaphor seems to have enjoyed a longer life when compared to the Neo-Platonic tradition and to the drift of deists. Many Christian authors would feed it, although not always equipped with enough scientific competence. They have often underscored the order and harmony of the Book, the intrinsic finality of nature oriented toward the service of man, and the evidence of a Creator who has planned morphologies of living beings and biological processes. The naïvete of some of their considerations, though being endowed with a certain heuristic value, would make the sting of Darwinism more severe and critical, once it was discovered that biological evolution and natural selection are also satisfactory causes for adequate morphogenesis and for the harmony between living beings and the environment. However, the authors who set forth a Darwinian interpretation of nature and history didn’t realize that the image of the “Book” would continue to have value even within an evolutionary perspective. Actually, the Latin term *evolutio* expresses the unfolding of the *volumen*, that is, of a book of the unrolling of the tapestry of nature, to use the metaphor employed by Robert Boyle. Pope Benedict XVI gave witness to this in his 2008 speech to the Pontifical Academy of Sciences:

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. [...] 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”.⁵⁴

A remarkable change of perspective occurs with the rise of German idealist romanticism. Many contents associated with the concept of nature shift into the concept of *history*. It is true, of course, that the encounter between the metaphor and the scientific environment, which had occurred two or three centuries earlier, had already produced its fruits. That is, it had conferred authority, autonomy, and coherence to the study of the natural sciences. However, from the 19th century onward, both nature and human life are seen primarily as *history*. And this would also become the case for the Bible. In this view, the true way of looking at nature is history, and nature itself is a history. Consequently, the world of books is considered to be merely a parody of the real world, such that the metaphor of nature as a book loses interest. Nature has its own story to tell—“natural history”—through the findings that the scientist collects, observes, reads, and deciphers, just as a historian does using documents. From the comparison between “Two Books,” we shift to the comparison between “Two stories”: the history of the natural cosmos and the history of biblical salvation. Contemporary theology has thus inherited the task of demonstrating, and not without labor, how these two stories are two readings of a single history, at the center of which—as in the metaphor of the Two Books—lies the mystery of the Incarnate Word.

7.5 The Book of Nature and contemporary theology of Revelation

Are all the difficulties and subtle clarifications found in the intriguing history of the metaphor strong enough to prevent today’s theology of Revelation from speaking fruitfully of Nature as a book written by God? If we desire not to use the adjective “ambiguous,” we should at least acknowledge that the metaphor has a multifeatured image having different meanings. In addition, the tricky and problematic heritage of the very concept of “nature”—one of the most complex subject matters in the history of ideas—brings more trouble to an already problematic issue. Looking at the whole history of metaphor, we have found at least four different

⁵⁴ Benedict XVI, *Discourse to the Pontifical Academy of Sciences*, October 31, 2008.

ways of referring to the Book of Nature: a) Thanks to this book, knowledge of the Creator, of whom biblical revelation speaks, is extended toward all in a very accessible way, making known the fundamental moral requirements deriving from the existence of a Creator. Nature is proposed to be a true form of divine revelation that is comprehensible, effective, and universal; b) This book confirms the reasonableness of the religious and moral teachings contained in Sacred Scripture, showing them to be available also to those who observe the natural order of things and the laws ruling it. The image of the “Two Books,” consequently, underscores the uniqueness of their Author; c) This book shows the self-sufficiency of a natural moral order with respect to the teachings contained in biblical revelation, placing the latter in parentheses or declaring it superfluous; d) Finally, the Book of Nature indicates a field of competence reserved only for scholars of the natural sciences, due to the specific and restrictive language in which the book is written. The image of the “Two Books” can express even a break between the rational and mathematical study of the world and the view of creation as given by philosophy, theology, or the Bible itself.

At the same time, notwithstanding its complex history and the different meanings it has acquired, the metaphor certainly offers a rich heritage to be appraised. In reality, it generates a number of interesting insights that could nurture the dialogue between science and theology. These insights appear to resist the different hermeneutical views proposed, while standing above the contrasting purposes with which the image has been used. Three main ideas seem to persist through history, as shared by most authors: a) The Book of Nature is universal (the language of mathematics, in a sense, continues to express a dimension of universality); b) It has an Author (other images of nature such as “mother” or “living being” do not refer primarily to any author); c) Scientists have used the image widely as it has many things to say to the activity of science, in the past as well as in the present. I will comment on each of these ideas in turn.

First, the idea that nature lies before our eyes like an open book—a public book that everyone can read even if not knowing how to interpret it immediately—is an idea that persists throughout all eras with different emphases. The sky is above us all, and the earth is below the eyes of all. Everyone comes across nature as it is our common home, so we need not look for this book as it comes to meet us. Somehow it reveals itself. It speaks to one person with its

illustrations, to another with its arguments, and to others illustrating its laws to a greater extent, whether they be of a physical or moral order. Upon closer inspection, even if we were to recognize that it is written in mathematical characters and think its reading to be reserved only for those who know its language, we would still not deny its universality. Rationality and science still have a public dimension and everyone, in principle, can be educated to have access to this knowledge. In contemporary society, where suggestions of the unknown and the search for secret mysteries too often replace a true religious sense, the call to the universality of divine revelation in a book available to all can help to avoid such dangerous drift. In this task, science and theology find themselves on the same side as they are both interested in reason, that is, in the Logos as the basis for the Book's readability.

Second, those who for centuries have used the metaphor of nature as a book—or the metaphor of the “Two Books” to include Sacred Scripture—have accepted at least implicitly the possibility of thinking of a personal Author. For materialists and atheists closed to any possible transcendence, nature is certainly not a book but rather only a place of conflict and irrationality—the theatre of pure chance, something that appears to be absurd. Knowing the reasons why the metaphor has been used would allow theology to understand better where and why implicit or explicit references to an Author of the Book were born, thus helping the interlocutor (including scientists) to evaluate which Subjects are philosophically adequate for playing the role of an *intelligent and personal author*. It should be noted that reference to the “author” was not denied even by those who had emphasized the self-sufficiency of the Book or had defended the autonomy of scientific work. Until the rise of 19th century materialism, none of these prerogatives of nature were posited *against* the existence of God. Within the rich framework of the metaphor, theology could help scientists to recognize the many consequences that stem from the belief that a personal author exists in the very foundation of physical reality. The effects of having a personal author are that the universe is readable, rational and lawful, conveying a message and embodying a purpose, in a word, reflecting what a book *is* and what a book *means*.

Third and last, the dialogue between theology and the natural sciences can be fostered by the historical fecundity of the metaphor of the “Two Books”—taking into consideration the limits and hermeneutical warnings already highlighted. Contrary to a rather

widespread *cliché*, the scientific revolution did not mark a break between the Two Books, but rather gave voice to the need for a greater intelligibility of both. A consolidated tradition is present even among the witnesses of the newborn scientific method, from Francis Bacon to Thomas Campanella, and from Galileo Galilei to Robert Boyle, according to which the Book of Nature helps in understanding the Book of Scripture. The latter retains unchanged moral and spiritual value for our lives. Precisely because the author of the Two Books is the same, new interdisciplinary questions have arisen and new implications have come to light with the development of the sciences. These evidently have concerned not only biblical exegesis, but creation as a whole, which now appeared to scientific observations as having an extent, richness, and complexity that was unimaginable previously. Scientific discoveries have claimed—and in a certain way will always require—a rereading of the Book of Scripture. Beyond the inaccuracies and misunderstandings that the Copernican revolution unveiled on both sides, the call that Galileo addressed to theologians would continue to be addressed by other people of science over the following centuries on new important issues, from Darwin to Freud. At the same time, Scripture may also urge scientists to read the Book of Nature yet again, in a more complete way. In so doing, theology and Scripture do not interfere with the scientific method, but rather help them to distinguish what in that Book speaks to science and what instead speaks instead to the existential and religious dimensions of the human being, what is written in the characters of mathematics, and what is written instead in the language of wisdom. A scientist like Robert Boyle, for example, was able to read Nature according to this twofold appeal, showing how one reading complemented the other.

All of these reasons suggest that Fundamental Theology, operating within a scientific context, should appraise all the richness that the metaphor still retains, and use it fruitfully. However, to put such a program into practice requires that theologians include in their studies a good reading of the Book of Nature, incorporating into their *curricula* some knowledge of the natural sciences. For manifold reasons, most contemporary theologians have lost the familiarity that the clergy of past centuries once had concerning the results and even the practice of the natural sciences. It is only thanks to a better knowledge of nature that they could understand and explain convincingly how and why natural history and salvation

history of salvation constitute one and the same history. With regard to this need, Thomas Campanella employed a lively tone in his *Apologia pro Galileo* (1622), a work that also makes wide use of our metaphor of the book. Invoking Augustine and Thomas Aquinas as witnesses, he recalls that in the Christian faith, human reason finds itself to be at home. And so it must continue to be, for “those who prohibit Christians from studying philosophy and the sciences prohibit them also from being Christians.”⁵⁵

⁵⁵ Cf. Thomas Campanella, *Apologia pro Galileo*, ch. III (Francofurti: Typis Erasmi Kempfferi, 1622) 14.

CHAPTER 8. GOD'S REVELATION THROUGH CREATION, BETWEEN COVENANT AND PROMISE

At first glance, the decision to reevaluate the manifestation of God through creation might seem dictated by mere opportunity. God the Creator's natural revelation is a subject capable of engaging in dialogue with non-Christian religions, philosophy, and also the sciences. It also intercepts the sensibilities of contemporary people who are attentive to their responsibility for safeguarding nature. Some might think that, in different eras, Christianity perhaps has exploited different opportunities, choosing content more congenial to its interlocutor and its historical context. For contemporary people, one might think such an opportunity would be given by a discourse on nature. These considerations are certainly true as the people of our time like to talk about nature. However, if Fundamental Theology is called to speak again today with conviction and competence concerning God's natural revelation, it is not for reasons of mere strategy or opportunity. I am convinced that every theology of Revelation *must begin* with God's revelation in creation, and all explanation of the history of salvation, consigned to Israel in favor of the entire human race, *must be anchored explicitly* in the God who created heaven and earth.

Throughout the ages, the people of Israel have expressed their faith in a natural revelation of God in different ways. For some authors, however, the awareness of such a belief matured late in the history of the people of God—well after the religious experience of its Exodus from Egypt. It is true, for instance, that Israel read its faith in God as Creator in light of its faith in the Lord of the Covenant. These historical or exegetical remarks—while certainly grounded—must not constrain the “position” that God's revelation in nature should occupy in the *theological* understanding of the one God, Creator and Redeemer. The faith in God as Creator—whose knowledge starting from nature has been available to everyone—was explicit from the very beginning of Christianity, as witnessed by the profession of faith that opens the apostolic *kerygma*: “I/we

believe in one God, the Father, the Almighty, maker of heaven and earth." The positioning of the creation of all things in the opening pages of the Book of Genesis, both in the Hebrew and Christian Bibles, is not accidental. Nor is it merely the result of systematic or chronological ordering. It is not by chance that the readings of the Liturgy of the Word reserve an opening role for the teachings on creation during the solemn Easter Vigil of Holy Saturday. This framework is particularly impressive because it is in this context that the Christian people are called to remember and renew their faith in the Risen Jesus Christ, the center of the cosmos and of history.

This is how Benedict XVI expressed this truth, in an Easter homily that is worth reading at length:

Is it really important to speak also of creation during the Easter Vigil? Could we not begin with the events in which God calls man, forms a people for himself and creates his history with men upon the earth? The answer has to be: no. To omit the creation would be to misunderstand the very history of God with men, to diminish it, to lose sight of its true order of greatness. The sweep of history established by God reaches back to the origins, back to creation. Our profession of faith begins with the words: 'We believe in God, the Father Almighty, Creator of heaven and earth.' If we omit the beginning of the *Credo*, the whole history of salvation becomes too limited and too small. The Church is not some kind of association that concerns itself with man's religious needs but is limited to that objective. No, she brings man into contact with God and thus with the source of all things.¹

A look at the theological literature of recent decades shows that, in the textbooks of Fundamental Theology in the Catholic world, the issue of the revelation of God in creation has not received adequate attention.² In the pre-Vatican II period, it was above all a philosophical path that was developed, expounding upon the theme of the natural-rational knowledge of God as part of the preambles of the faith. Less interest was reserved for biblical grounds, as was typical in the neo-Scholastic approach. In the years leading up to Vatican II, Michael Schmaus made the choice of presenting jointly both the ascending (philosophical knowledge of God) and

¹ Benedict XVI, *Homily during the Easter Vigil*, Rome, April 23, 2011.

² Cf. Javier Sánchez Cañizares and Giuseppe Tanzella-Nitti, "La rivelazione di Dio nel creato nella teologia della rivelazione del XX secolo," *Annales theologici* 20 (2006): 289-335.

descending (natural revelation of God) perspectives, framing them as “Revelation of the Natural Knowledge of God.”³ In an article that Heinrich Fries dedicated to Revelation in the collective work *Mysterium salutis*, he presented a section on the “two ways” in which God realizes his revelation in light of the Bible – i.e., in nature and in history – but offered only a few pages to the first of them, revelation in creation.⁴ In the great majority of textbooks following Vatican II, the reference to creation is even omitted. Avery Dulles does not include a natural revelation of God among his “Models of Revelation.”⁵ At best, some Catholic theologians prefer to present the manifestation of God in nature as a simple introduction to the treatment of divine revelation in the history of salvation, but without offering specific developments.⁶ The only praiseworthy exception, as far as I know, is in the work of Heinrich Fries. Two decades after the text prepared for *Mysterium salutis*, the German theologian devoted ample space to the natural revelation of God, inserting in his *Fundamentaltheologie* (1985) an extended chapter entitled “The Revelational Dimension of Reality.”⁷ I should also mention René Latourelle, who dedicates a limited but theologically meaningful space to the relationship between revelation and creation,⁸ while Christoph Theobald offers interesting suggestions yet without any

³ An English synthesis of Schmaus’ *Dogma* has been published by Sheed and Ward; cf. Michael Schmaus, *God in Revelation* (London: Sheed & Ward, 1977), 1: 57–69. We refer here to the Italian edition Michael Schmaus, *Dogmatica Cattolica* (Torino: Marietti, 1963) 1: 148–167, original in German.

⁴ An English translation of Fries’ article for *Mysterium salutis* has been edited in the short essay Heinrich Fries, *Revelation* (London: Burns & Oates - Herder, 1970).

⁵ Cf. Avery Dulles, *Models of Revelation* (Maryknoll, NY: Orbis Books, 1999).

⁶ This is the choice made by textbooks such as: Joseph Schmitz, *Die Offenbarung* (Düsseldorf: Patmos, 1988); Salvador Pié-Ninot, *La teología fundamental. Dar razón de la esperanza (1Pt 3,15)* (Salamanca: Secretariado Trinitario, 2006); César Izquierdo, *Teología Fundamental* (Pamplona: Eunsa, 2009), 138–147; Giuseppe Lorizio, “Teologia della rivelazione ed elementi di cristologia fondamentale,” *Teologia Fondamentale* (ed. G. Lorizio; Roma: Città Nuova 2005) 1: 56–71; Auer and Ratzinger dedicate a few pages to the revelation of God through the works of creation, and then immediately discuss the philosophical proofs of the existence of God: cf. Johann Auer and Joseph Ratzinger, *Kleine katholische Dogmatik*, vol. 2: *Gott-Der Eine und Dreieine* (Regensburg: Pustet, 1978). Verweyen offers a critical presentation of the proofs of God's existence, but he does not provide any link between the philosophical knowledge of God and the revelation of God in creation, a subject about which he does not speak: cf. Hansjürgen Verweyen, *Gottes letztes Wort. Grundriss der Fundamentaltheologie* (Regensburg: Pustet, 2000).

⁷ Cf. Fries, *Fundamental Theology*, 185–248.

⁸ Cf. Latourelle, *Theology of Revelation*, 329–341.

systematics.⁹

What are the reasons for this unexpected silence? With regard to the “two ways” of the one divine revelation, I believe that there are some unresolved—or not yet satisfactorily understood—theological questions that have prevented theologians from dealing confidently with this theme. I will examine some of these questions and will attempt as far as possible, to suggest some ways of resolving them. I will then discuss a few important biblical passages along with their main implications.

8.1 The revealing dimension of creation: some hermeneutic clarifications

Without ignoring necessary distinctions between nature and Scripture, creation and Covenant, the inclusion of God’s presence in creation within the theological category of “revelation” is justified by some key-considerations. First and foremost is the original bond between the divine Word, the Revealer *par excellence*, and creation. The Old and the New Testaments agree in affirming that all things were made in the Word and through the Word. Moreover, the close connection between words and works, one that characterizes Judaeo-Christian Revelation as a whole, is also manifested by creation: creatures are not only works but also “words” of their Creator. Finally, creation, like all of Revelation, participates in the dynamic between promise and fulfillment. The created world is, in fact, still unfinished. It is ongoing, still in progress (Lat. *in statu viae*), as shown by the logic of human activities that are called to reach their fulfillment in the Paschal Mystery of Christ and by the promise of a “new creation,” the final establishment of the Kingdom when God will be all in all (cf. 1 Cor 15:28).¹⁰ In Christ, creation is the sign of a Promise.¹¹ The evolving cosmos, the life that rises in it and

⁹ Cf. Theobald, *La Révélation... tout simplement*.

¹⁰ Cf. CCC 302; *Gaudium et spes*, nn. 33–39.

¹¹ The dimension of creation as a *promise* was highlighted well by Jürgen Moltmann: “The idea of God’s unity is preserved only through the concept of creation as a meaningfully coherent process. This process acquires its significance from its eschatological goal. The symbols ‘the kingdom of God,’ ‘eternal life’ and ‘glory’ are ways of describing this eschatological goal of God’s creation. It is not the historical covenant which is already ‘the inner ground of creation,’ as Karl Barth maintained: this is true only of the kingdom of glory; for this eternal kingdom is the inner ground of the historical covenant as well. Creation in the beginning points beyond itself to the history of promise given with Abraham, Isaac and Jacob. This history of promise points to the messianic history of the gospel of Christ, and both

enlightens it, and especially every human being created in the image of God are all *promises of fulfillment*. Because of its dynamisms and overall history—the place of physical and biological processes of increasing complexity—the universe seems to point beyond itself. This dynamism takes voice in human self-transcendence, where it becomes a search for truth, hope for an immortal life, and expectation of a fully realized love. What the philosophy of nature, philosophy of life, or anthropology can indicate merely as a “moving toward,” the light of the Christian faith qualifies as the embodiment of a promise, a promise the creative word of God pronounced in favor of all things.¹²

Those who wish to reserve the theological category of revelation only for the history of salvation and the logic of the Covenant should recognize that God’s revelation in creation has much to do with both of them. Creation is part of salvation history and a sign of alliance. The notion of creation, however, cannot be “absorbed” totally within a history of salvation and alliance as if it were only a “first step” or “first stage” of this history. Nor would it be right to affirm that only the history of salvation experienced by the people of Israel would provide the light to assess what creation would have to say about the relationship between God and humankind. Creation is a place of covenant in itself as it is a participation of God’s being, a gift from the Creator who asks every human being for a responsible response, whether invited or not by the Covenant bestowed upon Israel. And creation opens up to a history of salvation in itself due to the limit that creatural being implies and from which it longs to be redeemed, even before sin can wound it. The creature invokes “salvation” because it realizes its finitude and considers its life as embodying a promise that it could not fulfill without its Creator.

Some might observe that God’s revelation is never “silent”, that is, the kind of revelation eventually hosted by nature, since it is God who acts, and his revelation is always historically visible. If humans look to heaven, it would be only because God asks them to do so,

point to the coming kingdom which will renew heaven and earth, filling everything with the divine radiance.” Moltmann, *God in Creation*, 55.

¹² As far as the physical cosmos and life are concerned, the idea of creation as “promise” can be put in dialogue with the sciences, as shown for example by the works of Henri Bergson and Pierre Teilhard de Chardin. If we refer to the human creature, it is the whole existential tradition, from St Augustine up to the present day, that speaks of the human being as someone in tension towards a fulfillment.

just as he does when speaking to Abraham or Moses. It is not thanks to their own initiative that human beings come to God through nature, but rather thanks to a hermeneutics that God himself consigns to them. All this is certainly true, but we cannot ignore that in a number of biblical texts, human beings also commit themselves to listening to nature and reflecting wisely on creation. God's initiative is not undervalued because all creatures, insofar as they are *created*, are the expression of this initiative; and it is God himself who, by creating the heavens and the earth, starts the history of salvation. Although God's revelation in nature may appear silent, in reality it is eloquent and industrious, just like the salvific deeds that accompanied the history of the people of Israel (cf. Ps 107:19–38; 136:19, 25–26; Job 5:8–10; Isa 28:23–29).

Some also might point out that Israel comes to know the existence of a Creator through its experience of a history of liberation and salvation, not by following philosophical or theoretical paths. It is in light of this history that Israel later will come to read the relationship between nature and its Creator. This perspective certainly also rings true. There is no doubt that when the people of Israel wrote down their religious experience, they do not develop the idea of God's revelation as Creator. Likewise, they do not elaborate on the idea of God's natural knowledge starting from creatures. The existence of the Creator is rather a prerequisite, a constant awareness on which Israel reflects, *based on the covenant*, whose role in the formation of the historical identity of this People remains decisive. For the Jewish mentality, the world's total dependence on God did not need to be *believed*, as it already had belonged to their way of thinking: God is the Creator (cf. 2 Macc 1:24–25; Jdt 9:12). Should we conclude, then, that the revelation of God as Creator is a totally derived, later belief? I do not think so. Consider, for example, that faith in God the Creator sustains God's people precisely when the covenant is being challenged by adverse historical events. Moreover, the revelation of God as Savior and Lord, who fights against Israel's enemies, does not totally absorb his revelation as Creator. In fact, in the history of Israel, the question concerning the existence-presence of God (creation) is never ruled by the dialectics of victory-defeat (covenant). For Israel, whether deported or defeated, God continues to exist even if he appears not to save, precisely because Israel knows that He is the Creator of heaven and earth. He is a God who purifies and educates, admonishes and punishes, because he has the history of the world

in his hands.

The revelatory dimension of creation does not need to be founded upon the existence of philosophical-rational paths (although there would be biblical passages that suggest a causal relationship between Creator and creature). The revelatory dimension of creation, rather, is based on the fact that the human being, the recipient of divine revelation, can reasonably *listen to* creatures. If the latter manifest their Creator, it is not because they activate any theoretical or metaphysical inferences within human reason, but simply because *they speak of Him*. Some lively expressions of the sacred text recall this fact, as shown by verbs such as *declare, proclaim, praise, exalt, and manifest* (cf. Ps 19:2; Ps 89:6; Dan 3:57; Sir 43:1). We are in the presence of a “criterion of witness,” which *Dei Verbum* echoes in a sober but significant text at the very moment of introducing the idea of God’s natural revelation: “God, who through the Word creates all things (cf. John 1:3) and keeps them in existence, gives men an enduring witness to Himself in created realities” (DV, 3). The testimonial dimension of natural revelation recalls the categories of “fidelity” and “stability.” The grounds for this testimony are nothing more than the original relationship between the divine Word and creation, the latter arising as the effect of the former (cf. Gen 1:3 and ff.; Ps 33:6). And upon these grounds also lies the role that the Word-Logos plays in creation, which the NT presents as endowed by profound Christological resonances (cf. John 1:1–3; Heb 1:2–3). Things come into being because they are *called into existence* through a powerful, primordial, and creative word. As we have already seen in the rich usage of the metaphor of the Book of Nature, creatures themselves are these words, to which He who pronounced them listens. Creaturely existence is, in its deepest sense, a *vocation*.

If the experiences of liberation and the covenant were decisive for the religious education of Israel, such religious education for the human race as a whole is forged, according to Scripture, by faith in God as Creator – and Israel is aware of this spiritual condition. This truth finds its testimony in the oldest layers of the Book of Genesis and the Wisdom books, but also by the desire that the sacred texts express for reading the canon of the Covenant in cosmic-foundational terms, as happens in Noah’s history and by the cosmic framework that Jewish literature reserves for the history of Enoch. The fact that God’s revelation in creation must be seen as an original religious experience is envisaged as well by an episode related to

Abraham's vocation. Immediately after leaving the land of Ur of the Chaldeans to move to the land of Canaan by command of the "Lord," whose personal name he does not know, Abraham meets Melchizedek, king of Salem. Both recognize themselves as worshipers of *one and the same God* precisely through a *cosmological* reference to "God Most High, the creator of heaven and earth" (Gen 14:19). Melchizedek knows the true God not under the name of Yhwh—which will be revealed to Moses within the context of the Covenant—but under the name of El, which is that of God the Creator as known through his action in the world. Melchizedek is a priest of this first religion of humanity, which is not limited to Israel but rather embraces all peoples. He does not offer sacrifice in the temple of Jerusalem. Rather, the whole world is the temple from which the incense of prayer rises.¹³ The affirmation that the God of Israel "made heaven, earth, sea and all the things that are there contained" runs through all of Scripture as *an awareness that accompanies* all of Israel's religious history from its beginning. It is a constant refrain in its pages (cf. Exod 20:11; Neh 9:6; Dan 14:5; Jer 32:17; Esth 4:17), particularly in the Psalms (cf. Ps 24:1-2; 89:12; and 146:6), until appearing in the NT on Jesus of Nazareth's lips when he addresses the Father: "I give praise to you, Father, Lord of heaven and earth" (Matt 11:25; Luke 10,21; cf. also Acts 14:15 and 17:24).

8.2 Relevant biblical pages and emblematic passages

Every theology of Revelation must admit that God can reveal himself only *through the mediation of some created reality*. The cognition and experience of creatures, therefore, remain an indispensable factor towards expressing any knowledge of God. They are created realities: the human conscience, in which interiority God's word resounds; divine theophanies; the life and words of prophets; and the very humanity of Jesus of Nazareth. The encounter with God remains, in the end, a huge mystery: a mystery that the human being, by himself alone, could not bear. The personalistic dimension of revelation—that is, God's call to enter into a personal relationship with him—does not exempt us from such mediation. Otherwise, no one ever could enter into an immediate relationship with God, nor have a direct vision of him, nor listen to his intimate word. He always remains the mysterious transcendent foundation

¹³ Cf. Jean Daniélou, *Holy Pagans of the Old Testament* (London - New York: Longmans - Green, 1957).

(*absconditus*) that lies behind the tangible realities of our world, including our creaturely reality as personal beings.

How does this creaturely mediation work in the case of God's "natural revelation?" Recognizing in the Bible the logic of a "revelation through creation" is not always easy. The Bible speaks of creation in narrative, poetic, or apocalyptic terms, and not everything that refers to the natural world can be understood in terms of a theology of Revelation. Otherwise the latter would be identified with the dogmatic treatise on Creation as such. The biblical passages where the Lord reveals himself as the Creator, or is so invoked, cannot be considered in the strict sense to be biblical references speaking of a natural revelation. The revelatory dimension of the created world, rather, emerges when *the creatures themselves are the subject of a word addressed to human beings, or when they offer themselves as a mediation so that, through them, the divine word may resound, calling upon humanity and urging it to respond responsibly.* Referring to creatures of the material cosmos or to living beings other than humans, the term "word" evidently is used in an analogical way, as with the image of the Book of Nature as a metaphor. This analogy, however, rests upon an ontological foundation—that of a world created in and through the Logos-Verbum, which remains the most important Word that makes creation subsist, and the only Word that creation can convey.

Some biblical contexts seem to establish the logic of a natural revelation of God better than others.¹⁴ The first set of texts is an example of explicit association between creation (or creatures) and the divine word or a Creator's command (cf. Gen 1:3, 6, 9; Ps 33:6, 9; Ps 148:5; Wis 9:1; Sir 42:15; Isa 48:13). These passages should be complemented by the passages of the NT that teach us about the Christological dimensions of creation; that is, the connection of creation to the Word-Logos made flesh in Christ—the ultimate reason for nature's capability of revealing something of God (cf. John 1:3; Heb 1:2-3; 1 Cor 8:6; Col 1:15-17).

A second set of biblical passages illustrates how the existence of the Creator and some of his important attributes are revealed or deduced from the contemplation of creatures (cf. Wis 13:1-9; Rom 1:18-20; Acts 14:15-17, 17:26-27; Isa 40:25-26; Sir 18:4-7; Gb 26:14), among which the human creature excels (cf. Gen 1:26, 2:7; Ps 8:4-6).

¹⁴ A systematic account of the relevant biblical passages may be found in André-Marie Dubarle, *La manifestation naturelle de Dieu d'après l'Écriture* (Paris: Cerf, 1976).

It should be noted that “revelation” and “deduction” are not antithetical here. This point is evidenced by a third important set of biblical texts: the practice of wisdom, which enables the recognition of God’s revelation in creation by reflecting on things, meditating on events, and considering the great themes of human existence (cf. Sir 39:12–21; Sir 16:24–30; Wis 11:24–26). God reveals Himself in the meditation of the wise, as well as in the psalms of praise and in the prayer of the faithful. The reflection of the wise person does not refer necessarily to theoretical philosophical approaches (though it may include them). It is a “wise” meditation; that is, it takes place in an atmosphere of love for wisdom, prayer, and humility. The search for Wisdom-*Sophia* is a search for God, and the ways in which Wisdom manifests herself are ways in which God manifests himself. As we already have seen, *Sophia* fully participates in the logic of divine revelation. Divine Wisdom—which expresses the order of creation and God’s overall project for it—speaks with authority, in the first person, as a subject other than God yet more eloquently than his prophets, urging humans to recognize their Creator and exhorting them to a moral life. She does so in an open and universal way, speaking in the squares and on the heights, calling people to gather, indeed inviting them to join her and enjoy her banquet (cf. Prov 1:20.33, 8:1–2, 9:1–5; Sir 24:7–11).¹⁵

Another biblical context of revelation is that of humanity’s praise to God the Creator upon observing His works: In becoming the voice of all creatures, humanity invites them to join it in such praise (cf. Sir 42:15–25 and ch. 43; Ps 8; Ps 150:6; Neh 9:5–6) because “all the earth is filled with his glory!” (Isa 6:3; cf. Num 14:6). Similarly, together with all creatures, humanity recalls God’s fidelity and salvific works (cf. Ps 136).

But there is something more. Often the creatures themselves praise, bless, and glorify God because they are able to speak of Him and, therefore, reveal Him: “Bless the Lord, all you works of the Lord, praise and exalt him above all forever” (Dan 3:57; cf. Dan 3:58–83; Ps 104:4 and the context of the whole psalm; Ps 19:1–5) Indeed, humans are invited to ask creatures to speak to them of God, as vividly expressed in the Book of Job: “But now ask the beasts to teach you, the birds of the air to tell you; or speak to the earth to instruct you, and the fish of the sea to inform you. Which of all these does

¹⁵ Cf. Gerhard von Rad, *Wisdom in Israel* (London: SCM Press, 1981), ch 9: “The Self-Revelation of Creation”.

not know that the hand of God has done this?" (Job 12:7-9) The stars and other celestial bodies—which the cults of the neighboring peoples of Israel worshipped as gods—are themselves able to praise and reveal the glory of the Creator with their voices: "The beauty of the celestial height and the pure firmament, heaven itself manifests its glory. The sun at its rising shines at its fullest, a wonderful instrument, the work of the Most High!" (Sir 43:1-2; cf. Sir 43:9-10; Bar 3:33-36; Isa 48:13); and also "the heavenly hosts bow down before you" (Neh 9:6). The protagonist of the transmission of the divine message, which all human beings can hear and recognize, is the firmament of heaven, whose characteristics of stability, grandeur, and transcendence are well suited to the dignity of the message to be delivered: "The heavens declare the glory of God; the firmament proclaims the works of his hands" (Ps 19:2); "The heavens praise your marvels" (Ps 89:6).

On several occasions, as is reasonable to expect, praise and gratitude for the works of God provide a projection and exaltation at the cosmic-natural level of what Jahve has achieved in history in favor of his people. Within this context, the reference to the logic of the Covenant is direct and evident, even in the reading of creation made by the prophets (cf. Isa 61:11; Jer 31:35-36, 33:20-21; Zeph 3:5; for a retrospective look, see Gen 9:13-16; cf. also Ps 89:3.6; Ps 147:15-20). The stability of the cosmos, and the regular and conservative action of the laws of nature, are a witness to God's love and a sign of his faithfulness to man, thanks to which everything is led gently towards its end (cf. Prov 3:19-20; Wis 11:20-21).

Finally, a last biblical context outlining natural revelation involves where careful consideration of creation restores humanity's rightful relationship with God, recalling its moral duties and helping it to rediscover the meaning of its existence before its Creator (cf. Job 38:4-20 and the whole context of chaps. 38-39; Job 40:3-5; Ps 8:4-5; Ps 19). Here we find answers to important issues such as the significance of human fragility and suffering, the need for a philosophical realism in which the existence of things "out there" comes before any human feelings, and the existence of a natural moral law engraved in the heart of each human being.

Two biblical pages deserve to be examined more closely at this juncture, both for their emblematic value and the influence they have had on the topic of concern. These passages indicate the natural knowledge of God contained in the Book of Wisdom (Wis 13:1-9) and in the Epistle to the Romans (Rom 1:18-21). Because of the

apparent dialectic between knowledge and ignorance of God that is present in both texts, their interpretation sometimes has been the subject of lively debate. Some authors have seen proof in them of the availability of a philosophical-rational knowledge of God as the First Cause of the created world. Alternatively, others have found in them the demonstration that such knowledge, perhaps possible in principle, never actually was reached. Undoubtedly, both the Book of Wisdom and the Epistle to the Romans show a certain *chiaroscuro* on the human condition with regard to the knowledge of God. Additionally, there is no doubt that the use of these passages to support specific metaphysical-rational ways of thinking might be perplexing. In both cases, moreover, the descending path of a divine revelation through nature is not explicit, but should be drawn eventually as a counterpart to a more explicit ascending path realized by reason. It should be noted immediately that these texts do not intend to offer a “philosophical demonstration” of God’s existence. Chapter 13 of the Book of Wisdom, in fact, deals with a religious and anti-idolatrous context, while the verses of the Epistle to the Romans are close to an apocalyptic genre, within the framework of the Pauline theology of justification. However, in both cases, the texts clearly refer to the inference of causes from their effects. Therefore, it was inevitable (nor should be it criticized) that Christian philosophy desired to use these pages to show the agreement of Sacred Scripture with a metaphysical itinerary leading from visible effects to their invisible causes. In reality, the intellectual process—beginning from the observation of qualities present in creatures—that deduces similar or superior qualities belonging to the Creator is witnessed to by several pages of Scripture and recalled by Jesus of Nazareth himself (cf. Matt 6:26-30; Luke 12:24). The basis for the legitimacy of this deductive process is that God can (and wills to) reveal something about himself—at least his existence and some of his attributes—through his creatures.

The well-known text of chapter 13 of the Book of Wisdom is inserted within a large-scale criticism against idolatry. After mentioning cosmic forces (cf. vv. 13:1-9), the text moves on to condemn idols built by human hands (cf. vv. 13:10-15:17) and then the worship of animals (cf. vv. 15:18-19). The “cosmic forces” essentially refer to the stars and meteoric agents, according to the common language of the phenomenology of religions (cf. v. 13:2). The author of the text does not intend to develop an argument against atheism—the latter being a view that neither the Bible nor

the culture of the time considered—but rather against worshippers of idols. Man seeks to return to the cause that founds the existence and beauty of creatures, but he is wrong when attributing this Foundation to the creatures themselves (idolatry). It is, therefore, a matter of “correcting the shot.” We face here *religious* proof of the existence of the one and true God within the anthropological-aesthetic field, rather than *philosophical* proof in the cosmological-rational field—if we really wish to distinguish (but not separate) these two perspectives. The argument in favor of monotheism appeals to a spontaneous, reasonable knowledge, as frequently introduced in many pages of Scripture (Isa 40:21–26). Some of the elements that are philosophical in character have always characterized the peculiarity of this text, the first one being the way of referring to God as used in the opening verse: “Foolish by nature were all who were in ignorance of God, and who from the good things seen did not succeed in knowing *the one who is*, and from studying the works did not discern the *artisan*” (Wis 13:1).

God is designated as an artisan, literally as the “technician.” (Gr. τεχνίτης). The idea that creatures are “works made by the hands of God,” although affected by a Hellenistic influence, is by no means extraneous to Scripture (cf. Ps 8:4, 19:2, 95:5; Isa 45:12; Sir 42:21). It is justifiable to believe that, just as the works of an artist or artisan reveal something of their author, so creatures reveal something of God who created them, who “cut” them, if keeping to the concrete meaning of the Jewish verb *bara*’. Created things reveal “the One Who is,” the *Being* (Gr. τὸν ὄντα). We are not dealing here with a neutral subject, as is usual in Platonic philosophy (“what is,” as opposed to “what becomes or is transformed”), but with a masculine subject: *The One Who is* coincides with the expression used by the LXX when translating the divine name Yhwh of Exod 3:14 into Greek.

A second philosophical element concerns the mode of recognition by means of proportionality or analogy (v. 13:5). From the greatness and beauty of creatures one contemplates (Gr. θεώρειν) their Originator by analogy, the One from whom the creatures had their origin. The procedure of proportionality already had been introduced in the preceding verse: “If they were struck by their might and energy, let them realize from these things how much more powerful is the one who made them” (v. 13:4). The adverbial expression “by analogy or proportionality” (Gr. ἀναλόγως), is unusual for the biblical text. Greek literature also does not use it in

reference to the knowledge of God, but only to indicate a proportional knowledge acquired within a mathematical or geometric context.¹⁶ It seems logical, therefore, that a Christian-inspired philosophy desired to draw from this passage some consequences in terms of the analogical knowledge of God, as described by the metaphysics of our participation in being.

The Book of Wisdom thus invites the reader to bring the science of the visible world and the cosmic forces that it hosts back to the one true God, the One Who is. In accordance with the biblical profile that characterizes the wise man, the science that he exhorts is undoubtedly demanding, requires constancy and reflection, and must never be separated from those primary forms of wisdom that are the holy fear and love of God. At the same time, it is a knowledge or revelation that is, in principle, available to all, as confirmed by the moral judgment reported in the text: those who do not reach such knowledge rightly can be considered “foolish” (v. 13:1; cf. also Ps 53:2). The reproach made toward the observers of heaven who are unable to go back to the Creator is clear, formulated in accordance with the tradition of Israel (cf. Deut 4:19). Yet it is moderate when compared to what is addressed to those who worship handmade idols (cf. vv. 13:10–19). The author of the sacred text cannot justify them but seems inclined to understand them. In summary, that we are dealing here with a “context of revelation” through creation seems quite clear. It can be understood from the general logic of the text. If from visible creatures we can know their Creator—the one true God, the Lord whom Israel knows and worships—then creatures, by means of proportion, reveal something of Him, first of all his existence.¹⁷

The Pauline text of the Epistle to the Romans shows some similarities to this passage in the Book of Wisdom, both in the reproach made to the pagans who were unable to recognize the true God even though they could have done so, and in the philosophical

¹⁶ Cf. Durbarle, *La manifestation naturelle de Dieu d'après l'Écriture*, 133–140.

¹⁷ This is how André-Marie Dubarle summarizes the meaning of this text: “With regard to the knowledge of God through creatures, the contribution of the text of *Wisdom* 13:1–9 is to formulate in a reflective way what was the spontaneous process of biblical faith: to rise from the visible world to God, attributing to the Creator, according to an infinitely greater measure, the qualities discovered in his works. Taking up terms used by Greek philosophy, the wise man implicitly indicates the usefulness that religious faith can find in confronting rational thought and in deepening such a dialogue.” Durbarle, *La manifestation naturelle de Dieu d'après l'Écriture*, 151.

debate to which it gave rise.¹⁸ Gentiles worship visible creatures in a situation of serious and widespread corruption (cf. Rom 1:22–23). In so doing, they attract the wrath of God, who, in turn, seems to manifest himself precisely through abandoning men to their dissoluteness (cf. Rom 1:24–32). The origin of this progressive corruption is a guilty ignorance of God—knowable through his works—since the creation of the world (cf. Rom 1:19–20). It is well known, in this Epistle, that Paul develops the theme of man’s justification in Christ before God. A Christological reference is not yet present in this passage, but the distinction between those who are saved or justified because they recognize the true God and those who are not (a topic that resumes in ch. 2) is already clear. The manifestation of God’s wrath is inserted here into the logic of an eschatological revelation of salvation. It does not indicate primarily a sense of God, but the revelation of his mystery. With regard to the natural knowledge of God is the central passage: “For what can be known about God is evident to them, because God made it evident to them. Ever since the creation of the world, his invisible attributes of eternal power and divinity have been able to be understood and perceived in what he has made” (Rom 1:19–20).

According to Heinrich Schlier, Paul is not indicating here the dynamics that make the invisible knowable starting from what is visible, as happens more explicitly in the text of Wisdom 13. Rather, the Apostle reiterates more generally that what can be known of God is evident and manifest (affirming merely that it is “knowable” would be a tautology). It is manifest because God always has revealed himself to the Gentiles, from the foundation of the world, in a way that the text does not specify but seems to take for granted (cf. Rom 1:19b). The fact that the works speaking of God must be divine works in the order of creation, and not wonders realized in a history of salvation and liberation, comes from the fact that the text speaks of the Gentiles and not of the people of the Covenant. The appeal to creation, then, does not indicate a temporal reference to the past, but rather objective and everlasting evidence. The character of “universal evidence” that the Apostle attributes to this knowledge must be emphasized, as it is precisely what motivates the guilt of ignorance with which the pagans are charged. Coherent with the meaning of the text, Schlier prefers not to speak of creation in an

¹⁸ Cf. Heinrich Schlier, *Der Römerbrief* (Freiburg: Herder, 1977) and Dubarle, *La manifestation naturelle de Dieu d’après l’Écriture*, 201–236.

abstract way, but of concrete works, although it is legitimate to understand these “works” (also) as “creatures,” bearers of a specific value of revelation. According to the German exegete, God is always perceptible in what he created, and he is universally knowable and has made himself known: Therefore, it can be said that he has “manifested himself” to all men. The works of which the Pauline text speaks here are not God’s act of creating, nor a generic action of God within history, but rather the works of creation that he continuously carries out in time. They are “the works of your hands” (Ps 8:7), or also “all his creatures” (Ps 103:22) and “all his works” (Sir 42:16).¹⁹ Thus, it is true that we are not faced here with a metaphysical deduction, with a knowledge that seeks the philosophical cause for the origin of all things. It is, rather, not a due recognition of what the *religious* person, having a pure and sincere heart, can achieve, but rather a recognition of what remains unachievable for those who are corrupt and idolatrous.

Within the expression, “his invisible attributes of eternal power and divinity have been able to be understood and perceived” (Rom 1:20), I wish to underscore two actions here involved. One regards the intellect that understands (Gr. νοῦς) and the other refers to a vision that contemplates (Gr. ὁράω). Even if the subject called here to recognize God is the *homo religiosus* and not the *homo philosophicus*, the aforementioned actions seem to indicate an acknowledgment of God in which *aesthetic* aspects are necessarily linked to *rational* ones. The fact that the divine attributes cited here are God’s “eternal power” and “divinity,” while other attributes such as providence and mercy, also present in the Pauline vocabulary—are not mentioned suggests that we are dealing with a revelation of cosmic nature, the cosmos being the place of natural powers and the image of God’s transcendence. The universal character of this knowledge, as in the case of the Book of Wisdom, is still highlighted by the guilt of those who deny it and who are now associated with a more rigid and dramatic moral judgment (cf. Rom 1:21; cf. Wis 1:1), formulated within an eschatological-apocalyptic framework. The reproach is stronger because the objects of idolatry are now animals (cf. Rom 1:23), and no longer celestial phenomena. The abandonment to which God condemns men is no longer the ignorance of idolatrous worship, but the corruption of human bodies, the disruption of human desire, and the disorder of their passions (cf. Rom 1:24–31).

¹⁹ Cf. Schlier, *Der Römerbrief*.

Beyond any debate concerning the possible use of this Pauline page in providing strict support to philosophical itineraries that lead to a rational knowledge of God as First Cause and the Ultimate End of all things, the Epistle to the Romans certainly states that a revelation of God through creation is operative. It was so for the pagans of the past of whom Paul speaks, and it remains so in every age due to the universality and evidence demonstrated by this natural knowledge. It is a divine revelation manifested within a cosmological context before the eyes of all. The reason for the effectiveness of such natural knowledge, ultimately, is not due to the efforts of human research as in the reflection of the wise man in the Book of Wisdom, but from the initiative of God who manifests himself.

Before examining a further important passage of the New Testament – that of Paul’s speech in Athens, to which I will devote the next section – it is worth summarizing some considerations that emerge from the biblical data mentioned thus far. First of all, even within different literary and theological contexts, the sacred Scriptures are unanimous in formulating the same invitation: the human being *is exhorted to look upwards, to the starred sky*. The sky, with its variety of bodies and celestial phenomena, is the locus of divine revelation. Religious and philosophical reflections begin from observing the sky, leading to recognition and praise of the one true God. If we take into account the historical and cultural context in which this exhortation was born and the recipients to whom it is directed, we soon realize that we are facing a religious and intellectual operation of a certain audacity with strong originality. In fact, from observations of the sky and its phenomena, the Mesopotamian world and, later, Greek culture derived the existence and activity of several gods. On the contrary and somewhat surprisingly, when Israel invites humanity to observe the starred sky, it does not multiply gods but instead strengthens its monotheism. It adores only one God, the Creator of the sky, of heaven and earth.

Secondly, divine revelation through creation provides a *canon of universality* suitable for speaking to other peoples and cultures of the one true God whom Israel knows and adores. If Israel is aware of possessing a prophetic word that is able to interpret human life and all of history, it is equally aware that such a word is the same word of creation before the eyes of all. As Psalm 136 exalts, a

common language exists that is capable of announcing the wonders of God in creation and the works of God in salvation history. There is a musicality capable of giving praise to God because he “skillfully made the heavens” and because “the Lord remembered us in our low estate,” and praise for having made “the moon and stars to rule the night” and given the promised land “as a heritage for Israel, his servant,” interspersing each of these praises with a single incessant reason: “For his mercy endures forever.” The correspondence between the word of creation and the prophetic word not only accompanies the entire Old Testament, but also enters the New, now founded upon solid Christological grounds. The prophetic word becomes the proclamation of the Gospel, whose capability of appealing to every man is compared to the universality with which the starry firmament, sun and moon are before the eyes of all. This truth is shown in the liturgy of the Church, which has long applied the words of Psalm 19 to the ministry of the Apostles, both in the Liturgy of the Hours and in the responsorial psalm of the Mass corresponding to them. The language whose sound cannot but be heard and which spreads to the confines of the earth is now the *kerygma* they proclaim.

Thirdly, the revelation of God through creation *has moral implications*, not only manifesting his existence to all peoples but also, in a certain sense, a universal revelation of his will, of the religious bonds that every human being, in justice, is called to live and profess.

In tune with the biblical message, as is well known, the Fathers of the Church spoke in their works of God’s revelation through creation. The theology of the Logos of Justin the Martyr and Athanasius of Alexandria centers on the polarity of the knowability alongside the revelation of God in nature. Jerome, John Chrysostom, and Augustine wrote on the moral obligation to worship the true God as revealed in creation. Irenaeus, Clement of Alexandria, and Basil consider God’s revelation in creation as propaedeutic to his revelation in history.²⁰ “The ancients,” Irenaeus of Lyon states, “celebrated the praises of one God, the Maker of heaven and earth; others, again, after them, being reminded of this fact by the prophets

²⁰ Cf. Irenaeus of Lyon, *Against Heresies*, II, 30, 9; Jerome, *Commentary to the Book of Isaiah*, 6, 1-7; Theophilus of Antioch, *Ad Autolicum*, I, 5-7; Basil of Caesarea, *Hexaemeron*, VI, 1; Athanasius of Alexandria, *Against pagans*, 22-44; Athanasius of Alexandria, *Against Arians*, II, 78-79; Clement of Alexandria, *Protrepticus*, I, 5; Eusebius of Caesarea, *Praeparatio evangelica*, I, 9,13-20.

of God, while the very heathen learned it from creation itself. For even creation reveals Him who formed it, and the very work made suggests Him who made it, and the world manifests Him who ordered it. The Universal Church, moreover, through the whole world, has received this tradition from the apostles.”²¹ Basil of Caesarea offers his canon of the relationship between faith and reason in plain language: “In believing in God there is a *knowledge* of God’s existence that is preliminary; and we derive this knowledge from the created world.”²² When inviting people to look at nature, the Church Fathers constantly fought against idolatry, superstition, and corruption; and they did so precisely in the same field—the starry sky—where those drifts and errors had arisen. In this way, by a first-class cultural operation, they indicate to all how to restore the world to its Creator. Even when they propose an ascending path that leads from created things to their Author, the perspective followed is religious, anthropological, and aesthetic in scope. They appeal to common sense and ordinary experience, judging it sufficient to “prove” and, therefore, to motivate the reasonableness of listening to the Apostles’ *kerygma*. In fact, it is the one God who made heaven and earth that the Apostles preached as definitively revealed in Christ. He is the God-Father about whom Jesus spoke. In the midst of the Greco-Roman world, the Fathers had no other tool than this one to prepare the hearts of their contemporaries for the proclamation of Christ, who died for our sins and rose from the dead. Surprisingly, contemporary theology seems to have forgotten this point.

²¹ Irenaeus of Lyon, *Against Heresies*, II, 9,1.

²² Basil of Caesarea, *Letters*, 235, 1; PG 32, 872B; italics are mine. On the propaedeutics we need in our knowledge of God, here is a text from John of Damascus: “God, however, did not leave us in absolute ignorance. For the knowledge of God’s existence has been implanted by Him in all by nature. This creation, too, and its maintenance, and its government, proclaim the majesty of the Divine nature. Moreover, by the Law and the Prophets in former times and afterwards by His Only-begotten Son, our Lord and God and Saviour Jesus Christ, He disclosed to us the knowledge of Himself as that was possible for us.” John of Damascus, *An Exposition of the Orthodox Faith* I, 1 (Eng. transl. by E.W. Watson and L. Pullan. *Nicene and Post-Nicene Fathers*, Second Series, vol. 9; digital text at www.newadvent.org).

8.3 God's revelation in nature supports the apostolic *kerygma*: St. Paul's speeches at Athens and Lystra

Two episodes of Paul's preaching reported in the Acts of the Apostles are of special interest to us because they place the effectiveness of a natural revelation of God in a kerygmatic context, employing such revelation as necessary propaedeutics for introducing the Gospel's message: Jesus Christ, Son of God, dead for our sins and raised from the dead. I refer here to the well-known speech at the Areopagus in Athens (cf. Acts 17:16–34) and to the lesser known, but no less significant, speech given by the Apostle in the city of Lystra (cf. Acts 14:14–18). I wish to recall now some key elements from the first speech, also because of the resonance it has regarding the relationship between faith, philosophy, and culture.²³

In addition to addressing the synagogue as was usual, Paul's second trip to Greece included discussions with Stoic and Epicurean philosophers in the agora of Athens (cf. Acts 17:18). They lead him to the Areopagus, where he would meet an audience of greater political and religious authority, albeit with less philosophical commitment.²⁴ Paul believes that both places, the synagogue and the public square, are suitable for proclaiming the Gospel of Jesus Christ and so he does, according to Luke's report (cf. v. 17). Paul's custom with philosophers was not surprising: he saw in them potential allies against the idolatry of polytheism. Moreover, both the Epicureans and the Stoics practiced an existentially directed life, a wise way of life to which the Apostle felt he could then propose Christianity as the "true philosophy," just as the Apologist Church Fathers did in subsequent decades.

²³ On St Paul's speech at the Areopagus, cf. Walther Eltester, *Gott und die Natur in der Areopagrede*, in *Neutestamentliche Studien für R. Bultmann* (Berlin: Töpelmann, 1954), 202–227; Bertil Gärtner, *The Areopagus Speech and Natural Revelation* (Uppsala: Almqvist & Wiksells, 1955); Dubarle, *La manifestation naturelle de Dieu d'après l'Écriture*, 155–200; *Dio ignoto. Ricerche sulla storia della forma del discorso religioso* (ed. C. Moreschini; Brescia, Morcelliana, 2002). A careful study of patristic commentaries in Javier Sánchez Cañizares, *La revelación de Dios en la creación: la referencias patristicas a Hch 17,16–34*, *Dissertationes. Series Theologica* (Roma: Edusc, 2006).

²⁴ The agora was the main square, a place for informal meetings of philosophers and thinkers, but also for the free opinions of all. The Areopagus, located on a small hill in the direction of the Acropolis, was the place where a council with judicial functions traditionally met, but it also was used to discuss issues of special interest to the Athenian community.

This Pauline passage has received different interpretations. Some saw in it a typical Jewish setting, others underscoring a Greek scheme. Commentators today agree that the sources and literary forms used in the speech are indebted to both Jewish and Greek culture. It is customary to emphasize the emblematic value of the discourse at the Areopagus with regard to the encounter between Christianity and philosophy – an encounter that is not rejected even if it certainly presents some problematic aspects, as the episode teaches. Paul, like the first Christian thinkers after him, saw in philosophy an opportunity for purification from idolatry and a way for preparing the proclamation of the Gospel. It is worth remembering that the Pauline text cannot be framed hastily as a mere critique of idolatry, even if such critique is undoubtedly evident. It has, rather, the form of a kerygmatic discourse, albeit left open and unfinished (cf. v. 32).

After introducing a *captatio benevolentiae* about the religiosity of Greek people (cf. v. 22) and soon after mentioning their cult of the “unknown god” as a device for his opening speech (cf. v. 23), Paul explicitly and directly addresses the real subject of which he desires to speak: “The God who made the world and all that is in it, the Lord of heaven and earth” (v. 24). Among the various ways of approaching monotheism as a starting point for his discourse, Paul chooses to identify the one God through a clear reference to nature, as the latter is before the eyes of all. He is speaking of the Creator, whose attributes of transcendence and universality would soon be made explicit. In this manner, the Apostle knows that he can dialogue with the highest philosophical stratum of the audience, as the religious stratum there is characterised markedly by polytheism. This Pauline discourse, it is true, does not intend to develop the idea of divine revelation through nature, but this idea actually underlies all his argumentation. At the heart of his reasoning, there is, above all, his concern to emphasize the transcendence of God against worship of the idols of polytheism (cf. v. 24b–25a.30; cf. also v. 16). However, interpreting the Apostle’s entire intervention as being aimed solely at the critical confrontation between monotheism and polytheism would be reductive. Paul wants to invite his listeners to conversion and faith in Jesus Christ starting from what he can share with them: the knowledge of a provident Creator at the origin of the human race – that is, the subject he introduced at the beginning. It is the God who transcends everything, of whom Paul can affirm “is he who gives to everyone life and breath and everything” (v. 25); he is

the Creator who “fixed the ordered seasons and the boundaries of their regions [of peoples]” (v. 26). Even if we do not see Him, we can enter into a relationship with Him through our personal experience and our knowledge of the world. It is true: We look for him as if by groping, “though indeed he is not far from any one of us. For ‘In him we live and move and have our being,’ as even some of your poets have said, ‘For we too are his offspring’” (vv. 27–28).

The Church Fathers frequently comment on this Pauline discourse, highlighting the gradual way in which the Apostle introduces the proclamation of Jesus Christ, starting precisely from a reference to creation.²⁵ St. John Chrysostom, for example, states that in our knowledge of God we must begin with the visible things, the simplest to understand. We need to have as our basis a shared knowledge, such as that of creation and of the Author to whom creation refers. This way of proceeding is in accordance with the economy of the Incarnation, which from the shared experience of the humanity of Jesus Christ leads us towards the recognition of his divinity.²⁶ St. Ambrose teaches the same. According to the Bishop of Milan, St. Paul works as pastors do in catechesis with the catechumens. First, the latter are taught that God is the Creator of the world and of all things, the One in whom we exist, live and move, and to whom we are united by bonds of sonship. Then Jesus Christ is announced to them, and the works done by him in his mortal flesh, before turning to preach his divinity and resurrection from the dead.²⁷

As regards the issue of our concern, the Pauline speech at the Areopagus offers us a basic teaching: To be understood by listeners, the proclamation of the Gospel must be “placed” within specific religious and philosophical coordinates. Doing so is not a simple rhetorical strategy, but rather a necessary hermeneutic aimed at ensuring the full intelligibility of the message. In this view, the natural revelation of God is included in a certain way, even though on this occasion, it perhaps remains implicit. This is the reading of Luke’s text also proposed by *Fides et ratio*:

²⁵ Commented on in countless patristic works, the *corpus augustinianum* dedicates almost 90 different quotations to this page of the *Acts of the Apostles*; St John Chrysostom recalls it more than 50 times and St Ambrose more than 30 times. See Sánchez Cañizares, *La revelación de Dios en la creación*, 270–277, 392.

²⁶ Cf. John Chrysostom, *Homilies on the Acts of Apostles*, XXXVIII, and *Sermons I–IX on Genesis*, I, 2.

²⁷ Cf. Ambrose of Milan, *Exposition of the Holy Gospel According to Luke*, VI, 104.

If pagans were to understand them, the first Christians could not refer only to 'Moses and the prophets' when they spoke. They had to point as well to natural knowledge of God and to the voice of conscience in every human being (cf. Rom 1:19-21; 2:14-15; Acts 14:16-17). Since in pagan religion this natural knowledge lapsed into idolatry (cf. Rom 1:21-32), the Apostle judged it wiser in his speech to make the link with the thinking of the philosophers, who had always set in opposition to the myths and mystery cults notions more respectful of divine transcendence (n. 36).

An encounter between Christianity and culture is encouraged here. Pagans who investigate God or the divine are not condemned to a frustrated search. Rather, the Christian faithful may dialogue with them, allowing the best part of pagan thought – their philosophical approach open to recognition of the transcendent God – converge with biblical monotheism and clarify the error of polytheism. The convergence between philosophy and Judaeo-Christian faith in the one true God is achieved on the grounds of the knowledge of nature, that is, by addressing the question concerning the origin of all things and of human race.

The hermeneutics of the Areopagus speech also can benefit from brief reference to another discourse, that given by Paul a short time before at Lystra. In this case, the cosmological reference does not precede, but follows, the proclamation of the Gospel. It is intended to avoid misunderstandings and clarify *who the God preached by Paul is*, thanks to Whom health had been restored to a paralyzed man. The enthusiastic but idolatrous reactions of the crowd are halted by the Apostle precisely by speaking of the natural revelation of God, the God whom Paul serves and whom the pagans could know through His works:

Men, why are you doing this? We are of the same nature as you, human beings. We proclaim to you good news that you should turn from these idols to the living God, 'who made heaven and earth and sea and all that is in them.' In past generations he allowed all Gentiles to go their own ways; yet, in bestowing his goodness, he did not leave himself without witness, for he gave you rains from heaven and fruitful seasons, and filled you with nourishment and gladness for your hearts (Acts 14,15-17).

The propaedeutic purpose of God's natural revelation with respect to the announcement of the *kerygma* is clear, although the chronological order here is reversed. A religious-philosophical "collocation" of the Christian message is required, again, to address a correct hermeneutic, both to prepare the reception of what is preached and to understand it properly. It is less important here whether the knowledge of God the Creator has been available to the pagans of Lystra within the canons of a descending natural revelation or in those of an ascending philosophical path. And it is even less important, in my view, to radicalize the difference between the religious and philosophical approaches. All philosophical paths, in fact even the most speculative ones, begin from wonder. Thus the dimension of "revelation" entailed by every sincere amazement before natural reality precedes every human questioning, whether this prompts humanity to argue or moves it to adore.

8.4 Theological questions raised by the re-evaluation of God's revelation in nature

It is worth taking up some of the main theological problems previously raised in order to seek possible answers for them. The first question concerns the teachings of the Catholic Magisterium on the status of "revelation" attributed to the manifestation of God in creation. Until a few decades ago, when these teachings spoke of nature and creation, the word "revelation" did not appear. This term (Lat. *revelatio*) explicitly referred only to what God did, in words and deeds, in the religious history of Israel, including what God provided to this people through accounts concerning "the origins." Nonetheless, creation and revelation remain two very closely related theological concepts. One could observe that the "notes" the Lateran Council IV associated with creation and taken up later by Vatican I—namely: freedom, purpose, rationality and goodness, in addition to the note on temporality (*ab initio temporis*)—are also notes that characterize any divine revelation. Revelation, in fact, is a free and gratuitous word, intelligible to humans and thus rational, spoken out of love, and having goodness as its end, a word that enters into history at the beginning of time (cf. DH 800, 3002). The First Vatican Council did not develop this convergence. As is well known, chapter 2 of the dogmatic constitution *Dei Filius*, dedicated to Revelation, explains the traditional teaching on the natural knowledge of God, without involving the noun "revelation" or the verb "to reveal" (cf. DH 3004–3007). This choice was probably motivated by the doctrine

of the “double order of knowledge” (*duplex ordo cognitionis*) within which the whole chapter develops. The subject matter of the Council text concerns the philosophical knowledge of God and how we come to know something about him. What is known by accepting the Word of God, through the light of theological faith and with the help of sanctifying grace, cannot be placed at the same level of what is known in a strictly philosophical way through the light of reason, moving from effects to causes. At the time of Vatican I, the Church above all had to contend with rationalism and agnosticism, while modernism would emerge shortly afterwards. Against these currents, the Fathers of this Council intended to reaffirm that faith is true knowledge, one that concerns a higher order than that achieved by natural reason. During the following decades, the *theological* status of a revelation of God in creation would not receive specific attention, as the neo-Scholastic approach would absorb this topic within the *philosophical* exposition of the natural knowledge of God, without favouring particular developments in biblical scholarship.

Even Vatican II, it is true, did not use the term “revelation” when referring to nature. However, the understanding of revelation as a personal dialogue between God and the human being, and the preeminence given to the divine initiative that invites man to participate in the life of the Trinity (cf. DV, 2), allow *Dei Verbum* intensively to “extend” this dialogue and divine initiative, speaking of a perennial witness of the Creator in the world: “God, who through the Word creates all things (see John 1:3) and keeps them in existence, gives men an enduring witness to Himself in created realities” (DV, 3). Divine action goes beyond a mere initial moment of time—that is, beyond time itself—pointing towards the eternal present of God. In the drafting of the document, the present participle “creating” appears only in the last scheme, like the reference to conservation of being (*creans et conservans*), while in the second and third scheme the past tense “created” was still used (*creavit*). Also, it may surprise that there was no mention of our topic in the first scheme of *Dei Verbum*.²⁸ On the other hand, this document shows continuity with the Magisterium of Vatican I and it takes up in n. 6, almost *verbatim*, the teaching of *Dei Filius* on the philosophical natural knowledge of God.

²⁸ Cf. Gil-Hellín, *Dei Verbum. Constitutio Dogmatica de Divina Revelatione*. Synopsis, 22–23.

The pontifical magisterium after Vatican II displays a gradual and increasingly crucial deployment of the category of “revelation”, in reference to creation. The *Catechism of the Catholic Church* (1997) clearly affirms that God “*speaks* to man through the visible creation.”²⁹ The idea of an inseparability between “revelation of creation” and “revelation of the covenant” then is recovered, affirming that “Creation is revealed as the first step towards this covenant, the first and universal witness to God’s all-powerful love.”³⁰ *Fides et ratio* (1998) explicitly acknowledges “a first stage of divine Revelation, the marvellous ‘book of nature,’ which, when read with the proper tools of human reason, can lead to knowledge of the Creator” (n. 19). On a further occasion, John Paul affirms that “creation is like a first revelation that has its own eloquent language: it is almost another sacred book whose letters are represented by the multitude of created things present in the universe.”³¹ According to Benedict XVI, “even before discovering the God who reveals himself in the history of a people, there is a cosmic revelation, open to all, offered to the whole of humanity by the one Creator.”³² Rather, one can speak of “two forms of the one divine Revelation [that] are interwoven: the cosmic and the historical.”³³ The exhortation *Verbum Domini* (2010) returns to the subject in an indirect but sufficiently explicit way, recalling that “while the Christ event is at the heart of divine revelation, we also need to realize that creation itself, the *liber naturae*, is an essential part of this symphony of many voices in which the one word is spoken” (n. 7; cf. nn. 8–9). Pope Francis, citing in his *Laudato si’* (2015) a document issued by the Canadian Bishops Conference, articulates that “nature is a constant source of wonder and awe. It is also a continuing revelation of the divine” (n. 85). There seems to be no difficulty, therefore, in terms of dogmatic teachings, in associating today the noun “revelation” with the divine word given to us by creation. This solves one problem, that of

²⁹ Italics are mine. CCC 1147: “God speaks to man through the visible creation. The material cosmos is so presented to man’s intelligence that he can read there traces of its Creator. Light and darkness, wind and fire, water and earth, the tree and its fruit speak of God and symbolize both his greatness and his nearness.”

³⁰ CCC 288. Note, still a bit surprisingly, the created world as a passive object and not as an active subject of revelation. The original Latin texts says: “Creatio revelata est tamquam primus gressus ad hoc Foedus.”

³¹ John Paul II, *General Audience*, January 30, 2002.

³² Benedict XVI, *General Audience*, November 9, 2005.

³³ Benedict XVI, *General Audience*, November 16, 2005. In this and the previous Audience, the context is that of a commentary on *Psalms* 136.

realigning the theological and biblical perspectives. However, it unexpectedly opens up another question: Which conceptual framework might we suggest for understanding correctly the “two modes of the one divine Revelation?”

In theological literature, various models can be found for interpreting the relationship between the revelation of God in creation and revelation ordinarily understood—that is, delivered through a history of salvation and liberation of which the Israelites are protagonists and mediators. These models are usually suggested in heuristic or illustrative terms, but without providing, as far as I know, a convincing theological foundation. Let us try to examine which theological coordinates could be employed to express more satisfactorily the rationale of this relationship.

A first element concerns the *condition of the subject* to whom the Word is addressed. Once it becomes clear that here we deal with a kind of divine revelation, not with a philosophical-rational itinerary, both modes of revelation, through nature and through a salvation history, require the subject to have the virtue of faith. In fact, if the word pronounced by God in salvation history calls people to freedom, and they embrace it thanks to the virtue of faith as bestowed by a gift of grace, a word pronounced by God through creation also challenges people freely, and they can embrace that word with faith thanks to the help of God’s grace. Such a dynamic is in accordance with our existential experience and biblical data. To recognize God who reveals himself in nature, we need humility and a religious disposition, together with the divine grace that inspires and sustains faith in a personal Creator, in a good and provident Father. We are not faced with a rational conclusion, but rather with a personal donation of the human subject to God who reveals himself. We are not only dealing here with the perception of a logos as *ratio*, but also with the recognition and acceptance of the Logos as *Verbum*. Therefore, it is not faith or freedom that can differentiate—on the part of humanity who listens to the Word—a revelation through creation from a revelation arising out of the events of salvation history. For this reason, a distinction based on the necessity of freedom or faith is not applicable to distinguish revelation in nature and in history. Humanity is always free to listen to or reject God’s call, no matter if it is recognized in nature, in the voice of conscience, or through historical events.

Considering the two different modalities of revelation—through creation and through the history of salvation—in terms of

different ways or forms (*quoad modum*) and not in terms of different object content (*quoad substantiam*). In this case, couples of terms such as nature and grace or natural and supernatural do not seem to represent this difference well. In fact, the *Revealer* at work for both is the one Triune God and the uncreated Word. And both modalities of revelation involve, at some level, the gift of grace. Neither can we invoke a division that makes use of the difference between works and words, for the two modalities of revelation are possible, thanks to both. Nor does it satisfy the idea of considering natural revelation as the “initial stage” of a divine revelation in chronological order. God’s revelation in creation, in fact, is not merely a first step of a subsequent revelation in history. It might seem so when looking at the history of Israel, but it is certainly no longer true for the religious history of mankind as a whole. God constantly reveals himself in creation (*creans et conseroans*) through a creation that is a continuous relationship that bonds the creature to its Creator. This dynamic makes clear that any difference based on the two expressions “cosmic revelation” and “historical revelation” cannot be radicalized, simply because creation does not have an a-historical dimension. In addition, when referring to the adjective “historical,” we should remember that the history of Israel does not coincide with a complete theological understanding of history as such. The use of adjectives such as “natural” and “special” would have descriptive value and, in some cases, could provide some help. But the two terms remain too generic and consequently not entirely meaningful for our purposes.

The previous difficulties would seem to confine the difference between the two modalities of divine revelation to considering only the transmitted contents, thus leading us back to the classical distinction called *quoad substantiam*. Apparently, concerning the theological object of revelation one could say that the attributes of God as One would be revealed through creation, while the Trinitarian nature of God would be accessible only through the Scriptures and the religious history of Israel. It is only in this latter modality that God prepares the Incarnation of his Word and communicates fully the gift of his Spirit—thus addressing man definitively, in Christ, in human words. What we have known of God through the fulfillment of the Promise exceeds what nature (or God through it) could ever tell us. Such an articulation centered on revealed content certainly is appropriate. However, we now must ask: Does it completely express the best possible *theological*

understanding of the two different ways in which God reveals himself? I do not think so. To deepen this understanding, I suggest shifting attention from revealed content to the set of relationships that the two different modalities of revelation establish between God and creature. In the previous pages, I have highlighted two concepts that I would like to address here yet again: a) “revelation” is the name of a relationship; and, b) a complete understanding of salvific revelation can be achieved only through the personal missions of the Son and the Holy Spirit in the world and in history.

The dynamic between revelation and salvation, as well as the intrinsic purpose of Revelation as God’s invitation for creatures to participate in the Trinitarian life, have their exemplary rationale and their total cause in the *ad extra* missions of the divine Persons. Trinitarian revelation is accomplished by the two missions of the Son and of the Holy Spirit because, in revealing themselves and being present to the creature, the Persons sent reveal also the sending Persons. The gift of Revelation manifests its continuity with the gift of grace (salvation). The divine Persons are sent so that human beings may recognize and accept the Word of God in freedom and, by accepting it, may receive the uncreated Gift. God’s revelation through the word of creation achieves this logic only partially, even though all forms of revelation are aimed at salvation. In fact, although the created world bears the seal of the divine Persons and their exemplariness, the relationship with creation *is not the fruit of the divine missions*. The Holy Trinity does not create by sending any divine Person. Whoever recognizes God in creation, while listening to the divine Word that resounds in the natural world, is not the recipient of any divine Person’s mission. On the contrary, he or she who recognizes the Father as revealed by the Son-sent, and he or she who recognizes the Son as revealed by the mission of the Spirit, are certainly the recipients of specific divine *ad extra* missions. In the economy of the Old Testament, the divine missions are also the cause of the history of Israel, and of the sacred Scriptures that gather and transmit this history. This is a history, in fact, that points globally to the Incarnation of the Son, and which the Holy Spirit wisely has guided by speaking through the prophets. As we have seen, there are well-founded reasons for using the term “revelation” even when the divine Word resounds in creation. Therefore, it is appropriate to maintain the use of this term even if creation is not caused by the missions of any divine Persons. However, it is evident that only the second modality of God’s revelation discloses the full

meaning of the creaturely *exitus* (revelation as creation) aimed at a Trinitarian *reditus* (revelation as invitation to an intra-Trinitarian dialogue). These two different modalities of revelation thus *are two different types of relationship*, expressing a different understanding or completeness of God's manifestation to humanity. Consequently, I suggest to speak in the first case of "creaturely revelation," while speaking in the second case of "filial revelation."

Creatureliness and sonship are the names of two relationships between God and human beings. The adjective "filial" can address satisfactorily both the relationship established by God with Israel in a salvation history that prepares for the Incarnation of his Word-Son, and the Trinitarian relationship that God establishes with mankind through the Paschal Mystery of his Son and the fulfilled gift of his Spirit. The missions of the Word and the Spirit *ad extra*, through which true filial revelation is accomplished, thus must be understood from the beginning of the world (*ab origine historiae*), in accordance with the best patristic and theological tradition, as reminded by the Augustinian aphorism *Novum in Vetere latet* (the New Testament is hidden in the Old).³⁴ The aforementioned theological perspective allows us to read once again, in a personalistic and relational way, the models previously judged as unsatisfactory for expressing the two forms or modalities of revelation, namely those based on the relationships between nature and grace, and between nature and history. If understood in an abstract and purely formal manner, these relationships are unable to explain satisfactorily the specificity of each of the two modalities; they can do so more successfully if read in light of the theology of divine missions. Grace is the sanctifying grace in which the mission takes place and the Person is received, and history is the story of the personal encounter, in freedom, between human beings and divine Persons.

Creaturely revelation and *filial* revelation have in common their origin from the same Word: both establish a personal relationship between humanity and God (they recall the recognition of a *Logos ut Verbum* in the created world); both are ordered to salvation (saved also are those who recognize and worship the true God only by contemplating creation); and, finally, both have moral implications for human life. Their distinction lies in the different ways in which

³⁴ Cf. Augustine of Hippo, *Quaestionum in Heptateuchum libri septem* 2, 73; PL 34, 623.

God enters into relationship with man: not yet through the missions of the Son and the Spirit or, instead, through them; in revealing to him a creaturely relationship or, instead, a filial relationship in the Paschal Mystery of the Word made flesh; with a relationship informed only by a transcendental knowledge of God, to which one adheres in silence and contemplation, or instead by categorical knowledge, to which one adheres in declaring the articles of faith. Between them there is a relation of “propaedeuticity.” The first prepares the second: the Word pronounced, but not yet sent, prepares to receive and embrace the Word sent; the revelation or awareness of being creatures prepares for the revelation or awareness of being children; gratitude for the mystery of being (creaturely life) prepares for the gratitude for the mystery of an unexpected childhood (filial life).

It is in this logical-propaedeutical sense, and not according to a chronological scan, that the image of the Word of creation as the “first stage” of divine Revelation as used by some authoritative texts (cf. *Fides et ratio*, n. 19) would acquire clearer meaning. A relationship of propaedeuticity was basically applied by the Fathers of the Church, when they referred intelligently to religious attitudes and philosophical wisdom as a preparation for Christ, basing them upon the natural knowledge of God and the experience of the created world available to all people. The biblical texts, too, point towards the understanding of an articulation of propaedeutic nature: creatures proclaim but cannot cause the mission of the Word; the beauty of creation makes us experience a foretaste of, but cannot originate the gift of the Spirit; and revelation in Wisdom-Sophia is propaedeutic to revelation of the uncreated Wisdom, serving as preparation for the mission of the Word of God who becomes flesh in Mary’s womb, Sophia’s most perfect image. Creaturely revelation enables the creature to glimpse and hope for a *personal-filial relationship* with God, while filial revelation – accomplished through the missions of the Son and the Spirit – manifests the way in which the human being is made *son of the Father, in the Son, through the Spirit*. The words with which creation proclaims and sings to God is like the “cry” with which the world and history invoke the missions of the Son and the Spirit: *veni Domine Iesu, veni Creator Spiritus*. Since its origin in the salvific Father’s plan, within the bosom of the Trinity, the created world desires the Incarnation and the gift of the Spirit, as it proclaims to the four winds. The “desire” that the whole universe has to give rise to the human being – a desire seemingly present in

the slow and impressive evolution of the cosmos and of life within it—in its deepest heart is nothing but longing for Jesus Christ, longing for his Spirit.³⁵

8.5 Recognizing the Logos in the created world: a contemporary propaedeutic for the proclamation of the Gospel

I am persuaded that the theology of Revelation today is called to value, in a special way, the propaedeutical dimension that nature has for the proclamation of the Gospel, whose theological implications I have just examined. The greater sensibility that our contemporaries show for the natural world should not be seen as merely a strategic opportunity, but a due restoration that links once again the Christian message to its biblical basis and to the patristic and mediaeval theological tradition. The area where such propaedeutics should be highlighted is in aesthetic knowledge, also available to scientific activity, with both being open to a relationship with *religious* experience. In the past, the cosmological field favored a theoretical elaboration of the preambles of faith with a rational-philosophical character, mainly centered on the search for “ways” to prove a natural knowledge of God. Today, I would posit that reflection on nature should recuperate those preambles of faith especially as related to religion. Philosophy and religion were both presented and understood by the Church Fathers as a preparation for the Gospel. The hermeneutical framework they employed, aimed at showing that Christianity was the *vera philosophia* and the *vera religio*, should be reproduced also in our present time. Renewed thought concerning religion should complete what the philosophical thought had built over the past centuries with patience and labor. The search for a common logos—to be shared by believers and non-believers, now necessary for ensuring the intelligibility of the Christian message and for correctly addressing the relationship between faith and reason—should be entrusted to religion as well.

³⁵ According to Jean Mouroux, all of cosmic nature is a movement and an aspiration towards God; all cosmic activity can be understood as a great desire for God. This aspiration is manifested clearly in its striving towards the human being, who give nature a voice for glorifying his Creator. See Jean Mouroux, *The Meaning of Man* (Garden City NY: Doubleday, 1961), ch. 2. Thomas Aquinas already had argued that all the elements of the physical cosmos have as their aim to reach the generation of man (cf. C.G. III, ch. 22). A Christological reading of this cosmic dynamism is only implicit in Aquinas, while it becomes explicit in Bonaventure and Duns Scotus.

The common amazement before the being of the world, the wonder that we all share over its beauty and complexity, and the gratitude we all owe for the gift of life are all religious paths that could have a propaedeutic role for faith similar to that played in the past century by theoretical philosophy.

Today, nature can help our postmodern contemporaries to recover a regard for *being*. This regard is concurrently both metaphysical and religious, a regard full of wonder that stimulates attention and prepares men to listen. If wonder and awe are typical feelings that humans sense when encountering nature, these feelings often leave room for “reverence,” which is a prelude to adoration and prepares humans for listening to a word that nature embodies. Some might object that the people of our time are no longer accustomed to regarding or listening, or how today’s sensitivity towards the protection and safeguarding of nature often has no clear reference to its ultimate source of meaning—that is, God. Nevertheless, there is no doubt that anyone who takes care of nature plays a positive role in favoring a thoughtful relationship with being, the prerequisite for listening to the word of creation. In recent decades, both theology and the Church’s Magisterium have followed this path, underlying our moral responsibility toward the earth and its environment within the framework of the social doctrine of the Church. Such are the dogmatic and theological-fundamental aspects—less developed yet present—that now should be emphasized. In this respect, it may be helpful to follow the suggestions proposed by the pages of *Laudato si’* (2015). In this document, perhaps more explicitly than elsewhere, Pope Francis’ moral exhortations are not confined to avoiding harmful and irresponsible behavior toward our planet and the life it hosts. He also invites all men and women to contemplate the beauty of creation, to be grateful for the gift of life, to be joyful in recognizing themselves at the center of a network of natural relationships whose most radical origin is the loving will of a Creator.³⁶ Just as the Church Fathers succeeded in separating religion from idolatry and superstition within the cultures of their time, so contemporary theology should separate the thoughtful respect for nature from the

³⁶ “If we approach nature and the environment without this openness to awe and wonder, if we no longer speak the language of fraternity and beauty in our relationship with the world, [then] our attitude will be that of masters, consumers, ruthless exploiters, unable to set limits on their immediate needs.” *Laudato si’*, n. 11.

seductions of ideology. The former is open to an authentic religious sense, while the latter causes minds to close within a self-referential geocentrism, unable to establish ethically convincing relations between the human being and the cosmos.

Today's scientific observation, and the in-depth study it implies, also favor our listening to being and inspire our metaphysical view of nature. Thanks to scientific progress, our gaze upon nature now is far deeper and more astonished than it ever has been in the past. It includes the "gaze" of our electronic microscope, our terrestrial radio telescopes, and our powerful space telescopes. It is the gaze of our Event Horizon Telescope (EHT) array, able to investigate the inner nucleus of a galaxy and even to map a massive black hole located at its center. It involves the gaze of the Large Hadron Collider (LHC) at CERN labs, capable of discerning which quarks are forming the inner structure of a proton within an atomic nucleus. Our gaze into nature includes complex computer labs that are capable today of rapidly sequencing the DNA of a living being, and the gaze of micro-cameras monitoring the inside of a blood vessel or the cells of a damaged human organ. In some cases, it involves sophisticated "listening," to gravitational waves coming from remote objects (also associated with a "look" at the phases of lightwaves), or to the very delicate heart of a human embryo, which we are able to record today just three weeks after conception. Compared to the past, scientific progress now enables us to make the invisible visible and to listen to what appears to be silent. Can these virtualities benefit human encounters with a richness of being and prepare our contemporaries to acknowledge the word of creation? I think so. Indeed, we can do it better now than in the past because of the greater wonder and amazement that this deeper encounter with reality arouses in us. For a well-disposed heart, the natural world revealed by scientific research is the site of "creaturely revelation," propaedeutic to filial revelation. Once more, it will be the task of theology to distill the true religious meaning that is aroused by the awe and astonishment experienced within the depths of the scientifically investigated reality, separating it from all *hubris* and any feeling of rational domination potentially brought about by this deeper knowledge.

As we have seen before, scientific culture does not remove the meaning of the notion of God, as scientific research makes evident epistemological and anthropological openings that transcend the empirical level. We can now add that scientific culture, when

correctly understood, can also prepare us to listen to God's revelation in nature, to the word of creation that all creatures – even when studied with the instruments of science – embody in their being.

In fostering an encounter with nature and approaching the wonders that scientific observation is able to reveal to us today, Christian believers have as travel companions countless men and women of their time. Yet, it should be stressed again that we are not faced here with a "strategy" of behavior deemed necessary for dialogue in a world marked by cultural pluralism. The re-evaluation of creation as a place for listening to the Absolute holds a much deeper purpose that is non-utilitarian in scope, becoming a general propaedeutic for the re-evaluation of the religious sense, and thus an expression of the articulation between creaturely revelation and filial revelation. It was in following such articulation that St. Paul spoke of the cosmos in his preaching at Lystra and Athens. Even before him, exponents of the sapiential movement in Israel had invited all people of good will to reflect on the real as a source of education and inspiration for religious relationship with God. The Church Fathers proceeded likewise in their preaching to the pagans. In the Modern Age, many believing scientists from Robert Boyle to Niels Steensen, and from James Clerk Maxwell to Pierre Teilhard de Chardin, were not afraid to invite everyone, be they learned or modest, to a deeper observation of nature, sure that this path would lead to the acknowledgment and contemplation of the one true God.

Until the mid-20th century, Christianity engaged in a close engagement with philosophy in order to answer its questioning about God or to seek in it support for the proclamation of the Gospel. Until the problem of God was recognized at the heart of philosophy, much apologetic work from Thomas Aquinas to the present day considered philosophical thought as a privileged interlocutor. Philosophy was rightly seen as an indispensable step towards making discourse on God intelligible and replying to criticisms directed against faith. In the present century, and in those that will follow, the classical *praeparatio fidei* (teachings propaedeutic to faith) must enlarge its horizon substantially. It needs to promote, I guess, especially the religious sense, recovering the seeds of contemplation that human life still is able to recognize and appreciate in all its manifestations, revealing them as seeds of religious feeling. Without abandoning philosophy, a renewed reflection by Christianity on *religion* can lead, on the one hand, to a correct approach toward the

relations between religion and civil society; on the other hand, to a courageous appreciation of today's demand for spirituality. It is urgent to assist the spiritual quest to avoid the shallows of irrationality, so that it remain open to the search for the true God. On this defense and re-evaluation of the religious sense—which, it is worth remembering, has its primary source precisely in man's original relationship with nature—will depend much of the preparation for the proclamation of the Gospel to our contemporaries.

Considering the revelation of God in nature within a religious, and not merely philosophical, context also has the merit of bringing the “problem” of the ambivalence of nature into the existential horizon proper to it. It is necessary to do so when humanity encounters the scandal of physical evil, a circumstance in which nature, rather than speaking in favor of God, seems to speak against Him. Concerning the problem of physical evil, the religious sense is able to grasp resonances that philosophical thought alone would not admit. Albeit in a painful way, religious people know how to see in every circumstance something that God allows and can transform into good. They are willing to bring what they do not understand or are frightened of in nature back to the mysterious will of a provident Creator. Before the scandal of evil and suffering, the context in which the psychological maturation of the protagonist of the Book of Job takes place is religious, not philosophical in character. Analogously, the context is still religious-existential in scope where Qohelet develops his suffered answers while considering the fragility of the human condition.

When humans suffer because of the absence of God, when history no longer hosts His works, when the silence of solitude seems to have stifled His word, it then falls to nature to speak, comforting the human beings concerning the existence of a Providence that accompanies them and sustains the destiny of the world, even in the apparent silence of God. With due proportion, we could apply to God's revelation in creation the words that St. John of the Cross used in reference to God-the-Father in relation to His Word, when humans who were complaining about the absence of God asked for new words and new revelations that could reassure them: “God has become, as it were, dumb, and has no more to say” — affirmed the Spanish mystic by commenting on the beginning of the *Epistle to the Hebrews* — “since that which He spoke aforetime, in part to the prophets, He has now spoken altogether in Him, giving us the

All, which is His Son.” To those who would ask for something more, St John of the Cross continues: “God might answer him by saying: ‘If I have spoken all things to thee in My Word, Which is My Son, and I have no other word, what answer can I now make to thee, or what can I reveal to thee which is greater than this?’”³⁷ The entire universe is also placed before us as a whole. In a certain sense, it is the greatest word that has been addressed to human beings, even before the Word became flesh and came to dwell among us, as St Augustine admonished: “Why do you ask for a louder voice than that? They cry out to you the heavens and the earth: ‘I am the work of God.’”³⁸ We should have the courage today to put the people of our time before creation, a word that could not be clearer due to the enormous symbolic density and the meanings it conveys. Knowing how to listen to this word prepares us to welcome Him who, coming out of silence, wished to reveal Himself and to make known the mystery of His will.

³⁷ John of the Cross, *The Ascent of Mount Carmel*, II, 22, nn. 4–5.

³⁸ Augustine of Hippo, *Sermons*, 68, 6. Cf. also Augustine of Hippo, *Confessions*, X, 6, 8.

PART III
SCIENTIFIC PERSPECTIVES ON CHRISTIAN REVELATION

CHAPTER 9. HISTORY OF THE COSMOS AND THE HISTORY OF SALVATION: THE UNIQUENESS OF CHRISTIAN EVENTS AND THE UNIVERSALITY OF THE SCIENTIFIC APPROACH

An initial question arises whenever the content of Judaeo-Christian Revelation is evaluated against the backdrop of the space-time extension of the entire physical universe and the extraordinary multiplicity of celestial bodies that it hosts. It concerns the contrast that emerges between a “register of plurality” typical of the natural sciences, and a “register of uniqueness,” which seems more pertinent instead to the biblical message.¹ Assuming a register of plurality in the natural sciences means that everything implying privileges, exceptionality, or uniqueness usually is avoided, placed between brackets or made an object of abstraction. Actually, science is interested only in what is general and reproducible, such as universal laws, objects showing identical properties, or general criteria able to unify the phenomena of material reality. From this point of view, the position of planet Earth in the cosmos, what happened on it in the past, or what may happen in the future are of very minor relevance for understanding our universe and the laws that govern it. The universe already existed for a long time before Earth was formed, and it will continue to exist even when our planet disappears from the scene. Something similar could be said for life on Earth, its origin and evolution, and the appearance of our species as *Homo sapiens*. Generally speaking, science is reluctant to accept something that happens only once and seeks also to avoid any observer’s specific privilege.

It is easy to understand, then, how different this scenario is from the uniqueness and specificity with which Judaeo-Christian Revelation presents Earth, human life, and God’s manifestation to

¹ Rahner is aware of the problem, without offering a specific solution. See Karl Rahner, *Natural Science and Reasonable Faith* (Theological Investigations, 21; Darton: Longman & Todd, 1988), 16–55, esp. 48–55. Cf. also Lucien Morren “L’influsso della scienza e della tecnologia sull’immagine dell’uomo e del mondo,” *Scienza e Fede* (ed. P. Poupard; Casale Monferrato: Piemme, 1986), 60–61.

the human beings as Creator of the whole universe. According to the Scriptures, all the logic of creation appears to be centered on the formation of the earthly *habitat* and the appearance of life. God's gift of existence seems to be given to one first man and one first woman. Specific, individual human beings, from Noah to Abraham, from Moses to David and up to Mary of Nazareth, are entrusted with the destiny and future of all humanity, according to the canon of *one-for-all*. According to this canon, the Word-Logos, through whom the *whole* universe was created, becomes Incarnate as true man, only once, taking on the humanity of Jesus of Nazareth. In Jesus, He dies as man and rises from the dead. The resurrection of *this* man causes the beginning of a new creation, a cosmic renewal that is believed to possess *universal import*.

The contrast between these two registers could be reduced by hermeneutic considerations aimed at eliminating or at least balancing anthropomorphisms, and by contextualizing in a more general framework what the narratives of salvation history seem to refer only *quoad nos*, that is, insofar as addressed to the human race. This hermeneutic correction is certainly possible, but it does not solve the major problem. Even in doing so, the physical universe remains disproportionately great for humans, its times and spaces remain disproportionate for framing the religious history of a people on Earth. The relationship between man and God as presented by the Bible also signifies disproportionately great consequences, as the Scriptures intend to apply to the entire cosmos what happens in a small theatre, at a specific interval of time on planet Earth. A deeper contrast emerges in an even more radical way between the register of universality and the register of uniqueness when one considers the cosmic significance of the "flesh" of the Risen Jesus. That is, a biologically contingent humanity appearing on Earth is believed to represent the canon of a truly universal recapitulation and reconciliation, for both present and future creation. Therefore, it seems necessary to reflect more carefully on the scientific data and on its possible theological resonances, so as to see how to understand the dogmatic content conveyed by the biblical message.

9.1 The space-time context of God's revelation to human beings

The Sun around which Earth and our planetary system rotate is just one of the approximately 10^{11} (one hundred billion) stars that form our galaxy, the Milky Way. The latter is another rotating system so gigantic that it would take about 100,000 years to cross it

at the speed of light (300,000 km/sec). A good number of stars (at least one third) are surrounded by a planetary system similar to our solar system, albeit with differences in the way the masses of the planets composing it are distributed. Our solar system's planets (Earth included) formed at the same time as the Sun as a result of the contraction of a gaseous mass occurring approximately five billion years ago. Such a phenomenon is very frequent on the spiral arms of galaxies along which new stars originate, as in the case of the Milky Way. Even from the perspective of our own solar system, the dimensions in question are enormous: 150 million km lie between us and the Sun; the stars closest to Earth are light-years away, and we are roughly two million light-years away from the closest galaxy similar to our own. Although our Sun is a dwarf star, its radius measures almost 700,000 km and has been stably transforming approximately five million tons of hydrogen into energy every second for at least five billion years. The Milky Way belongs to a local group of 70-odd galaxies situated in the outskirts of a far more sizeable cluster of galaxies called the Virgo Cluster, dominated by the giant elliptical galaxy M87, in the center of which the first observational evidence of a massive black hole was found. The Virgo Cluster comprises approximately 1,500 galaxies of differing morphologies, each having a number of stars not less than that in our Milky Way. On the basis of both the dynamic behavior of our universe's total mass and the models depicting its expansion, we are able to estimate that the total number of existing galaxies is no less than 10^{12} (one thousand billion), at least in the space-time section of the cosmos that we can access either directly or indirectly. Every galaxy stretches over tens or hundreds of thousands of light-years and contains an average of 100 billion stars, thus bringing the number of "suns" existing in our universe to approximately 10^{23} (i.e. 100,000,000,000,000,000,000,000). Galaxies are gravitationally bound in clusters and superclusters, almost all of which have been existing stably for about ten billion years.

Since the mid-20th century, we have had sufficient data to know that the physical universe accessible to us presents a clear historical-evolutionary character. The universe has slowly undergone enormous development over time, beginning roughly 13.7 billion years ago, starting out from an initial phase capable of "containing" all the matter and energy existing today, in physical conditions of very high density and temperature within incredibly reduced geometric dimensions. It is not impossible that the universe we can

access actually coexists with other space-time regions totally independently of one another and having different evolutionary histories, prompting us to be more precise and careful at the moment of introducing our “definitions” of the universe. From the forming of the first chemical elements (represented solely by hydrogen in the beginning, and then gradually synthesized primarily within the stars, where lighter atomic nuclei were transformed into heavier ones) to the moment when the Sun and Earth formed (with almost the entire table of chemical elements at their disposal by then), an incredibly long time passed: one equal to roughly half the age of the universe. The time passing from the appearance of the first life-forms on Earth (unicellular living beings in the oceans) to the appearance of mammals and then the human race was also significantly longer than anything imaginable only little more than a century ago, being at least three and a half billion years.

Albeit employing the observable elements pertaining to their method and specific, formal object of study, the natural sciences have the capacity to reconstruct the salient phases in the history both of the universe and of our planet, without any gaps, demonstrating that they are also capable of predicting some of the main future scenarios. The latter are characterized by very long (but not infinite) timeframes that nevertheless indicate that the physical and chemical conditions suited to hosting biological life not only on our planet but, possibly, also in other places in the universe correspond to “windows of opportunity.” They have occurred only as part of a certain epoch and, after a certain period of time, will no longer exist because the necessary favorable conditions will have been irretrievably lost. Therefore, we must face the fact that human life and the history of the physical universe regard different time scales. The universe existed long before we humans set our eyes upon Earth, and it will still exist for a very long time after the human race has disappeared. This may happen either because the human race will no longer exist, due to a substantial decrease in energy produced by the sun (upon which terrestrial life depends for everything) or, more probably and far earlier, due to events that are catastrophic for the biosphere like meteoric impact, in particular, which certainly already has had lethal consequences for other, non-human life forms in the past.² The history of the cosmos unfolds

² Catastrophic meteoric impacts on the biosphere (Earth's atmosphere is capable of curbing and burning small meteorites, but it can do nothing against big ones)

within a constantly transforming evolutionary context. The chemistry of the universe is constructed patiently in the stars that are born, develop energy for a finite period of time and then die. Life is subject to continuous transformations, insofar as it is known with certainty that the different biological species have slowly grown from very simple forms into the more complex. Only after populating exclusively in the oceans for more than two billion years did life forms then colonize the globe's land masses and, subsequently, the entire biosphere.

These brief considerations – now part of a scientific knowledge shared by all and taught in all the schools of developed countries, and in any case known by large sectors of the population living in a globalized world—show that the space-time context framing our understanding of the universe in which we live has undergone an extraordinary widening of horizons. We, therefore, are forced to “relocate” humanity and its cosmic *habitat* in space and time. This new scenario cannot be ignored at this point, just as it was not possible in the past to ignore the new worlds reached by the great geographical discoveries at the end of the 15th century, or the Copernican revolution that followed shortly thereafter.

One legitimately could believe that such a physical “description” of the cosmos and its history has no direct implication on the religious message that Judaeo-Christian Revelation transmits; it would only suggest applying a correct hermeneutic to the biblical texts, looking for the appropriate exegetical solutions. While that is certainly true, the point at stake here is another one. It is not a question of examining what Revelation says about the physical cosmos and what our scientific knowledge tells us about it so as to assess and then reaffirm their compatibility. Rather, it is a question of being aware of the *new richer implications* that the biblical text now seems to acquire, precisely thanks to new and deeper scientific knowledge. Among them, the fact that the God who revealed himself to Abraham, the God whom Christians confess to have become man in Jesus Christ, is believed and preached as the God of *this entire universe*, and the cosmic place of the human being to whom God revealed himself *must be appraised accordingly*. We are faced here

have taken place on our planet approximately every 100 million years. In the impact that occurred about 250 million years ago, 90% of existing biological species disappeared. In the last impact, approximately 65 million years ago, 75% of the animal species then present on Earth disappeared, in addition to the disappearance of large reptiles that favored the eventual emergence of mammals..

with real intersections between what faith proclaims—God is the creator of everything and has come to meet me in Christ—and what scientific reason knows, that is, the factual, historical, and material implications of this “everything” and this “coming to meet me.” Why does the Creator of this universe, so great and extended, reveal himself in this particular corner of the cosmos, with such a choice in time? Why does the content of this revelation seem to have no reference to the cosmological context unfolded by science? Why does humanity enjoy the privilege of seeing the human nature of Jesus of Nazareth elevated to the canon of a universal recapitulation and a new creation? We can discuss whether the epistemology and implications of these questions are addressed correctly, but they will arise anyway if our interlocutor belongs to the contemporary scientific environment. We can no longer ignore that the interest with which 21st century men and women of science will listen to Christian preaching depends on whether or not these questions are answered. Refusing to tackle them or declaring them irrelevant as they would concern two “different areas” incommensurable with each other would be tantamount to qualifying the Christian announcement as almost meaningless and, in terms of its content, hardly believable. In some cases, it is true, it could be specified that these questions strictly speaking are not posed *by science to theology*, but rather are part of a much more general inquiry *of an existential nature*. In any case, theology is called to make an effort to provide some answers. However, an initial, important hermeneutic task is worth accomplishing. Scientific data must be examined carefully as they often are clothed by some *a priori* philosophical outlook. At times, the questions posed by the scientific culture to theology should be stripped of their possible pre-conceptions, clarifying what belongs to shared empirical knowledge and what transcends it. Scientific data must be brought back to bare factuality, to be confronted and placed in dialogue with the biblical message. It is in undertaking this task that I now propose some reflections.

A first element for reflection comes from the results of contemporary cosmology. We know today that the great cosmic spaces and long evolutionary times are not redundant at all, but are strictly necessary for the presence of the human being in the specific place that he occupies. The vast spaces and enormous times involved do not imply necessarily any sort of disorientation, nor a destructuring of the anthropological meanings that the biblical message implies. In fact, these cosmic dimensions are essential so

that the slow synthesis of chemical elements can take place in the thermonuclear processes of the stars, subsequently causing the formation of physical scenarios (planets) and biological niches (chemistry) suitable for hosting life. Generating the chemistry necessary for life on Earth could not be an instantaneous process but necessarily required several billion years and multiple generations of stars in our galaxy. It is precisely this ample breadth of time, we should remember, that causes the great extension of space and the large amount of matter involved. In fact, in an expanding universe, the more time passes, the greater the space associated with it and the more complex these transformations and diversifications of matter and life become. Let us make an example here. Consider that we live in an apartment built on the 100th floor of a tall skyscraper. Ours is the only home in the skyscraper, and there are no other apartments used as dwellings. We then wonder: What was the need to build our apartment right there at the top, in contrast to the principles of simplicity and economy? The answer is that “everything we need has to be made only in that skyscraper”: the air we need to breathe is produced on the first floor, water is produced on the second floor, the food for eating is prepared on the third floor, the furniture of our house is built on the fourth, the system for providing heat is assembled on the fifth, the electronic equipment we need is manufactured on the sixth, and so on, up to the hundredth. Each of the floors is necessary, and all of them had to be built *before* our apartment located on top of the skyscraper, so that we could live there. A small villa on the ground could not accommodate anyone and thus would have remained empty. Therefore, the greatness of the universe should not necessarily frighten or disorient, nor can it be used as a “proof” that divine revelation addressed to the human being on our planet is hardly credible. The structure and “conception” of the universe reveal a strong unity, strengthened by the unified evolutionary behavior it demonstrates as a whole, giving rise to a scientific discipline (i.e. contemporary cosmology) capable of treating the universe as a single intelligible object. In our “comprehensive” *uni-verse*, physical laws and the constants of nature have universal value, thus allowing us to deduce large-scale general laws starting from observations on a local scale. Because of the unity and coherence of the physical cosmos, its size and temporal extension as well as the enormous variety of material bodies and phenomena that take place in it, are not synonymous with fragmentation, uncertainty or randomness. Considering whatever

value or dignity we desire to associate with the human race on a cosmic scale—even assuming that the scientific method would be able to estimate such a value—humanity is part of something homogeneous and unitary. In this sense, our universe neither has a “center” nor a “periphery,” neither essential nor accessory items, but rather a single coherent and rational logic capable of embracing the entire cosmos and its history.

A second important implication derived from scientific data is a suggestion coming from the so-called “Weak” Anthropic Principle (WAP). The latter adjective must be specified here because, unlike its “strong” formulation (SAP), the Weak Anthropic Principle is confined to presenting objective data without forcing any idealistic approach.³ Examination of the data associated with the weak formulation of the Anthropic Principle reveals that the physical cosmos is an object having high internal coherence, with precise coordination between its physical laws and its chemical-biological composition. In particular, our universe seems “finely tuned” to favor the development of life because, since the origin of its cosmological expansion, the numerical values of its most important physical constants are neither randomly “selected” nor independent from each other. They appear, rather, to be correlated strongly in determining, in the subsequent history of the universe, the necessary (but not sufficient) conditions for the creation of physical structures and chemical bonds indispensable to host life and ensure its gradual evolution. The stability of atomic nuclei, the gravitational balances that regulate the expansion of the universe and the collapse of matter to form galaxies and stars, the availability of stars with sufficiently long evolution and not too hot temperatures, the formation of an adequate abundance of carbon nuclei, and the properties of the water molecule, together with many other factors indispensable for life: All these phenomena that really have occurred in the evolution of the universe are the result of a very delicate equilibrium between the numerical constants of the four fundamental forces of interaction (gravitational, electromagnetic, weak nuclear, and strong nuclear). A small variation in the values of these constants would compromise

³ Cf. John Barrow and Frank Tipler, *The Anthropic Cosmological Principle* (Oxford: Clarendon Press, 1986); Errol E. Harris, *Cosmos and Theos. Ethical and Theological Implications of the Anthropic Cosmological Principle* (London: Humanity Press, 1992); *Fitness of the Cosmos for Life. Biochemistry and Fine-Tuning* (ed. J. Barrow; Cambridge - New York: Cambridge University Press, 2008); and Giuseppe Tanzella-Nitti, *Anthropic Principle* (2005), INTERS, DOI 10.17421/2037-2329-2005-GT-1.

irreparably the chain of processes that makes the presence of life possible.

A clarification is necessary here. In reality, despite the adjective “anthropic” by which it is known, the physical-chemical conditions whose coherence this Principle highlights do not involve the human being as such, but concern more generally all life that is based on carbon. Strictly speaking, we should not even call it a “principle”, as its weak version merely presents and organizes a set of results without postulating any interpretative principle, while the “strong” version does so. The latter instead provides a “declaration of principle,” for it states that the purpose of the whole cosmic evolution is the appearance of intelligence and, therefore, of the human being. This conclusion, however, goes well beyond the scientific data, making them say what they would not be able to say on their own.

Limiting ourselves to the results presented by the Weak Anthropic Principle, we can conclude confidently that there is a strong dependence of biology, and therefore of human life, *on the entire history* of the universe. In fact, the “anthropic” conditions are to be seen as “original conditions,” since the laws of nature and their numerical constants of interaction came into being at the very beginning of the universe, that is, a few fractions of a second after the Big Bang. This implies an important conclusion that is supported by scientific evidence. For the purposes of the appearance of life, the influence played by chance or indeterminacy in the many events that occurred during the formation of planets and during biological evolution on Earth was much less important than the influence exerted by the initial conditions in our universe, when the values of the fundamental physical constants came into being. The four fundamental laws and their constants of interaction are responsible for the physics of the universe and *for how it will evolve*, much more than the individual events that have accompanied and will accompany any cosmic and biological development over time.

Let us turn now to the initial objection, which denied the significance of a divine revelation and a history of salvation if they were given within a minimal cosmic context, such as that of our planet, because it considered them irrelevant when compared to a physical universe disproportionate and anonymous with respect to human life. Actually, this objection turns out less severe than it seemed at first sight as this “disproportion” and “lack of significance” are only apparent: scientific data indicate that the

cosmos is strongly unified in character, and life and humanity within this immense universe are at home.

9.2 Philosophical implications of a historical revelation of God within the cosmic scenario

Sacred Scripture does not ignore the “relativity” of the human being’s position in the cosmos, which, however, it accords unexpectedly with the greatness that the human creature acquires when the gaze of God rests upon him: “When I see your heavens, the work of your fingers, the moon and stars that you set in place — What is man that you are mindful of him, and a son of man that you care for him? Yet you have made him little less than a god, crowned him with glory and honor” (Ps 8:4–6). Scripture does not ignore the incommensurability of creation, the human inability to fully understand the world in which we live, or how little we know about the richness and variety of creatures that have come into existence like us. After lingering on one of the most extensive and poetic descriptions of creation in the Bible, the Book of Sirach concludes: “Lift up your voices to glorify the Lord as much as you can, for there is still more. Extol him with renewed strength, do not grow weary, for you cannot fathom him. For who has seen him and can describe him? Who can praise him as he is? Beyond these, many things lie hidden; only a few of his works have I seen” (Sir 43:30–32). Other texts reinforce the very same idea: “How beautiful are all his works, delightful to gaze upon and a joy to behold!” (Sir 42,22); “Lo, these are but the outlines of his ways, and what a whisper of a word we hear of him: Who can comprehend the thunder of his power?” (Job 26,14). When describing the Wisdom of God in creation and his care for all creatures, numerous pages of the Book of Job, of the Wisdom Books in general, and of Isaiah and Jeremiah, all present the condition of the human being as one who is “in the midst” between two infinities, namely the infinity of God who transcends him and the immensity of a creation that we cannot fully understand (cf. Wis 9:14–16; Eccl 3:11; Isa 40:25–26; Jer 31:35–37).

The human condition described by the Bible flows within a narrative framework similar to what Blaise Pascal would employ in his *Pensées*, where this French thinker offers a philosophical-religious commentary on our existential situation under the title of the “greatness and misery of man.”⁴ If we employ a canonical

⁴ Cf. Blaise Pascal, *Pensées*, nn. 483, 602. For this volume, concerning the order of

approach to Scripture (something not always easy to do due to the specific weight Genesis 1 continues to have in every biblical discourse on creation), we see that the Bible does not endorse any “geosupremacy” intrinsic to Revelation, one that would end up belittling the universal significance of God's image. Balancing the experience of Exodus with the contribution of the Wisdom books and the Prophets, both emphasizing the universal reach of God's salvific plan as revealed to Israel, an identical canonical approach would show that Revelation also does not commit to any specific “ethnosupremacy.” When Sacred Scripture centers its narratives on the history of a planet (Earth) and of a people (Israel), it does not in any way lessen or minimize the image of God and His relationship with the created world, as they proceed from the biblical message as a whole.

The absolutely cosmic dimension of the mystery of the Incarnation of the Word also raises questions associated with the “register of uniqueness” of which I spoke earlier. If it is true that Christ's headship over all creation—true God and true man—can surprise those who study the universe using the methods of science, it is true likewise that it is precisely this cosmic breath that constitutes a significant language for any scientist. Christianity, in fact, is declaring its competence over this entire, enlarged horizon, reassuring the human race that it possesses sufficiently universal categories to be able to interpret *in Christ* all reality and not only part of it. Lacking an adequate philosophy to explain how a concrete historical event (Incarnation) has such universal scope, Christianity does not “relativize” the image of the Word, in which and by which all things have been made. In the noetic and hermeneutic center of the Christian cosmos, there is neither a human being, nor the Earth, nor any other *created* reality.⁵ At the heart and center of creation is the love of the One Triune God, who gives himself to the world by participating in its being, and through the Incarnation of the Word, takes upon himself the logic of matter, space and time. If it is sometimes difficult to justify the universal value of the concrete historical event of Jesus Christ, we must not forget that the horizon of meaning in which we understand the relationship between Jesus Christ and creation is not marked by time as a finite dimension of

Pascal's *Pensées*, I adopt the editing arrangement proposed by Jacques Chevalier.

⁵ If the created humanity of Jesus Christ is at the center of the cosmos, is because it is the humanity taken on *by the increated Logos*.

history; the temporal horizon proper to the mystery of Christ looks both at *the beginning* and at *the eschaton*, being that eternity from which and towards which God holds and guides the world.⁶

The *register of uniqueness* – if we agree to continue employing this term – does not prevent God as revealed in Jesus Christ from satisfying the *canons of universality* that philosophy demands when wondering about the Absolute, and which religion demands when invoking the Totally-Other. If the love that governs God’s creative and redeeming action desires to reach its supreme level – making Himself present to his creature and encountering it – then it seems reasonable that God would do so through a creaturely logic (Incarnation) and language (Israel and its culture); that is, within a *specific* space and time. However transcendent the image of God and incommensurable with respect to the universe of which he is the Creator, the language of love is consistent with a choice that intercepts the history of creatures “from within.” It is not by coming to our planet from alien worlds, like a spaceship visitor, that the Creator of the universe would safeguard his transcendence. Rather, he accomplishes his loving revelation in a more natural way, thanks to the flesh of Mary of Nazareth, “*tu quae genuisti, natura mirante, tuum sanctum genitorem.*”⁷ The Creator of the universe looks upon the Earth and places his gaze upon life, speaking to Abraham and establishing a lineage in Israel, where he chooses a history, a language and a geography. The very reason for all of this is to prepare a woman’s womb, one which has a history, a language, a culture, and a face. God desires to reveal the dignity of the human being, created in His image and likeness, by becoming man in the bosom of a mother; He does not reveal this dignity by means of exhortations or extrinsic visitations. Upon closer inspection, these events do not express a minimal or local logic, that disconcerts those accustomed to reasoning in cosmic-universal terms. The mystery of the Incarnation simply expresses the only way in which the Creator can encounter His creatures in a historical and realistic way, using human words. It expresses the totality, and therefore the universality, of God’s gift, the maximum intensity of His *agape*. This logic of the historical-concrete signifies that the content transmitted

⁶ Cf. Jürgen Moltmann, *Wissenschaft und Weisheit. Zum Gespräch zwischen Naturwissenschaft und Theologie* (Gütersloh: C. Kaiser, 2002), ch. 5: “Eschatologische Perspektiven auf die Zukunft des Universums.”

⁷ Liturgical Hymn *Alma Redemptoris Mater*: “You who generated, under the amazed gaze of nature, the One who created you.”

by the Revealer cannot be framed in a manner resorting to future cognitive contexts that are scientifically deeper and more complex, or entrusted to subsequent generations scientifically more equipped the task of understanding them later, in a progressive and gradual way. The continuous advancement of knowledge would make such a strategy impossible. There are no objective, ahistorical criteria for establishing which linguistic and scientific context would be the most suitable to ensure the full intelligibility of the content that God wishes to reveal concerning the cosmos, life, humanity, and their destiny. God delivers his Word once and for all, through an existential yet not strictly scientific language, entrusting to each human generation the task of opening itself to the salvific message of the Incarnate Word.

What could the scenarios outlined above suggest to a theology that intends to reflect on the credibility of Revelation? They tell us, for example, that a witness who proclaims the Gospel to scientific culture will be judged “credible” only if aware of the cosmic breadth of his faith in God. He must be conscious of what implications these arguments have for the physical world, the Incarnation of the Word, the recapitulation of all things in Christ, and the new creation unveiled by the Risen One. Cultivating this awareness, and doing so within a scientific context, does not contradict the Pauline exhortation to avoid human wisdom in favor of spiritual knowledge (cf. 1 Cor 2:5). Rather, it merely expresses the desire of the witness to know truly about what he or she is speaking, thus contributing to his own credibility. For example, if one were to confess, “I believe in one God, creator of heaven and earth,” ignoring what “heaven and earth” imply and mean, especially when addressing those who know such implications and have questioned them at large, he or she would not render good service to evangelization. Nevertheless, to be aware of the universal, and in a certain way, “scientific” import of one’s faith does not mean being able to frame and explain this import in theological terms. A credible witness should be always aware of what his or her faith implies, even if theology has not yet developed models or solutions able to answer all the questions that scientific reason may direct to Christian faith. Believers will remain silent adoringly concerning what has not yet been clarified theologically, sharing with non-believers their amazement before the mystery of being and the paradox of a creature able to trace the cosmic and biological history that led us to open our eyes upon the Earth, even if yet unable to answer through solely scientific methods

those existential questions by which we humans are inexplicably and continuously provoked.

A credible witness can (and should) speak rather of the firm principles that illuminate his or her faith, showing non-believers that what he or she already has understood and lived, in an ecclesial and personal way, is sufficient for accepting also that content of Revelation which has not yet been fully contextualized within the framework of contemporary scientific knowledge. By proposing some “preambles of faith,” the witness could then mention elements of convergence between Christian Revelation and the instances of universality claimed by a philosophical questioning of God. Philosophy’s demands concerning the causality of God over the totality of being and becoming certainly are no less broad and comprehensive than the requirements of universality made by physical cosmology.

From a theoretical point of view, “placing” Christian Revelation within a cosmic-scientific context means being able to explore, across a broader horizon, the implications of the economy of a *universale concretum*,⁸ accepting the challenge of knowing how to explain it not only to philosophers but also to scientists. Credibility, however, also involves praxis. Believers are required to bear witness to a faith somehow “proportionate” to the new cognitive horizon in which they participate, together with those to whom they proclaim the Gospel. For example, a believer who describes prayer as a dialogue with God must be aware that such dialogue takes place between a creature who belongs to a remote planet of a remote galaxy and the Creator of *the entire universe*; and also be aware of the unfathomable transcendence of the mystery of grace, which allows *this* creature to participate in the life of *that* Creator. Witnessing and practicing Christian faith within a scientific context means understanding that the Christian liturgy has a truly cosmic breadth, and its symbols and meanings acquire new and deeper value due to the wider horizons to which they now refer. It means being aware that the Eucharist celebrated on Earth introduces believers into a space and time that belong to the eternal present of the Paschal Mystery of Jesus Christ, leading all of creation to the Father in the Holy Spirit. It means realizing that by receiving the

⁸ Introduced in the 15th century by Nicholas of Cusa, and commented on extensively in our times by H.U. von Baltasar, this expression indicates that in Christ the universal dimension of divinity is condensed and made accessible to us in the finite dimensions of time and space.

Body and Blood of Jesus Christ, believers communicate the supreme fruit that summarizes and elevates the history of creation, a creation that patiently had to wait for the slow synthesis of the elements that allowed life to appear on Earth and for human life to be assumed by the Word, through whom and in view of whom all things were made.

Although working within a historical context that certainly could not be called scientific—at least in the modern sense of the word—with regard to the cosmic dimension of the Christian faith and liturgy, the Fathers of the Church showed sensitivity and awareness that the hasty believers of postmodern society seem to have lost, thus running the risk of weakening the credibility of what they confess and try to transmit. The cosmological context was the horizon within which the Church Fathers had framed their theology, particularly their Christological works. This horizon was constantly present in the writings of Maximus the Confessor, Augustine and Basil and, before them, Irenaeus of Lyons and Athanasius of Alexandria. In his work *On the Incarnation of the Word*, Athanasius provided a detailed overview of the role of the Logos in creation before bringing to light the rationale of Christian redemption: “It is, then, proper for us to begin the treatment of this subject” — Athanasius affirmed — “by speaking of the creation of the universe, and of God its Artificer, that so it may be duly perceived that the renewal of creation has been the work of the self-same Word that made it at the beginning. For it will appear not inconsonant for the Father to have wrought its salvation in Him by Whose means He made it.”⁹ On many occasions, mediaeval Christianity was able to show the same awareness especially through the architecture of the great cathedrals, where symbols derived from nature and the elements of the cosmos were fully integrated into a theological presentation and placed at the service of catechesis. From the Celtic religiosity of the early Middle Ages to the Renaissance, the role played by astronomy and the observation of the sky within Christian symbolism and the Church’s liturgy would suffice to demonstrate what I mean here. A man of science living in those eras found in Christian temples a language that was familiar to him and felt in a certain way at home. A man of science in the 21st. century feels a completely different sensation when entering contemporary churches, perhaps with the only exception of the *Sagrada Familia* in

⁹ Athanasius of Alexandria, *On the Incarnation of the Word*, 1, 4.

Barcelona, a temple conceived by a genius and a saint in Antoni Gaudí. In contemporary theology, some attempts have been made to recover this tradition, bringing it up to speed with the progress of knowledge. The thoughtful, impressive work of Pierre Teilhard de Chardin immediately comes to mind. Among other theologians, we should mention the works of Émile Mersch, *Le Christ, l'homme et l'univers* (1962), Gustave Martelet, *Résurrection, eucharistie et genèse de l'homme* (1972), Louis Bouyer, *Cosmos. Le monde et la gloire de Dieu* (1982), and Jean-Michel Maldamé, *Le Christ et le cosmos* (1992), just to recall a few thinkers who have exerted wide influence over the past decades. If the new evangelization intends to appeal seriously to the world of science, it has important work here to carry out.

9.3 The world and the Word: the relevance to science of a universe created in Christ and in sight of Christ

The passages of the NT relating the doctrine of the Logos to the work of creation, and certainly on the prolongation of the Old Testament's reflection on the Wisdom of God, are all well known. Also well known are the different meanings that the philosophy of the Logos assumed in the Greek-Roman world with the passing of time, between Platonism, Stoicism, and Neo-Platonism. Confession of the Incarnate Word as the center of the cosmos and history, as I have recalled earlier, may be perplexing to those who are accustomed to reasoning with the categories of contemporary physical cosmology and its corresponding space-time dimensions. However, the fact that the NT chose the philosophy of the Logos as the language of faith, proposing a christological key from the beginning, suggests Christianity's desire to interpret the entire cosmos – its logic and laws, its rationality and its history – in light of the Paschal Mystery of Jesus Christ. This association ensures the universality and rationality of a christological faith but also entails the responsibility of uncovering all Christian doctrine on the Logos, without being silent that the Logos became flesh. Christianity, therefore, must explain in what way one can speak of a Christological dimension of *all nature* and of *all history*. Although aware of the paradox that Christology within a cosmic context inevitably implies, theology could regard this task as a new opportunity, similar in all respects to the enterprising cultural endeavor already carried out by the Church Father in early Christianity. From the affirmation that the world has been created in the Word-Logos, by means of the Word, and in sight of the Incarnate

Word, and how from the mystery of this Incarnate Logos the universe derives its consistency, meaning and design, interesting consequences will result for the scientific understanding of nature. Such results should be presented adequately to scientific rationality by a Christian theology developed within a cosmological context.

In order better to evaluate these consequences, it will be useful to recall some brief references to the philosophical-theological doctrine of the Logos. As is well known, in Greek thought the term *lógos* took on very rich and diversified meanings (Gr. λέγειν: to say, to tell, but also to count or enumerate, to select, to gather). The idea of reason and computation is present there (Lat. *ratio*), but also that of word, discourse (Lat. *oratio*).¹⁰ The first to develop a philosophy of the Logos was Heraclitus (ca. 550 – ca. 480 BC), who spoke of it as a universal reason responsible for the harmony and order of the world, a reason sometimes assimilated to the concepts of life and fire and in any case invested with divine character. However, it is with Plato (427–347 BC) that the term acquires explanatory importance. According to Plato, Logos designates something transcendent and assumes both the meaning of “discourse” and “reason,” both in its *defining* aspect (giving reason for something by enumerating its elements) and its *declarative* aspect (its concordance with the truth). The Platonic Logos belongs to the world of ideas, that world to which the Demiurge must look when shaping and ordering the cosmos according to harmonies and numerical ratios. In Aristotle’s *Organon* (384–322 BC), the Logos gives rise to the domain of logic, understood as the analysis of “rational discourse” through which to organize conclusions concerning all knowledge. Beginning in the III century BC, Stoic philosophers elaborated a more sophisticated doctrine of the Logos, with specific consequences for ethics, destined to become a fundamental element of Greek-Roman philosophy. While in Plato’s thought the Logos was a transcendent and ideal principle of intelligibility, according to the doctrine of the Stoics the Logos now is totally immanent to matter as the universal law guiding and expressing the order of all things. A Jewish philosopher belonging to the Hellenic environment, Philo of Alexandria (20 BC – 50 AD) conveys in his doctrine on the Logos both theological elements derived from the Old Testament, such as the personification of Jahvè Wisdom (Gr. Σοφία) as present in the Book

¹⁰ An interdisciplinary overview on the notion of *logos* has been proposed by the Italian mathematician Paolo Zellini, *Numero e Logos* (Milano: Adelphi, 2010).

of Wisdom and in the Book of Proverbs, and philosophical elements derived from Neo-Platonism, such as the Logos described by Philo as an image of the order and goodness of the One. It is through the Logos that the God of the Old Testament accomplishes his work of creation.

Thus, the term *lógos* acquires specific meanings in the Classical Age. In logic, it indicates the rules for discourse; in physics (philosophy of nature), it means seminal reason, a divine active principle present in all things; in ethics, it signifies the law we have to follow in order to behave according to nature; and in a religious vision of the world, it is the wisdom through which God creates and governs all things. Despite its different meanings, the notion of Logos refers above all to the rational and intelligible character of nature, and to the possibility of knowing and explaining the rational principles that govern the natural world as the world is made *according to reason*. In the Classical Age, the philosophy of the Logos is nothing more than an attempt to “give reason (*ratio*) of all,” looking especially for the causes of intelligibility and order.

Unlike all these perspectives, the NT speaks of the Logos by presenting it as a real person. He is the Son consubstantial with the Father, in the eternal life of the Trinitarian God who is a communion of Love. The Johannine Logos (cf. John 1:1–18) answers not only to the logic of *ratio* but also to that of *verbum*. To Him belongs all the unfathomability of divine transcendence, shown by His “being in the beginning” as Creator of all things, “being in the bosom of the Father,” and possessing “fullness of grace, truth and glory.” At the same time, to Him also belongs all the concreteness and visibility of human nature, the passibility of the “flesh.” He is the accessible Logos, whom John’s eyes have seen and John’s hands have touched (cf. 1 John 1:1). But He is also the heavenly Logos, albeit adorned with the historical signs of His passion, the eschatological judge in the apocalyptic vision of the final battle (cf. Rev 19:13). The Pauline Epistles do not give particular emphasis to the term Logos, but the claim that these writings contain concerning the headship of Christ the Incarnate Word over the world and all history is in full harmony with the Johannine Logos (cf. Eph 1:3–10; Col 1:15–20; Heb 1:1–3; see also Rom 16:25–26; 1 Cor 8:6). This headship has a *cosmic outreach* whose contents are the definitive revelation of God’s plan for creation, the recapitulation of all things and their ordering to God the Father, and the reconciliation of creation with its Creator. Of special interest is the well-known hymn in the first chapter of the

Epistle to the Colossians, which presents Christ the Incarnate Word as being at the heart of the divine plan of creation and salvation, according to a threefold involvement: “*in him* (ἐν αὐτῷ) were created all things in heaven and on earth,” and also “all things were created *through him and for him*” (τὰ πάντα δι’ αὐτοῦ καὶ εἰς αὐτὸν) (Col 1:16). To affirm that all things have been made in his sight seems to establish that all of creation points towards the humanity of the Word as if it were its apex and most perfect expression. The dynamic character of this formula is shown by the Greek εἰς αὐτὸν, which the Neo-Vulgate Latin translates as *in* plus the accusative case: *omnia in ipsum creata sunt*. We are dealing with an indication here that the entire divine plan has a coherent unity, and the Incarnate Word, as Man-God, is capable of expressing and revealing this intimate coherence in Himself. The Epistle to the Hebrews presents the Son become man, the definitive Word of the Father who brings to fulfillment what God has said in many ways and at different times: He is the One *through whom the world was made and who sustains the world with the power of his word*, giving it consistency and unity (cf. Heb 1:1-3). Finally, the Epistle to the Ephesians (cf. Eph 1:9-11) develops the well-known issue of a cosmic “recapitulation” in Christ (Eph 1,10: ἀνακεφαλαιώσασθαι τὰ πάντα ἐν τῷ Χριστῷ) In him, all things are contained, recapitulated as a summary, first among which being all the salvific works of God; they also have been “restored” and newly “established,” that is, “founded.” In Christ, everything finds its head, and all things must be placed under his sovereignty.

The philosophical originality of Christian Revelation lies precisely in the *simultaneous proposition of the transcendence and immanence* of the Word-Logos, a consequence of the two natures – human and divine – possessed by the one uncreated person of the Son of God, generated as God by the Father before time and born as man by a woman in the fullness of time. This theology of the Logos would come to be recognized by the Councils of Nicaea (325) and Chalcedon (451) and expressed in their professions of faith, and thereupon accepted from the first centuries as the authentic expression of the message contained in biblical Revelation. The “*consubstantiality*” of the Word-Son with the Father constitutes a crucial element of specificity as the Greek Logos, in its various meanings – even those that seemed personified – always remained as a creature, divine yet inferior to God. The creative action of the Greek Logos was limited on the one hand by the presence of preexisting matter, and on the other by the rationality imposed by

the world of ideas. Moreover, its personality was not entirely distinct from the Platonic one, of which the Logos was basically an emanation. The Christian Word-Logos instead is a subject distinct from God the Father, equally God as is the Father. He is different than matter as Creator of the matter, yet able to assume matter and space-time into himself, up to the point of becoming incarnate.

9.4 Philosophical realism, rationality, and the dialogical dimension of the natural world

If the *whole* universe depends on the logic of a single Logos – the source of rationality and intelligibility – then the *identity* of the cosmos and the *universality* of its rational qualities are well-founded. In short, universal interpretative categories exist that are capable of embracing the entire being of the world, with no part excluded, having obvious consequences at the level of global understanding. In a *uni-verse* ruled by the Christian Logos, conceptual procedures of great importance become possible for the analysis of the natural sciences, including: the process of deducing large-scale properties starting from the observation of local properties; the idea that the universe can be treated as a whole, allowing for the formulation of general cosmological models of the universe; the search for laws of nature having universal value; the concept of “elementary” particles possessing strictly identical properties; and, the notion that global and unifying properties have to function as expressed by the principles of symmetry and invariance, or by other principles that make use of a comprehensive methodological approach.¹¹

The feature of the Christian Logos having perhaps the densest consequences for a rational view of nature is its presentation of the traits of both transcendence and immanence. It includes the loftiness

¹¹ On the epistemological consequences that the Christian theology of creation and the vision of the Christian Logos had for the development of scientific Western thought, see: Herbert Butterfield, *The Origins of Modern science. 1300 – 1800* (New York: MacMillan, 1959); Stanley Jaki, *The Relevance of Physics* (Chicago: University of Chicago Press, 1970); Reijer Hooykaas, *Religion and the Rise of Modern Science* (Edinburgh: Scottish Academic Press, 1972); Stanley Jaki, *The Road of Science and the Ways to God* (Chicago: University of Chicago Press, 1978); Peter Harrison, *The Bible, Protestantism, and the Rise of Natural Science* (Cambridge: Cambridge University Press, 1998); Edward Grant, *The Foundation of Modern Sciences in the Middle Ages. Their Religious, Institutional and Intellectual Contexts* (Cambridge: Cambridge University Press, 1996); and David Lindberg, *The Beginnings of Western Science. The European Scientific Tradition in Philosophical, Religious, and Institutional Context, Prehistory to AD 1450* (Chicago: University of Chicago Press, 2007).

of the divine plan for the world as well as the concreteness of history and flesh. The Christian Logos' rationality is not confined to the Platonic circle of the world of ideas, but intersects nature with the objectivity of the earthly event of Jesus of Nazareth. Its rationality is not completely immanent to matter, as in the Logos of the Stoics. Nor is it totally immanent to the subject, like *a priori* Kantian categories, for the reason that explains the cosmos is God's reason and not human. The simultaneous transcendence and immanence of the Christian Logos acquires considerable interest precisely when thinking of the kind of rationality that implicitly could favor (and in fact historically has favored) the activity of the natural sciences. The simultaneous transcendence over the world and immanence in creation suggest that the intelligibility and rationality of nature should not be sought only in the intellect, but also in created things. In this way, a cognitive realism based on the idea of truth as *adaequatio* is encouraged, and the role of induction is fostered. In particular, it was the progressive reevaluation of induction with respect to the deductive approach of Greek thought that positively influenced the birth of the modern scientific spirit.

A universe shaped by the Christian Logos thus appears to be more in tune with a realistic gnoseology, in accordance with the inductive approach of the sciences; much less consonant with various forms of idealism, conventionalism, or functionalism; and, more inclined to weaken the truthfulness of the scientific enterprise and the reality of its progress. Only within a universe conceived in this way can the conviction emerge that the truth of things is not merely the product of our minds nor concerns only abstract coherence, but rather implies encountering reality and adjusting our minds to the things themselves. We find consonance here with the classical realism of the scientific enterprise, as indicated for example in the epistemological reflections of authors such as Planck or Einstein, and an implicit harmony with the primacy of experience. In continuity with the question of realism, additional consequences of interest are noteworthy here concerning the "objectivity" of nature. The *eternally generated* Word maintains its full distinction from the world *created in time*: All things are made in the one Word-Logos, *per quem omnia facta sunt* (through whom all things were made), but He is *genitum, not factum* (begotten, not made). Therefore, nature is not divine. It does not proceed from God as the Son does, he who is God from God. Whoever investigates nature, therefore, can consider it objectively as something autonomous, whose

rationality derives from the exemplary and final causality of the Logos, yet having a nature not identical to that of God. Any form of pantheism thus is excluded, and the temptation to dualism is avoided. Creation has a unique principle: It is not the result of a dialectic tension between spirit and matter, between good and evil, or between love and hatred. No other logic governs the outcome and future of the cosmos but that of “the Word [who] became flesh” (John 1:14).

A world created through the Word also consists of a specific dialogical dimension. Being the effect of an intelligible word, the universe is capable of appealing to and conveying a meaningful content. The world “tells us something.” Also created in the image and likeness of God, in the Word-Logos, the human person is enabled to recognize this meaning and decipher the information the world contains.¹² The dialogical nature of a universe created in the Logos highlights the fact that *comprehensibility* and *interpretability* are as much foundational categories as is rationality. Scientific knowledge itself basically notes this truth when it articulates that the essential nature of the world’s *objectivity* is not its perceptibility by the senses (sensory knowledge), but precisely its intelligibility (its communicability through abstract, rational, and universal concepts), thus rendering possible the communication of results and things known and the building of a common knowledge. The world’s objectivity consists not in the fact that various observers have the same sensory experience but, rather, in their ability to acquire a common understanding of an object through (and in spite of) the different sensory experiences they have of it. The physical universe thus truly can become a place of dialogue between humanity and God, between the scientist who studies and decodes reality and the Creator who possesses its ultimate keys.¹³ Researchers sometimes

¹² “Both of them (the believing scientist and the non-believing scientist) endeavor to decipher the palimpsest of nature, in which the traces of the various stages of the long evolution of the world are overlaid on one another and confused. The believer has perhaps the advantage of knowing that the enigma has a solution, that the underlying writing is, when all is said and done, the work of an intelligent being, therefore that the problem raised by nature has been raised in order to be solved, and that its difficulty is doubtless proportionate to the present or future capacity of mankind.” Georges Lemaître, cited by Odon Godart and Michael Heller, *Cosmology of Lemaître* (Tucson AZ: Pachart Publishing House, 1985), 178.

¹³ A useful review is found in Paul Davies, “The Intelligibility of Nature,” Robert Russell, Nancey Murphy, Chris Isham, eds., *Quantum Cosmology and the Laws of Nature* (Vatican City - Berkeley: Vatican Observatory and The Center for Theology

are unaware that they are taking part in this dialogue every time when—feeling attracted by the truth and showing themselves to be ready to make the sacrifices necessary in the passionate search for it—they recognize an objective intelligibility (*logos ut ratio*) in nature or even an otherness with which to engage (*logos ut verbum*). At the heart of the Christian concept of nature as the effect of a “word addressed to humanity” created in the Logos and through the Logos is the “Book of Nature” metaphor. Not always involving easy hermeneutics, such a metaphor for centuries has accompanied (and continues to accompany) many people of science in their philosophical reflections, suggesting to them that the natural world carries a message and refers beyond itself to Someone who can give it meaning.¹⁴

However, it should not be forgotten that the very intelligibility and dialogical dimension of physical reality—with traits presented here as being in close relation to the idea of a world created through the Word-Logos—have been the subject to philosophical criticism. In particular, two objections have been raised speaking against their real significance. The first, based on Kantian epistemology, warns that it is human beings who would impose their “a priori cognitive categories” on reality, because these are the only categories with which they can formulate their judgments. In other words, the *logos* is inside and not outside of the human mind. The second objection, based on an evolutionary paradigm, states that the intelligibility of the real and the harmony between our minds and the functioning of nature are mere consequences of Darwinian-type mechanisms of natural selection. These effects would gradually orient the mental path of *Homo sapiens* and his predecessors, ensuring our survival.

However, in reply to these objections and in support of the objective meaning of the intelligibility of reality, some arguments can be provided. First, it should not be forgotten that the majority of researchers opt for a realistic, not an idealistic, approach to scientific knowledge. They locate the source of knowledge principally in objective reality rather than in our minds. Our knowledge certainly is regulated by personal mental categories but such categories, in their turn, are forged and proven true by experience. Second, there are not a few difficulties in interpreting the harmony between the

and the Natural Sciences, 1993), 145–161. Cf. also *Verbum Domini*, n. 13.

¹⁴ See the bibliography presented in Chapter 7 of this volume: “The metaphor of the Two Books: an intriguing historical path”.

rationality and intelligibility of nature and the rationality of our minds in evolutionary terms. If rationality (in the broad sense) certainly has fostered the survival of the human species, such survival does not appear to have benefitted from rationality's most sophisticated scientific expressions (such as the discovery of the laws of nature and their related mathematization, a work that *Homo sapiens* developed during his "cultural" era, that is, when the natural selection of the human biological species was completed largely due to its new relationship with the environment). Finally, it is unsatisfactory to argue that the world's comprehensibility is merely a consequence of the fact that the biochemical laws of the human brain are part of the same laws found in our entire physical reality whose intelligibility startles us. In fact, such an argument fails to take into account the fact that—at least for those who do not endorse the idea that mind and brain are exactly one and the same thing—the scientific workings of the human mind seem to operate at an abstract level, different from those identified by biochemical processes.

9.5 The enigma of information: a native component of a cosmos created in the Word-Logos, and a source of meaning for an evolving universe

Pronounced by an intelligent word, a world created in the Word-Logos possesses a quantity of positive information capable of being preserved and clearly expressed during the course of cosmic history: The universe's evolution carries meaning. Alongside matter and energy, information also is recognized as one of the cosmos' original components. If it is true that the presence of "information" is perceived by the philosophy of nature when it indicates that formal causes, natural properties, specificities, and forms (i.e. *quidditas*) can be recognized alongside efficient causes, it is equally true that such a notion also has consequences at the level of empirical scientific analysis. One encounters, for example, the presence of stable elementary properties, laws of nature, and principles of symmetry. It is a matter of fact that scientists have demonstrated a growing interest in the notion of information.¹⁵ From Mendeleev's

¹⁵ Cf. Henri Atlan, *L'organisation biologique et la théorie de l'information* (Paris: Hermann, 1972); Jeffrey Wicken, *Evolution, Thermodynamics, and Information* (New York: Oxford University Press, 1987); Hermann Haken, *Information and Self-Organization. A Macroscopic Approach to Complex Systems* (Berlin - London: Springer, 2000); Paul Davies and Niels Gregersen, eds., *Information and the Nature of Reality. From Physics to Metaphysics* (Cambridge: Cambridge University Press, 2010); Vlatko

periodic table to the structure of DNA, and from the “standard model” for elementary particles to the teleonomic behavior of living organisms, the natural world studied by science offers us multiple examples of phenomena that are consistent with the hypothesis that information is an original component of the real world. Although it primarily concerns the formal causes of material entities, the presence of information is related somewhat also to the presence of finalism in nature, insofar as finality is understood to be the expression and development over time of non-material information constitutive to material reality.¹⁶ If the universe is the effect of a Creator Logos and, therefore, of an Intelligence, then it seems reasonable to assert this Logos as the ultimate source of both the information and the design existing in nature. Indeed, a Word is pronounced for a purpose, leads towards a goal and imprints meaning. Only a universe created through the Word and “with a view to” the Incarnate Word can have a “history” able to make its way towards an objective. This is what, for example, the biblical vision of time expresses (in that history has a beginning and will have an end), unlike the concepts of time present in Greek thought or in Eastern philosophies overall, where the myth of an “eternal return” cancels every piece of information that history may have produced, resetting every finding or novelty to zero. The universe created through the Word and with a view to the Incarnate Word has a principle and a purpose, an Alpha and an Omega, both of which belong to the Creator’s mystery and freedom.

In the perspective of a creation made through the Christian Logos, the whole cosmos takes on a great unity and coherence. At a metaphysical level, the unity of the universe and the coherence of its rationality depend primarily on the uniqueness and personal nature of its First Cause, that is, on the existence of a single God-Creator. However, affirming that the historical Incarnation of the Word, and thus the appearance of *Homo sapiens*, are the ultimate purpose of creation confers further and deeper unity upon the global

Vedral, *Decoding Reality. The Universe as Quantum Information* (New York: Oxford University Press, 2010); and Gennaro Auletta, *Cognitive Biology. Dealing with Information from Bacteria to Minds* (Oxford: Oxford University Press, 2011).

¹⁶ On the correspondence between formal and final causality within the framework of an Aristotelian-Thomistic philosophy of nature, cf. Giuseppe Tanzella-Nitti, “The Aristotelian-Thomistic Concept of Nature and the Contemporary Scientific Debate on the Meaning of Natural Laws,” *Acta Philosophica* 6 (1997): 237–264.

phenomenology of the entire universe. In a universe willed for Christ and in view of Christ, inanimate matter is created for the purposes of life, life for humanity, humanity for Christ, and Christ for God (cf. 1 Cor 3:22–23). Every moment of world history thus becomes significant. Inserted into the dynamism of time, the unity and coherence of a universe created in Christ can give rise to “development” or “evolution,” if you prefer, without fear of opposing to the latter term what is associated theologically with the concept of creation. If the focal point of cosmic history and the project that this history expresses are the Incarnation of the Word-Logos and its Paschal Mystery, and if the history of the universe and life is understood as an evolutionary process over time (with whatever corresponding mechanisms are at work or invoked), then it is precisely the term *evolution* that becomes enriched semantically. Evolution then can be read as a truly global phenomenon, capable of giving coherence and intelligibility to the entire universe on a cosmic scale, and no longer being interpreted only as an attempt to explain at a morphogenetic level what happened by natural selection on a relatively local scale on Earth.

Two clarifications are necessary here. The first concerns the use I make of the term “evolution.” Evolution indicates here the dynamic development which – starting from fundamental elements (physics and chemistry), simple morphologies and elementary functions (biology) – leads to compound structures, specialized morphologies, and increasingly coordinated and sophisticated functions expressed in a particular way by the complexification of biological processes and the cerebralization of vertebrates, until reaching the psychological phenomenology of the human being. By the term evolution, I do not refer to specific mechanisms responsible for such development, such as those in classical Darwinism concerning random genetic mutations and natural selection, or those suggested in the so-called modern synthesis, extended synthesis, or other related views including the role of epigenetics.¹⁷ The second caveat consists in recalling that, within the logic of the Christian Logos, the finality associated with an evolutionary understanding of the cosmos and of life – which

¹⁷ We notice here, incidentally, that the compatibility between science and theology on the delicate issue of biological evolution does not obligate us to accept or reject some mechanisms over others. These mechanisms involve factual phenomena, which only can be investigated, highlighted, and reconstructed in a more or less convincing way, but not determined *a priori*.

depends on the intentionality of the creative Word — *does not mean determinism*. It is not deterministic to say that formal causes exist or that a lawful behavior exists at the empirical level for physical, chemical, or biological phenomena. In a universe ruled by God's personal and intentional finality, the morphologies of living beings are not "determined" or "inevitable," nor is the morphology of the human being determined. Strictly speaking, even the Incarnation of the Word, the focal point of all of creation, is not determined by any created process. God is *free* and *creates in freedom*: only he knows what he wants and why he wants it.

When biblical data expressing the headship of the Incarnate Word over history and its exemplary causality in the creation of humanity are read according to the dynamism previously outlined, then the singularity and cosmic significance of the Incarnate Word — instead of being a "stone of scandal" when confronting the greatness of the entire universe — prove instead to be a hermeneutic key capable of illuminating the ultimate meaning of being and becoming in the cosmos. Within the logic of a universe created in Christ, the appearance of life and the evolutionary processes that have determined its morphogenetic variety no longer play the role of a casual emergence or random process hinging on local contingencies, whose origin and final result depend only on particular circumstances within a limited region of space-time. In a universe created in Christ, life (and human life in particular) would be seen differently. Human life in view of Christ is, rather, the goal towards which "all" the universe has aimed from the beginning, a fruit that the entirety of creation has prepared through the slow transformation of its elements, the patience of its cosmic times and the interweaving of its genetic mutations. This was the perspective underlined by Pierre Teilhard de Chardin, precisely in his attempt to break the deadlock of a reading of scientific data that seemed to remove meaning from Christian phenomena, but which he showed now to be the fulfillment of the human phenomenon:

The prodigious expanses of time which preceded the first Christmas were not empty of Christ: they were imbued with the influx of his power. It was the ferment of his conception that stirred up the cosmic masses and directed the initial developments of the biosphere. It was the travail preceding his birth that accelerated the development of instinct and the birth of thought upon earth. Let us have done with the stupidity which makes a stumbling-block of

the endless eras of expectancy imposed on us by the Messiah; the fearful, anonymous labours of primitive man, the beauty fashioned through its age-long history by ancient Egypt, the anxious expectancies of Israel, the patient distilling of the attar of oriental mysticism, the endless refining of wisdom by the Greeks: all these were needed before the Flower could blossom on the rod of Jesse and all of humanity. All these preparatory processes were cosmically and biologically necessary that Christ might set foot upon our human stage. And all this labour was set in motion by the active, creative awakening of his soul inasmuch as that human soul had been chosen to breathe life into the universe. When Christ first appeared before men in the arms of Mary he had already stirred up the world.¹⁸

9.6 The created universe belongs to the Paschal Mystery of Christ

The mediation of the Word in the cosmos and in history has a Trinitarian breadth: The Father created the world in his Son and for Love of his Son, and the Son brings everything back to the Father through the Spirit. Following what already had been confessed by Christian liturgy and the Church Fathers, mediaeval theology—especially in Thomas Aquinas and Bonaventure—read this dynamism according to the scheme of an *exitus-reditus*. Other authors—Duns Scotus in particular—developed a more “Christo-centric” perspective that also had been present in patristics. In a world marked by the disorder of sin, the recapitulation made by the Son through his humanity takes on the meaning of reconciliation and restoration. The considerations of human freedom and of the specific history of fall and forgiveness that this freedom has known, shifts analysis of the relationship between God and the world from a causal plan—available to reflections concerning the physical as well as metaphysical levels—to a moral plan. In the latter, the mediation of the Incarnate Word tends necessarily to be centered on the Paschal Mystery of Jesus Christ and on his sacrifice of reconciliation, death and resurrection. Apart from the dogmatic questions underlying a correct approach to the relationship between creation and sin, the basic perspective of a “theology of nature”

¹⁸ Pierre Teilhard de Chardin, *Mon Universe* (March, 25, 1924), *Hymn of the Universe* (Eng. trans. by G. Vann; New York: Harper and Row, 1969), 76–77. See also Pierre Teilhard de Chardin, *The Phenomenon of Man* (or. 1948) (New York - London; Harper Perennial, 2008).

seems to suggest that if material creation is summed up paradigmatically by the humanity of Jesus Christ, then the created universe in some way also must be associated with his Paschal Mystery. I do not intend here to address the issue of the revelation of ultimate realities or how they should be presented in today's scientific context. Nor am I referring to the paradigmatic nature of the Risen One as first fruit and revelation of a renewed world – both aspects to which I dedicate the last chapter of this volume. I intend only to highlight that examination of the meaning for scientific rationality of a universe created by the Word-Logos and in sight of the Incarnate Word also implies exploration, as far as possible, of the consequences that could impact our scientific understanding of the universe when including the Easter of Christ in the logic of such mediation. Some of these results merit explicit reference here, or at least to be suggested.

A first aspect, somewhat propaedeutic, is to note how the faith of the Church had no difficulty in emphasizing on numerous occasions the cosmic dimension of the Eucharistic liturgy, which serves as the sacramental re-presentation of the Paschal Mystery. The invitation addressed to every human being, created and redeemed in Christ, to enter into communion with the Holy Trinity as sons and daughters in the Son, also involves the material universe: “Grant, o merciful Father” – the Catholic Church preaches in one of the Eucharistic Prayers of the Mass – “that we may enter into a heavenly inheritance [...]. There, with the whole of creation, freed from the corruption of sin and death, may we glorify you through Christ our Lord.”¹⁹ The Second Vatican Council decree *Presbyterorum ordinis* affirms that in the eucharistic sacrifice, priests are encouraged to offer “all created things” together with Christ (cf. n. 5). In one of his encyclicals, John Paul II asserts that the celebration of the Holy Mass has a cosmic character. In this sacrifice, Christ offers to the Father, through himself, all creation.²⁰ This ordering of

¹⁹ *Roman Missal*, Eucharistic Prayer IV.

²⁰ “I have been able to celebrate Holy Mass in chapels built along mountain paths, on lakeshores and seacoasts; I have celebrated it on altars built in stadiums and in city squares ... This varied scenario of celebrations of the Eucharist has given me a powerful experience of its universal and, so to speak, cosmic character. Yes, cosmic! Because even when it is celebrated on the humble altar of a country church, the Eucharist is always in some way celebrated *on the altar of the world*. It unites heaven and earth. It embraces and permeates all creation. The Son of God became man in order to restore all creation, in one supreme act of praise, to the One who made it from nothing. He, the Eternal High Priest who by the blood of his Cross entered the

creation to be present, *in Christ*, alongside the Trinitarian life of God, is a consequence of the ordering to Him of all that exists, for everything has the effective exemplarity of the Word (cf. 1 Cor 15:26–28). The humanity of the Risen One is a sign of the very presence of all creation before its glorified Savior. The original goodness of creation, as witnessed to by the narrative of Genesis, is certainly “exemplary” goodness, as the universe resembles its Creator (cf. Gen 1:18; 1:31). However, it also manifests “final” goodness, for the universe is willed in view of the Word made flesh.

A second aspect suggests that, if the humanity of the Word has experienced suffering and death, then the created cosmos, which belongs to Christ's Paschal Mystery, must also be subject to caducity. The future participation of creation in the life of God seems, therefore, to foresee a mystery of expectation and labor, of death and resurrection, and the availability to be transfigured. Scripture knows this perspective: limits, pain, and inadequacy will remain present in creation until it is renewed by the advent of a new Heaven and a new Earth, of which the Risen One is already the first fruit (cf. Rom 8:19–22; 2 Pet 3:13; Rev 21:1.6). In short, within the material universe there is a kind of incompleteness and disorder mysteriously associated with sin, as far as we are able to understand. The extent of such renewal undoubtedly exceeds the forces inherent in the material universe – the subject of the final recapitulation will always be Christ, victorious over death – but the scenario of the physical cosmos is certainly involved. The original goodness of creation and the assumption of human nature by the Word-Logos guarantee, in light of the Risen One, that the material cosmos is “adequate” for such reordering and for its final transfiguration, ensuring that the “continuity” between the first and new creation also must imply a certain continuity at the physical and experiential levels.

Scientific cosmology does not contradict what Scripture or theology announce concerning this aspect, nor evidently could it do so. However, it is interesting to note that physical cosmology, though being a form of empirical knowledge, hosts questions that transcend the method of science and fit naturally into the wonder concerning final scenarios. The material universe, in fact, is destined

eternal sanctuary, thus gives back to the Creator and Father all creation redeemed. He does so through the priestly ministry of the Church, to the glory of the Most Holy Trinity. Truly this is the *mysterium fidei* which is accomplished in the Eucharist: the world which came forth from the hands of God the Creator now returns to him redeemed by Christ.” *Ecclesia de Eucharistia*, n. 8.

to irreversible transformations, ultimately dictated by the irreversibility of the arrow of time. However new and unexpected may be the forms in which energy can be found related to matter, space-time and information, and however accurate the harmony between the laws of physics and cosmic biological evolution may be, material reality always and in all cases undergoes slow degradation. The time windows within which life, here on Earth or even elsewhere, may appear and develop are always limited, because they are determined by delicate conditions that depend on the thermodynamics of stars in the galaxies and, on a larger scale and over much longer times, on the dynamics of the universe as a whole. Individual living beings participating in some form of biological life are destined themselves to dissolve, since life is based on irreversible thermodynamic cycles. Both the physical universe and the life it hosts question their future. Science knows the truths of degradation and death, but it does not know for what they may serve as a prelude. Neither the physical universe nor the human being possess sufficient empirical data to provide an answer to this question. While it is true that the times of the *eschaton*, the time of grace, do not overlap necessarily with the times of the material evolution of the cosmos or life, the fact remains that both contexts, the theological and physical, are united by the same query and remain open to the same revelation, for both are aware that "the world in its present form is passing away" (1 Cor 7:31).

The cross of Jesus seems to have something to say not only to the human being who awaits his or her own salvation, but also to the whole universe that does not have the strength to stand on its own. Once again, the created world here reveals its dimensions of "promise" in some manner; even the universe infinitely surpasses the universe, as so happens with rational creatures. Matter is capable of bonds, transformations, and energies that seem to contradict its dissolution; life is capable of a complexity and fecundity that contrast with its corruption. There is within the world the promise of something that goes beyond the world, something the world does not see. The cross of Christ and his resurrection speak to matter, life and humanity of a fulfillment that seems to reveal the ultimate meaning of that promise. It is not surprising that the Fathers of the Church, in a language suited to their time, perceived the profound truth of this expectation and envisioned both the cosmic projection and the metahistorical value of the Cross of Jesus Christ. Irenaeus of Lyons writes like this, in a passage that deserves to be reported in

full:

He is the Word of God Almighty, who in unseen wise in our midst is universally extended in all the world, and encompasses its length and breadth and height and depth – for by the Word of God the whole universe is ordered and disposed – in it is crucified the Son of God, inscribed crosswise upon it all: for it is right that He being made visible, should set upon all things visible the sharing of His cross, that He might show His operation on visible things through a visible form. For He it is who illuminates the height, that is the heavens; and encompasses the deep which is beneath the earth; and stretches and spreads out the length from East to West; and steers across the breadth of North and South; summoning all that are scattered in every quarter to the knowledge of the Father.²¹

9.7 Concluding remarks

Summarizing these reflections offered by our analysis of scientific cosmology concerning the rationality of the material universe, its intelligibility, and its intimate orientation towards the conditions necessary to host life, and placing all these reflections in relation to what the idea of a universe created and sustained by the Word-Logos might suggest, we now are able to provide some closing considerations. An “irrational,” chaotic world having no principle to characterize the universality of its laws, the identity of its elementary components or the lawfulness of their specific properties indeed could not exist, nor could life originate in it. The rational character of the world, Christian Revelation suggests, can be derived from the logic of a creator Logos, as a precondition for both its comprehensibility and very existence, thus legitimizing, even at an empirical level, the meaningfulness of questioning about the origin of information that universe contains. In other words, the rational character of the world, its comprehensibility, and its existence *are three aspects of the same reality*. Additionally, existence, rationality and information *must have the same cause*. All these aspects, in turn, are necessary conditions for the cosmos to host life and, in the case of intelligent life, are necessary conditions for

²¹ Irenaeus of Lyons, *The Demonstration of the Apostolic Preaching (Epideixis)*, 34, Eng. trans. by J. Armitage Robinson, digital text at www.ccel.org. Before him, Justin Martyr had intended to show the presence of the figure of the cross in the many earthly realities of human life, exalting its symbolic value, cf. *I Apology*, LV.

dialogue to transpire between a created intelligence and an Increate, creating intelligence. If the world exists, it is because the conditions for such a dialogue may be given and ensured. If the world exists, it is to have the conditions of possibility for listening to the Word. Recalling a well-known theological perspective, it is not only the human being who can be defined as *Hearer of the Word*, as Karl Rahner entitled one of his works, but it is the universe as a whole that can be defined and understood as “space of the Word.” Scientific thought, therefore, does not lessen the significance of the Christian, Johannine announcement that in the beginning was the Word, the Word was with God, all things were done through Him, and this same Word became flesh (cf. John 1:1-14). The scientific view of the world is indeed *consistent* with the idea that rationality, comprehensibility and existence of the world are unified by the hypothesis that a Logos may exist, a Creator principle transcending empirical reality.

Besides not compromising the significance of what Revelation affirms, comparisons with scientific data can suggest useful elements for a homogeneous development of the Church’s dogmatic teaching. Thanks to today’s scientific knowledge, theology is able better to frame what it means to be a creature in a created world. The meaning and scope of these terms acquire, thanks to contemporary science, a weight and context that they never had before. Recalling a conviction already expressed by Thomas Aquinas, when he argued clearly that a correct knowledge of creatures is necessary to possess a correct knowledge of God,²² we could say that scientific knowledge of the material world is also necessary today in order to possess a correct knowledge of God. Faith-enlightened scientific observation reveals the greatness of God’s attributes as Creator, as well as his fidelity and patience, the infinite reach of his projects, his beauty, and his perfections, probably much better than what abstract philosophical arguments or theological syllogisms could do. To know reality better is to know its Creator better: The crisis of truth and faith is also a crisis of wonder and desire for knowledge.

Theology still can benefit from other interdisciplinary considerations. For example, the fact that the essential conditions for finetuning between the physical and chemical laws necessary for life—conditions which would have ruled the whole space-time evolution of the universe—were given in the very first moments of

²² Cf. C.G. II, chaps. 2-4.

cosmic evolution, well before the subsequent biological evolution, is a result of great interest. This means that in order to justify the disposition of the cosmos towards life, what happened at the beginning of cosmological expansion is more crucial than what happened later in time on the surface of the planets or within their biosphere. The attention given by Christianity to the theology of the human body—a body that participates in the image of God and is recognized as a temple of the Holy Spirit, thus being suitable for revealing the spiritual dimension of the person—today receives new light from knowing that this body is the result of a long evolutionary history both cosmic and biological in scope—almost a “summary” of the entire history of the cosmos and the expression of possible ends contained therein. The intuition of the Church’s Fathers and of many renaissance authors, who presented the human being as a sort of microcosm, not only continues to hold, in the face of the contemporary widening of our cosmic horizons brought about by science, but it is also remarkably reinforced and remains available for interesting Christological connections: “Though made of body and soul, man is one,” the constitution *Gaudium et spes* affirms, “through his bodily composition he gathers to himself the elements of the material world; thus they reach their crown through him, and through him raise their voice in free praise of the Creator” (GS, 14).

Finally, with regard to the relationship between the history of the cosmos and the history of salvation, it seems clear that the meaning and logic of salvation—a history realized by the freedom of God and the freedom of humanity—certainly exceeds what is signified by the evolutionary stories of the cosmos and of life, and by any possible reconstructions that science can make of them. At the same time, salvation history is given—that is, it takes place—in *those same* stories and intersects with them. The realism of the mystery of the Incarnation, through which the Word, assuming human nature in himself, also has assumed all its relations with creation. This suggests that theology should investigate this intersection carefully, fully exploring its virtuality and consequences. However difficult this investigation might be, theologians know that natural history and salvific history, both depending on the same mystery of the Incarnate Word, consequently must be linked by an intimate and sound coherence.

**CHAPTER 10. THE REVELATION OF GOD IN AN EVOLVING
COSMOS: THE APPEARANCE OF HOMO SAPIENS ON EARTH
AND THE QUESTION OF LIFE IN THE UNIVERSE**

From what we have seen in the previous chapter, there are enough reasons to affirm that a divine revelation addressed to us according to a canon of uniqueness, historicity, and concreteness does not lose its meaning when faced with the widening of horizons brought about by contemporary science and the consequent new image of the physical world that derives from it. We indeed have recognized that, according to the biblical message, the Word of creation also satisfies the corresponding canons of universality because the entire physical cosmos, within which this specific divine revelation is given, is ruled entirely by the mediation of the Incarnate Logos both ontologically and historically. A closer examination of the human being's position in the natural world, however, obliges us to clarify how to interpret the anthropological and anthropocentric perspectives around which the history of salvation seems to develop and that biblical Revelation, as such, seems to endorse.

A first question that the scientific context can address to Scripture concerns where to place—within the historical, evolutionary and cultural journey of the human race—the novelty of the Word through which God comes to encounter human beings. It is certainly true, with regard to the building of this journey as offered by paleoanthropology and cultural anthropology, that theology always can affirm how the very call to existence is, for any *human* being, the anthropological and theological place of this encounter. The truth and historicity of this radical encounter, whose effect is the creation and presence in the world of every personal being, are in fact independent of how theology might describe the relationship between this call into being and the biological dynamics leading to the appearance of the human species. The truth and historicity of a primeval dialogue between God and humanity do not depend on the solutions through which theology might justify, more or less

convincingly, the compatibility between the biological path to *Homo sapiens* and the biblical data. However, this epistemological separation of fields does not escape the question concerning the meaning (and credibility) of a Revelation that not only affirms this encounter as having taken place, but also emphasizes that the dialogue between God and man is the very reason for human dignity. Created in the image and likeness of God, listening to the Word of their Creator, man and woman were entrusted with a specific mission towards all of creation.

The issue at stake—let us make clear once again—is not to investigate the steps of biological evolution in order to understand how hominization could have occurred historically, or how God’s creative and transcendent causality could be compounded with other causes that do not transcend nature. The search for a convincing synthesis between theology and science is, on those specific issues, a matter for theological anthropology and the theology of creation, when they agree to enter into dialogue with the scientific data. The perspective of the theology of Revelation, and therefore of Fundamental Theology, is a bit different. It concerns a more basic aspect of the relationship between faith and reason. Faced with an interlocutor who knows the times of the appearance of *Homo sapiens* and the ways in which this biological species emerged from the general landscape of other living beings, Fundamental Theology must justify why it is reasonable to believe that the Creator of the universe has desired to reveal Himself to the human being and entrust him with a specific task.

A second question easily raised by a scientific interlocutor concerns the possibility that other forms of *intelligent* life, different from human beings, may have developed elsewhere in the universe. In this case, self-reflection, rationality and freedom would be common as well to other biological species on planets other than Earth. If this were the case, before this new and unexpected context, would the historical and salvific Revelation announced by Christians not lose most of its meaning? If intelligent life were a relatively widespread occurrence, then the previously recalled scientific results, which show how the physical-chemical structure of the universe is finely tuned to the formation of environments suitable for the appearance of life, should be understood within a broader horizon. The human creature would no longer be regarded as the unique and more sophisticated fruit of a slow and coherent evolution of the physical cosmos. Consequently, the theological

consistency previously recognized in affirming the cosmic dimension of the mystery of the Incarnate Word and the universal scope of his mediation—which in some way recomposed the fracture between the registers of universality and uniqueness—would seem to be lost. If this were the case, the credibility of the announcement that the Paschal Mystery of Jesus Christ, true God and true man, is the cause of a universal renewal and future transfiguration perhaps would be called into question. The delicacy of the theme and the supposed value that some scientific circles attribute to the context of extraterrestrial life for verifying the credibility of the Christian faith oblige us to provide, as far as possible, some reflections on the subject.

10.1 The human being's historical response to divine Revelation along his biological and cultural path

The debate between scientific knowledge and Christian faith over the appearance of humanity on Earth has known different seasons.¹ Today, in the 21st. century, neither the Magisterium of the Catholic Church nor theological research show any preclusions to a reconstruction of the origins of humanity from the biological development and natural selection of previous animal species, genetically less complex and morphologically less advanced. The existence of such a biological evolution is a scientific view consistently endorsed by multiple studies. Taking these results into account, since the middle of the 20th century numerous declarations have been made by the Catholic Magisterium that reaffirm the compatibility between the evolutionary phenomenology with which life has come to the human body (regardless of the mechanisms associated with the term “evolution”) and the ontological and theological bond that places the human creature in relationship with God, as created in His image and likeness.² Over the last decades, a

¹ Regarding the reception of Darwinism among Roman Catholic Curia by the end of the 19th century, see Mariano Artigas, Thomas Glick, Rafael Martinez, *Negotiating Darwin. The Vatican Confronts Evolution, 1877-1902* (Baltimore: Johns Hopkins University Press, 2006).

² Despite some constraints, this compatibility basically was affirmed already by the *Humani generis* (1950) of Pius XII (cf. DH 3895-3899). In addition, see the well-known statement of John Paul II, *Message to the Pontifical Academy of Sciences*, October 22, 1996, English text (original in French) in *Papal Addresses*, Pontificiae Academiae Scientiarum Scripta Varia, n. 100 (Vatican City: Pontifical Academy of Sciences, 2003), 370-374, cf. also John Paul II, *Address to the Symposium “Christian Faith and the Theory of Evolution”*, April 26, 1985; and Benedict XVI, *Address to the*

number of Catholic theologians have examined this issue and made several proposals.³

The themes that present the greatest difficulties for dogmatic theology and require further theological elaboration in greater connection with empirical data concern the relationship between monogenism and polygenism, the nature and propagation of original sin. The more strictly philosophical questions—those concerning the dependence of the human *personal* being on God, the spiritual nature of the human *act of being* (soul) and, ultimately, the relationship between creation and evolution—are easier to frame. In my opinion, a metaphysical philosophy inspired by a Thomistic approach seems capable of providing cues for understanding that prove useful even today. The theology of Revelation, on the other hand, is urged further regarding the literary genres to be attributed to biblical narratives, where to place a “primitive revelation” addressed to our progenitors, and what content such revelation should have. Of concern still in biblical and dogmatic theology is the investigation of a reliable comparison between the biological-cultural history of the human species and salvation history. The problem is that the entire question and its proposed solutions, if any, do not seem to be present in the textbooks used in institutional theological formation (specifically for the formation of priests, to be clear). Unlike the biblical approach that today is more frequently seen in books addressed to a wider public, relevant dogmatic and fundamental-theological issues still seem to be confined to specialized theological literature. However, books intended for theological dissemination often limit themselves to asserting the compatibility between science and theology without offering a deeper dogmatic framework. This deficiency—in a certain way surprising because more than 150 years now separate us from the introduction of the theory of biological evolution (and its results) within public debate—has caused considerable uncertainties among pastors, consequently weakening the strength of an evangelization

Pontifical Academy of Sciences, October 31, 2008.

³ Among the classical and most authoritative proposals by Catholic authors, we should mention: Jacques Maritain, “Towards a Thomistic View of Evolution” (1967), *Untrammelled Approaches* (Notre Dame, IN: University of Notre Dame Press, 1997), 85–131; Joseph Ratzinger, “Belief in Creation and Theory of Evolution” (1969), *Credo for Today. What Christians Believe* (San Francisco: Ignatius Press, 2009), 32–47; Karl Rahner, “Natural Science and Reasonable Faith” (*Theological Investigations*, 21; Darton: Longman & Todd, 1988), 16–55, esp. 33–36.

directed to learned environments at the university level.

10.1.1 *The essential historical stages that led to the contemporary human race*

The scientific and historical data that stimulate theology and demand more mature interpretative synthesis may be sketched briefly as follows.⁴ Around 5 million years ago, individuals belonging to the Australopithecans, a species of puny primates, assumed an erect position, probably due to radical climate changes in their *habitat* (the Rift Valley in central-eastern Africa). In the descendants of the Australopithecans, the erect position generated an important turning point. This development would lead to the later gradual utilization of the upper limbs, to the development of the phonatory organs and, most probably, to the anatomy of the skull box and vertebral structure, which became available for the development of a more complex cerebralization. These factors would ensure the necessary conditions for the expression of elementary organizational and technical activities in the slow evolution that followed. The first examples of lithic industry (i.e., worked pebbles) and the oldest evidence of settlements having an elementary social organization date back to 2.5 million years ago. Their protagonists are indicated by paleoanthropology as being representatives of a *Homo* genus, qualified as *Homo habilis*: they would produce different tools with a sense of design, organize the places where they lived, and coordinate hunting trips. Beginning around 1.5 million years ago, a new variety appeared, according to the findings of anatomical and structural modifications of the genus *Homo*, indicated as *Homo erectus* or also *erectus/ergaster*: they would create settlements to organize the territory, generate and control fire, collect products of nature knowing the corresponding forms of food provision, and hunt in a coordinated manner. In particular, bifacial lithic work, with a progressive specialization of the instruments that were used, suggests the presence of elementary forms of rationality and aesthetic thought in *Homo erectus*, while the study of anatomical

⁴ Cf. Theodosius Dobzhansky, *Mankind Evolving. The Evolution of the Human Species* (New York - London: Bantam, 1970); George Simpson, *The Meaning of Evolution. A Study of the History of Life and of its Significance for Man* (New Haven: Yale University Press, 1978); Ian Tattersall, *The Human Odyssey. Four Million Years of Human Evolution* (New York - London: Prentice Hall, 1993); Fiorenzo Facchini, *Le origini dell'uomo e l'evoluzione culturale* (Roma - Milano: Città Nuova - Jaca Book, 2006).

structures shows that he had a cranial form and phonatory organs suitable for human language. From Africa, *Homo erectus* migrated to Europe and Asia, where they left traces of their presence. However, the first evidence of anatomical remains that bring the genus *Homo* closer to the human being as we now know it, dates back to a period between 90,000 and 200,000 years ago. They are commonly interpreted as the appearance of *Homo sapiens*, whose first manifestations coexist with the last traces of *Homo erectus*. Towards the final phase of this same period, we note the presence of at least two other archaic human forms, which point back to a progenitor *Homo erectus* but morphologically are a bit different from *Homo sapiens*, known as *Denisovans* and *Neanderthals*. Although their origins and the dates of their appearance currently are uncertain, they seem to have coexisted with the *sapiens* form for a relatively long period. We also have indications of an additional archaic human form, following *erectus* and preceding *sapiens*—*Homo heidelbergensis*—whose connections with the other forms of human beings are currently less clear.

Morphogenetic studies reveal that modern humans have developed from the descendants of *Homo sapiens*. With these predecessors, and other archaic human forms that seem to have been contemporary to them earlier, *Homo sapiens* shares in a common origin from the African continent, but in a way that expands much more quickly because of their better ability to survive. They underwent long migrations in relatively short time periods, moving from the zones of Central-Eastern Africa (Ethiopia and Asia Minor) towards nearly all the continents. Like *Homo neanderthalensis*, *Homo sapiens* also creates ritual burials and leaves traces of symbolic-sacral thought. They use the first lamps employing animal fat as fuel and forge elementary artistic objects. Paleoanthropological finds dating from a time period starting approximately 35,000 years ago show that within the form of *Homo sapiens*, and having a diffusion center that suggests a common origin, new individuals appear who exhibited surprising cultural and behavioral advancement. Equipped with a morphology closer to that of modern humanity, these individuals of *sapiens* quickly migrated across the planet and established themselves everywhere, with a corresponding disappearance of more archaic human morphologies such as those of the *Denisovans* and *Neanderthals*, who also shared with *sapiens* a certain technical and cultural progress, in addition to the social and ritual behavior evidenced since *Homo erectus* first came forward. In

the Lower Paleolithic, representatives of the *sapiens* species—it is reasonable to indicate it, at this point, as a “species”—engaged in handicraft work as well as particularly developed artistic and religious-sacral activity. They produce spears, harpoons, mortars, containers, and domestic utensils, but they also create ritual statuettes and musical instruments. After around 10,000 years they would conquer Earth's entire surface, exporting to all places their technical abilities, artistic traditions and experiences of their own social organization. The causes of this cultural “acceleration” are still largely unknown. Above all, also unknown are the reasons for their rapid and extensive migration, far beyond what climate or food needs would dictate. It is very probable that a true cultural evolution transpired here, allowing us to interpret these last migrations predominantly as expressions of a desire for knowledge, exploration and discovery. This qualitative progress is usually situated during the “turning point of the Neolithic,” which occurred approximately 10,000 years ago. The Neolithic *sapiens* were not any different from their immediate predecessors in terms of anatomy or brain structure, but then became capable of more sophisticated activities. They would work in breeding and cultivation, build villages and hydraulic systems, make stone and wooden buildings, even with multiple floors; use the boomerang as a hunting tool, and extract and process metals such as gold and copper. Their approximation to modern humanity also is reflected in the size of their brain and the corresponding complexity of their central nervous system. The dimensions of skull capacity increased from about 400cc in the primates that had assumed an erect position (Australopithecans) to circa 680–800cc in *Homo habilis*, up to 800–1200cc in *Homo erectus*, and then up to 1250–1500cc in *Homo sapiens*. The encephalization quotient—which is the ratio between the real weight and theoretical weight of the brain, with the latter being extrapolated on the basis of the average weight expected for mammals—is four times greater (8 instead of 2) for the human being compared with the quotient found in contemporary anthropomorphic monkeys. In particular, from the appearance of the genus *Homo* up to our present day, the size of the brain has tripled.

It should be kept in mind that cultural advances shown by the various forms and varieties of the genus *Homo* do not necessarily identify a linear process, but also are the result of selection and competitiveness. Studies of the finds associated with the human forms *habilis*, *erectus* and *sapiens* show a temporal succession in their

appearance, but not a mutual exclusion. Partial chronological overlaps are observed, as well as the interruption of some varieties or subspecies that seem to cease their evolutionary development. Moreover, *Homo sapiens* certainly is contemporary with *Homo neanderthalensis* and almost certainly with representatives of the *Denisovans*. In reconstructing these lines of development, it is important to note that the concepts of “species” or “subspecies,” sometimes introduced within such reconstructions, concern the paleoanthropological field here. They express the need for morphological classification and, strictly speaking, are not fully based on genetics. In fact, there still remain uncertainties concerning their interfecundity and the possibility of their crossbreeding. We only can record the story of the appearance and disappearance of common morphological and morphogenetic traits, and not the real appearance or extinction of a biological species as such. From a biological point of view, we can say only that there is substantial “continuity” in the development of the phyletic genus *Homo*, beginning around two million years ago, even with the differences and specifications that are found along its evolutionary path. The “jumps”—if we wish to talk of jumps, or perhaps of “rapid accelerations”—affect more greatly the cultural, behavioral, and psychological levels rather than biological or strictly genetic aspects.

The criteria for recognizing the identifying traits of the contemporary human being in one or more species of the genus *Homo*—not only his biological and cultural characteristics, but also his ethical and spiritual phenomenology—cannot be deduced exclusively from the study of remains and finds as such archaeological evidence relates necessarily to merely external and incomplete aspects of that phenomenology. It seems clear, however, that many activities corresponding to more or less pronounced forms of psychism already were carried out by individuals of the genus *Homo* over a million years ago. At that time, *Homo erectus* knew how to set up a camp, collect fruits, store provisions, hunt in groups, and build specialized tools with some aesthetic sensitivity. Though other animal species also can hunt, collect and conserve, organise themselves in social life and sometimes even build and use tools, all these operations were carried out by the last exemplars of *Homo habilis* or by the first individuals of *Homo erectus* according to a “planning” unknown to other animals. In our ancestors, these actions not only show some form of “intelligence” but something that was “carried out with intelligence,” because they were actions

and behaviors open to both cultural transmission and historical progress. They could “capitalize” upon their experiences and transmit the corresponding information not merely by way of genetic-hereditary factors or through the external effects of a natural selection that favored winning or more competitive behaviors—all factors that certainly operated across the previous phases of the evolution of Australopithecans and hominids in general. *Homo sapiens* capitalizes and transmits experience and knowledge also resorting to *universal* and *abstract* concepts, extracted and separated from a practical and concrete know-how. We also see evidence of manifestations of reflexive self-psychism, such as an awareness of the passage of time, testified to by the conservative and versatile, not occasional use of instruments and tools. Such awareness in the first exemplars of *Homo sapiens* soon would become a memory of the past, as evidenced by ritual burials and parietal art.

Interdisciplinary research always moves between two poles, no matter how far those data might trace back the appearance of certain specific human features. On the one hand, we have to accept that the roots of contemporary humanity, to which biblical Revelation refers, reach far back in time, much more than we could have imagined only a couple of centuries ago. On the other hand, we realize that what being *human* entails —moral behavior and intelligent thought— can only be known starting from times much closer to our present epoch, for they are not fully deducible from what those roots might tell us. Even if we refer to only 15,000 or 20,000 years ago, it is not easy to identify whether or how our predecessors displayed elements that biblical Revelation asserts fully characterize human beings in the image of God. This is evident in, for instance, ethical thought that approves good and condemns evil; the conscience of guilt; the consequences of freedom; conjugal and friendly love; the acceptance of sacrifice; self-giving; and the worship of One God, Creator of heaven and earth. When only empirical methods are used, to recognize what is specifically *human* and evaluate its emergence at a remote time remains a difficult and complex discernment. Consider, for instance, that the multiple skills and characteristics simultaneously present today in a mature human person seem to have appeared gradually over the course of human evolution. Or, consider the fact that the relationship between nature and culture has reciprocal and interwoven feedbacks: in the human being, biological evolution and cultural evolution flow into one another.

10.1.2 *The appearance of the perception and manifestations of the sacred in human religious experience*

Paleoanthropology is also able to inform us of the presence of religious behaviors and ritual practices among the habits of our predecessors, whose proper interpretation requires the help of cultural anthropology and the phenomenology of religion.⁵

The first evidence of some form of belief indicative of a certain “religious sense” is given by the ritual aspects present in the burials of the deceased. Starting from around 90,000 years ago, they represent a common practice not only among all the subspecies (or varieties) of *Homo sapiens*, but also across other human forms that have interrupted their evolutionary path, such as the Neanderthals. Even before this time, the presence of a kind of sacral vision of life and nature cannot be excluded, but the corresponding testimonies can be placed only in indirect relationship with a sacred, magical, or religious sense. Such is the case with the discovery of bone deposits, ordered deposits of skulls, and particular ways of embellishing or preserving a human skull. The religious meaning of the burial of a deceased person’s corpse, and not merely its hygienic or social purpose, is revealed by the geometric and spatial arrangement of the body (often oriented towards the rising sun), by the equipment that accompanies the burial, and by the red ochre dyes found on the bones, an easy symbolic reference to blood and life. Primitive burials reveal belief in a life that transcends the earthly dimension and, therefore, belief in a certain transcendent dimension either desired or at least imagined. Already in the Middle Palaeolithic (40,000–50,000 years ago), the presence of rituals in funerary depositions was a feature of *Homo sapiens* even in very different areas such as Asia Minor, France, and Central Asia. During the same epoch, Neanderthals left food next to their dead. Wall art and artistic objects developed from 35,000 to 40,000 years ago, also express a sacred vision of human existence. The subjects represented there sometimes recall the various stages of individual and social life, confirming a sort of “qualitative leap” experienced in that same period by exemplars belonging to the *sapiens* species, and which also presents other manifestations.

⁵ The presence and modalities of the religious attitude in the prehistory of humanity have been studied at length by scholars such as Mircea Eliade, Emmanuel Anati and Julien Ries. See the reference work of Robert Bellah, *Religion in Human Evolution. From the Palaeolithic to the Axial Age* (Cambridge: Harvard University Press, 2011).

The first structured religious concepts date back to the Upper Palaeolithic, around 30,000 years ago, in the form of sophisticated ritual practices carried out inside caves. Here we find proto-mythological artistic representations and the presence of objects for exclusively ritual use. These caves were used mainly as places of worship, although it should be noted that these places have preserved such findings best, so it cannot be excluded that cultural practices were also carried out outside, on the heights and in the woods. In some cases, the caves contain an altar or shrine in their center, the oldest example of which dates back 14,000 years. Spanning a very long extension of time, reaching back to the last great glacial period of circa 12,000 BC, the sanctuaries of the caves have housed objects and paintings revealing the deep-rooted conviction of *Homo sapiens* concerning a “cosmic-dualist” vision of nature and life. In this view, it is not the struggle between opposites or a dialectical logic that is highlighted, but rather an idea of complementarity: male and female, light and darkness, life and death, heaven and earth. Within the sacred domain, animals acquire importance and are endowed with highly symbolic roles as they are part of human life. They receive a sacred status for the production of food, the protection their skins provide and the respect they deserve. Humanity seems to perceive and want to defend animals’ reproductive and ecological balance. The meal made of their flesh acquires significance of sacred dimensions as it evokes the transfer of the strength possessed by the animal to those who feed on it. Because of the climate changes of planetary proportions that transpired due to the thaw following the last glaciation, which saw an average sea rise of over 100 meters and the consequent extinction of many large mammals, the habits and social organization of *Homo sapiens* changed abruptly. The need for large coordinated hunting trips ceased, as they then had to feed on small mammals and develop better agriculture. Human groups decreased in their number of members, favoring family and parental aggregation instead of big communities based on collective logic. Large caves were abandoned as cult sanctuaries, and religious-ritual practices did not leave significant traces. The testimony of a religious phenomenology would return only later, beginning around 6,000–5,000 BC, with the progressive origins of great belief systems, first in Central Asia and then in the Mediterranean basin, while other areas of the planet such as America and Oceania would continue to preserve more primitive religious forms.

The debate over the relationship between monotheism and polytheism concerns, instead, the advanced Neolithic. During this period of human evolution, in the passage from prehistory to history, the history of religions relied on a sufficient amount of information for their perpetuation thanks to the first testimonies of written documents (Sumerians, 4,000 BC). Cultural anthropology attempts today to reconstruct this passage by studying archaic religions, especially in Oceania and the Americas, that still retain an echo of the development of that relationship. A first approach to the problem by W. Schmidt (*The Origin of the Idea of God*, 1912–1954) suggested that all religious cultures could be traced back to an original monotheism—explicit or implicit—to the belief in a single Superior Being having similar manifestations from people to people (archaic monotheism). A certain primitive revelation having the same constants across all people corresponded to this original monotheism. On the contrary, the sociological-evolutionary approach represented by the school of E. Durkheim (*The Elementary Forms of the Religious Life*, 1912) considered monotheism and its characteristic content to be the point of arrival of an evolution having animism and totemism as its beginning and which, with the growth of social organization, conceptualized an increasingly precise and unitary divinity associated with legal content and more transcendent moral references. In reality, with regard to the more archaic nature of monotheism or polytheism, no apodictic evidence is extant in favor of one or the other. However, today, in light of ethnological studies conducted on the oldest Aboriginal populations, monotheism seems likely to be the more ancient. With regard to the discussion concerning the plausibility of a “primitive revelation,” such as Judaeo-Christian Revelation communicates, one might think that the study of this relationship provides the theologian with some elements of interest in order to understand the entire religious history of the genus *Homo* within a historical-salvific horizon. In reality, upon closer inspection, the debate over which is the most archaic form of worship adds very little to theological work, as the history of religions involved here refer to a time interval adjacent to the contemporary era, when compared with the long evolutionary times of *Homo sapiens*. The same could be said about the debate concerning the greater antiquity of divinities, whether celestial or telluric, for also in this case, this comparison is situated mostly in historical and not in prehistoric times.

Alongside the testimonies of a sense of the sacred and of religious experience, it can be rightly assumed that the path of human evolution was also marked by an ethical dimension. The progress of *Homo sapiens* was probably also due to beneficial behaviors such as cooperation and altruism and thus, to some extent, to the condemnation of theft, murder, and lies. These factors may have favored his survival and do not seem to be linked to a (merely) genetic transmission, for they can be preserved and transmitted only thanks to cultural tradition. Such behaviors are not directly comparable to group strategies for the survival of the species, which are also common in the animal kingdom. Rather, they leave room for freedom and gratuitousness, understood as a possible renunciation of a rule of strict reciprocity. Human life is *moral life*. If this were not the case, humanity would not exist. Without orderly social organization, the care and education of children, or the rules of conduct serving as the basis for the logic of all communitarian life, humanity would regress once deprived of the ability to build together towards real technical and social progress. Such downgrading would affect not only some individuals, but the species as a whole. We do not know when along the journey of our predecessors the moral life appeared in its fullness, but its influence on their future development was undoubtedly decisive. What we find here is a certain “universality” of the cultural life of *Homo sapiens*, as shown by the canons of his primitive artistic and cultural expressions found wherever this species was present, although they would come to light with a certain gradualness. To put it in another way, *culture seems to belong to the very nature of the human being*. If a particular cultural dimension arises and then permeates human behavior, it is not due to contingent factors that accidentally superimpose upon what might be dictated by a purely biological nature. Rather, it is because those skills, inclinations, and feelings accompany the path of the human species wherever man goes.

10.2 The place of Judaeo-Christian Revelation within the context of the religious prehistory of humanity

The aforementioned references to the main evolutionary and cultural stages of the human race introduce plainly the question of what constraints, if any, might be derived for the reconstruction of humanity’s religious history according to what Judaeo-Christian revelation teaches. In order to respond adequately to such a question, some methodological and hermeneutic clarifications need

to be made.

10.2.1 *A methodological premise*

Despite the effort to link empirical data – paleoanthropological findings, morphogenetic information, and evidence of cultural and behavioral environments – with what characterized the human species at the psychological and religious levels since its beginning, it is not possible to deduce from those data alone what the existential position of the the first human beings was before their Creator. The true relational context in which it would be meaningful to inquire as to how the Word of God came to encounter humanity is only existential-psychological in caharacter. This context cannot be known fully merely on the basis of investigative findings or empirical observations. If we seek understanding of the times and ways this encounter transpires between the Word of God and the human being, we must remember that we are not dealing with just an ordinary word addressed to one or more individuals of the human species at a particular moment of the biological and cultural history of our predecessors. The word involved here is the *Word of creation*; that is, a word that in some way establishes, precedes and constitutes the human being in so far as it is *human*. In this respect, both the process of humanization (here understood in a strict sense) and the personal revelation that God provides of himself to man, go beyond the methods of investigation employed by both the historical and empirical sciences.⁶ Moreover, there is an intrinsic limit of paleoanthropological data available to us that would disclose the content of the human being's psyche. These data can give us indications of when it is reasonable to think that intelligence, creativity and the aesthetic sense have made their entrance into the different forms of the genus *Homo*, as they become accessible to the investigation of the natural sciences. However, such data cannot tell us anything about our predecessors' awareness regarding their role in the cosmos, or if they had any image of the divine, and what that image might have been. More radically, while scientific data are able

⁶ As Joseph Ratzinger wrote: "It is not the use of weapons or fire, not new methods of cruelty or of useful activity that constitute man, but rather his ability to be immediately in relation to God. This holds fast to the doctrine of the special creation of man; herein lies the center of belief in creation in the first place. Herein also lies the reason why the moment of anthropogenesis is the rise of the spirit, which cannot be excavated with a shovel." Ratzinger, "Belief in Creation and Theory of Evolution," 47.

to tell us something about the sacred or even religious sense of these creatures, they can provide no information to us concerning concepts and contents of any form of divine revelation, understood as the *personalistic locus* where the bond between man and God is expressed comprehensively.

Analyses from the empirical sciences, again, have nothing to say to us about “how God sees His creatures,” or the value they hold in His eyes during different stages of the history of life and of intelligent life on our planet. Empirical data cannot tell us what these creatures represent for Him nor the degree of participation in His life to which they are called. Because of its gratuitousness and freedom, we can place the Word of God in relation to other sources of knowledge only once God himself desires to send his Word into human history.

Finally, it should not be forgotten that written testimonies of Jewish revelation, whose content theology may decide to compare with historical and scientific data, originate in times that occurred recently, relatively speaking. When the Scriptures of Israel desire to look at the distant past, they do so with a language and mythical-religious categories that correspond to a well-advanced historical era, in our case no earlier than around 1,500 BC in the oldest writings. This era is remarkably distant not only from the appearance of initial landmarks of the sacred in human history (40,000–90,000 years ago), but also from the appearance of the first structured religions in India and Mesopotamia (5,000–4,000 BC). However, despite all these limitations and differences between historical-scientific analysis and the moral theological perspective, theology should not ignore the knowledge of all those developments that led to the appearance of *Homo sapiens* and his behavioral, symbolic, and cultural manifestations. Fundamental Theology must keep this knowledge in mind and use it so as to offer a correct hermeneutic of what Christian faith says of the relationship between man and God. This effort today is a necessary feature of its duty to present the reasons for faith and argue the meaningfulness of Revelation.

In particular, there are four essential statements contained in Judaeo-Christian Revelation whose significance, reasonableness, and non-contradictoriness a theology in the context of contemporary scientific knowledge should present properly:

a) God the Creator of heaven and earth has revealed himself in a personal and free way to human beings, whom He created in His

image and likeness on this planet, and invited to participate in His life; b) This call to existence and God's invitation imply great dignity for human beings and give rise to a specific mission towards creation they have, one originally entrusted to them by God; c) Within this original context, a moral "trial" takes place having normative consequences for all human descent, in terms of its relationship with God, of the relationships of the human beings among themselves and with the rest of creation; d) God takes care of the human race and inaugurates a history of salvation, according to a pedagogy that leads Him to encounter man, lowering Himself to the level of creatures; by means of words and deeds addressed *ad hominem*, in particular to Abraham, and then to the whole people of Israel, in order to fulfill the promise of a Messiah.

In the Messiah, God makes Himself present in the midst of humanity, as a man born of a woman, as Son and Word-Logos sent into the world by the Father. Through the mystery of the Incarnate Word, God fully reveals man to man himself and makes his supreme calling clear, restoring the filial dignity that the human being has before God, a dignity compromised by the failure of the original moral trial and all the other human moral failures along the history.

10.2.2 Being "human": the creature before its Creator

With regard to the first statement above in (a), it should be noted that, at an empirical level, the phenomenology of the human species is objectively unique when examined against the background of other animal species. Clearly discernible in the symbolic, cultural, and scientific manifestations of contemporary *Homo sapiens*, this uniqueness sinks its roots into the phylogenetic branch of the genus *Homo*, when compared with other superior mammals' evolutionary paths. Although we cannot exclude that there have been competitions and extinctions among different forms of the genus *Homo*, the fact remains that what has come down to us as *sapiens* presents a phenomenology and reveals both a (neuro)physiology and functional complexity that have no equal among other living beings on our planet. Beyond the debate over how and when we can speak of a "human being," it is legitimate for theology to declare that the ultimate cause of this uniqueness is a privileged relationship with the Creator. Placed at a different epistemological level than the empirical sciences, this statement does not conflict with their analyses. The human being, and what leads to the creation of the human being, depends on God differently

than how other creatures depend on God. To affirm the existence of such a privileged relationship, not entirely entrusted to the mediation of secondary causes but due to the unmediated causality by God, is almost all theology needs, in plain words, to speak of the “creation of man.” Indeed, the first and most radical meaning of the term *creation* is precisely that of *relationship*.⁷

Affirming that human phenomenology is not qualitatively different from that of any other animal, mammal or superior primate, is always possible. However, this does stem from any scientific evidence, but rather from a philosophically materialist pre-understanding of nature supported by an ontological reductionism. Scientific evidence suggests the opposite. In just 2.5 million years – a very short time when compared to the entire extension of evolutionary processes that started about 500 million years ago in the Cambrian era – humanity has gone from the chipping of stones to the development of scientific knowledge, and the production of technological tools that have allowed us to reach celestial bodies different from our own native planet. Humanity has been able to know and describe the physical-chemical evolution of matter from the beginning of the universe’s expansion to the present day, within the space-time region accessible to us. *Homo sapiens* has recognized and described the language of life (DNA) as well as the evolution of life on the planet since the appearance of the first cells approximately three billion years ago to the present day. He has discovered and now employs, and in some manner also controls for the time being, the four fundamental forces existing in nature, with the sole exception of gravity. If some parallels can be drawn, the contemporary beaver, capable of elementary technique (the construction of dams on rivers), appeared around 20 million years ago, but since then it has remained morphogenetically stable and its activity has not changed. So, too, platarrine monkeys have remained unchanged, morphogenetically stable and constant in their behavior for approximately 20 million years; orangutan, for about ten million years; and chimpanzees, for about three million years. From an objective viewpoint, the phenomenology of the human being is not comparable to that of other animals on planet Earth with regard to the acquisition of practical, sensory and scientific knowledge, or regarding the symbolic, artistic and technological activities carried out.

⁷ Cf. S.Th. I, q. 45, a. 3, resp.

This difference does not constitute any demonstration of the fact that the human beings *as humans* have their original and total cause in being the image and likeness of an intelligent Creator, on whom they depend according to a privileged relationship. However, human uniqueness does make this theological statement plausible, and give it objective meaning. It is equally plausible that this privileged relationship, once human being becomes aware of that, can be interpreted as *an encounter of revelation*. Such idea of God's revelation to man is meaningful also within the contemporary scientific context, no matter theology's capability (or incapability) to provide a complete description of how the *metaphysical* relationship of creation might operate within the context of biological, genetic, or psychological causes leading to the human form. Theology must confess its ignorance of the historical and factual ways in which God has placed his gaze upon his creature. At the same time, the natural sciences also must confess their ignorance and inability to interpret human phenomenology within the context of a materialistic naturalism: Human beings are certainly animals, but they are not *only* animals. Quoting Chesterton we could say: "That man and brute are like is, in a sense, a truism; but that being so like they should then be so insanely unlike, that is the shock and the enigma."⁸

A couple of considerations remain that confer meaning on the Hebrew and Christian faith, concerning the causality of God the Creator in the creation of man and woman. First, the recourse to a philosophy of creation that underscores the transcendence and metahistoricity of the act of creation *ex parte Dei* would reduce any possible disorientation resulting from the long period preceding the arrival of *Homo sapiens*, or due to the gradualness with which the "human form" might have appeared. A philosophy of Aristotelian-Thomistic inspiration would emphasize, for example, the need for matter to be ready to receive an adequate form even when, as in this case, the *esse* communicated by this form is the radical act of being that expresses the dependence of the human being, inasmuch as he or she is human, on God. Second, to place the emphasis on the personalistic dimension of that relationship which is creation, gives plausibility to the statement that *my personal identity*, as a subject of self-reflection and freedom, finds its origin in a personal and transcendent Subject capable of calling me into existence, as God *my Creator*. A materialistic philosophy that would reject the possibility

⁸ Chesterton, *Orthodoxy*, 143–144.

of such a personalistic reading of the human self has too high a price to pay in doing so, having to deny not only the truth of personal freedom and responsibility, but also involving the irreducibility of the self to the mere realm of neurophysiological processes. God does not create or call humanity in an abstract or impersonal sense, simply intervening as an external agent who clarifies to our predecessors what biological evolution alone could not make them understand of their identity: God creates and calls *each human person*, every single man and woman, each with his or her own name. The “revelation of the name” of our progenitors, which the Scriptures of Israel desired to maintain, Adam and Eve, names that some exegetes interpret according to an exclusively abstract and impersonal dimension, actually signifies, from an existential point of view, precisely the opposite, that is, a non-abstract and personal reality. The presence of the progenitors’ personal names, although their exegesis evokes a more collective meaning (Adam, taken from the earth; Eve, mother of all living human beings), desires above all to indicate a *personal relationship* between the Creator and each human being. God's call of the progenitors into existence, whoever they were and wherever this happened, is not different substantially from the call into existence of each of us throughout history: God on Earth does not desire a merely generic *human being* – He desires *me*.

Understood throughout history with different emphases, from the Fathers of the Church to *Gaudium et spes*, the theology of the “image and likeness of God” can address and enlighten the theology and science dialogue also regarding the origins of psychism, rationality and freedom. The fact that this image has been fully revealed in Jesus Christ, the true man, unfolds the Christological dimension that the creation of humanity and God’s revelation certainly possess. In accordance with today's revaluation of personalism, what contemporary theology recognizes in the *core* of this image is the oblation capacity of love, the freedom of *self-giving*. Love and self-giving characterize the nature of the human being as human, but unlike artifacts that attest the presence of rational and symbolic thought, they leave no trace in the finds of the Palaeolithic and perhaps not even of the Neolithic.

God created the human being *not by merely elevating something* that He has recognized as suitable for that role, *but by desiring and creating someone*, from the beginning: He did not touch the evolution of the human being in any extrinsic way, but rather He revealed the meaning and scope of human life, awakening Adam from sleep.

Adam is more than an animal, but as long as he is alone and not aware of love, he is still, in a certain sense, one of them. Only the awareness of relationality provides Adam with appropriate categories for recognizing the love of God and his “being made in the image and likeness of God.” Only then is he able to address God *by you*, speak with Him, respond to Him, exercise his freedom, and then recognize this freedom as limited and fallible when experiencing the drama of sin—but also able to receive, precisely because of this drama, the promise of a “perfect measure” of love, that is forgiveness, finally experienced in an astonishing and unimaginable way through the mercy of Jesus Christ. When the consciousness of this relationality, this “being before God,” first emerged in a factual and historical way in our predecessors, we do not know. But it is not illogical to maintain that, in spite of the long time spent by the genus *Homo* in accomplishing the first elementary tools, showing the first forms of psychism and basic rationality, and expressing the capacity for careful observation and transformation, if they were times lacking the capacity to love and respond to God in freedom, then they were not yet *human* times, properly speaking.⁹ Adam's awakening may have been, perhaps, even very late. *His accomplished awakening*, where man understands God's salvific plan over creation—let us not forget—will take place in its fullness only in the resurrection of Jesus Christ.¹⁰ These perspectives certainly are

⁹ Arguing from the data at his disposal, in his essay *Towards a Thomistic View of Evolution* (1967), Jacques Maritain was inclined towards a similar solution, arguing that the long ascent times of the hominids and then of the first morphologies of the genus *Homo* represent a life no longer merely animal, for it is illustrated by superior forms of psychism, yet not even human because of still lacking the conscious freedom of a personal rapport with God. Looking at the other side of the coin, not only a personal spiritual relationship with God, but also hatred and violence, are slow to appear in the history of the human species. Human remains in the Palaeolithic show no trace of wounds from weapons, nor evidences of man's strategies against man, but only of men against animals. Traces of violence would appear, instead, starting in the Neolithic. Nevertheless, based on a heuristic rather than philosophical approach, other authors think that the first symbolic expressions of the last *Homo habilis* are testimony that the “human” already has appeared.

¹⁰ From the ontological point of view, we cannot affirm that before the redemption of Jesus Christ men were “less men.” Also, every gift of grace bestowed upon them in past history was already a *gratia Christi*. However, it is also true that only thanks to the new evangelical law of charity do men have the capacity, *even ontologically*, fully to express their filial relationship with God the Creator and with other human beings, for they finally are able in Christ to respond “yes” to the Father and to live in accordance with their original truth.

delicate and difficult to manage. However, what this Christological dimension could say to a theology seeking to investigate the relationship between science and faith in the creation of humanity should not be overlooked.

10.2.3 Entrustment, Fall, and Promise

The second statement of biblical Revelation highlighted in (b), the meaning of which we now examine within a scientific context, speaks of the existence of a precise mission that the human beings receive from God. It concerns the administration and full ordering of created realities to Him, a consequence of their specific dignity and of the task entrusted to them. Theology associates this biblical message with a sort of “primitive revelation” bestowed upon our progenitors. It would seem possible, in principle, to ground the reasonableness of this biblical content resorting to the idea of an archaic revelation addressed to humans, of which a primordial monotheism perhaps would be a historical echo. However, this scenario would encounter some major difficulties, first of all concerning the long times at stake. Even if we were to place such primordial revelation at the “human turning point” of the Neolithic era, the times that would separate us from a divine word communicated through categorial content and conceptual knowledge are always greater than those corresponding to any possible preservation of historical memory. It is not unreasonable, however, to hold that a primitive revelation could have been achieved largely through a transcendental component and not (only) through a categorial one. Such revelation thus could be placed where the human beings reached the awareness of their transcendence over nature, in different times and places. Sustained by divine grace and recognizing themselves as the image of God, the first human beings would have understood that they had a responsible task to accomplish—before other humans, before themselves and before God. Thanks to transcendental knowledge, wherever he and she might live they grasped for the first time the meaning of love, spousal love, and charity; he and she may have understood love in the transmission of life, in the conscientious care of children, in solidarity with the suffering, and in the construction of a social community. Such primitive and original revelation would not only be an inner transcendental revelation, within human conscience, but also a revelation of God in nature and through nature, and through the face of the other as God's image. Listening

to nature around him or her—from the starry sky to the laws of sowing and harvesting, from the perception of one's own contingency to the amazement for the fascination of creatures, from the face of one's spouse to the joy of procreation—the human being has received and accepted the revelation of his or her role in the world, the task entrusted to our progenitors by the Creator.¹¹

Scripture is sufficiently clear concerning the existence of natural revelation in the created cosmos and within the human conscience. This form of revelation could lead humans to an understanding of such knowledge that, if transmitted only in a categorial and historical-factual way, would be placed in epochs historically too close to us, or in any case such as to perplex interlocutors having a scientific world-view. The narratives with which the Bible presents the categorial content of primitive revelation basically outline the itinerary common to the first humans, wherever they were, once they came to an awareness of their creaturely condition before God—the nucleus of original religious experience—and of their moral relationship with others. The meaning of a Word delivered to the patriarchs, of which the Bible speaks, also indicates the progressive moral growth to which humanity has been called and is still called: to work in sincerity for good and not for evil (Abel and Cain); to work without pride or selfishness, and to avoid falling into incommunicability (Babel); to move away from corruption and recognize the authority of the one sole Creator (Noah); and, to surrender oneself fully, in faith, to a provident God (Abraham). The manner by which God “intervenes” in history is just arousing and accompanying such human growth. It was only in the religious experience of the Exodus (and perhaps earlier in Abraham's travels) that the idea of an “intervention of God in history” first appeared explicitly in the Scriptures of Israel, associating it with a history of salvation and liberation, and having the pedagogical aim of delivering a Promise.

Concerning the third essential affirmation made by Revelation, that I resumed above in (c), Scripture's narration telling a moral proof sustained by our progenitors, as well as the consequences

¹¹ I share and apply to this theme Karl Rahner's perspective, that the place of the original transcendental knowledge and revelation of God was the appearance of the human being's authentic religious sense, especially the awareness of one's own creaturely being. See Karl Rahner, *Foundations of Christian Faith. An Introduction to the Idea of Christianity* (trans. W. Dych; New York: Crossroad, 1993), 31–41, 51–71, 75–89.

generated by such a proof, does not lose its meaning when evaluated in the context of scientific knowledge about our origins. I am persuaded that the reasonableness of this content should not be justified through attempts to clarify more and more the circumstances of space and time in which this episode occurred, or which actors were involved in it. The consequences of such moral proof, and thus indirectly their historicity and reality in our human life, should be founded rather on phenomenological bases.

It is undeniable that the human being experiences a dramatic dichotomy between his intelligence—which is capable of greatly increasing his quality of life on the planet through an ever more advanced knowledge of nature—and the use he makes of that intelligence, which too often is focused and centered on war, oppression and destruction. There is an inexplicable contrast between genius and cruelty, between a thirst for knowledge and the will for power, between a desire for self-giving and the capacity for extermination and destruction, and between a love for life and hatred until massacre. Such fracture becomes more painful in what originally had qualified the human creature, that is, the complementarity between man and woman. The joy of mutual encountering and procreation can turn into a blind violence that fails to perceive the personal value of the body; sexual attraction and fascination can turn into dominion over the other's body up to its devastation. If it is difficult to understand in the evolutionary history of the human species what the "original sin" was, we must recognize that it is even more difficult to understand who the human being is if we were to deny the reality of sin. Moral sin and a kind of original human inclination to evil remain for all a reasonable explanation that decodes our moral and existential condition, as something dramatically revealing the meaning and outcome of a partially failed original vocation. As Blaise Pascal frankly stated: "Man is more inconceivable without this mystery than this mystery is inconceivable to man."¹² In one of his catecheses, John Paul II commented on the existence of sin within the context of human origins:

¹² Blaise Pascal, *Pensées*, n. 438. A few lines before, in this same fragment n. 438, Pascal writes: "We have an idea of happiness and cannot reach it. We perceive an image of truth and possess only a lie. Incapable of absolute ignorance and of certain knowledge, we have thus been manifestly in a degree of perfection from which we have unhappily fallen."

It is a truth that does not need to be proven by elaborate arguments. You just have to see it. After all, don't so many works from literature, cinema and theatre offer eloquent confirmation of this? In these works, man appears weakened, confused, lacking an inner centre, anxious against himself and against others, a victim of non-values, waiting for someone who never arrives, as if to prove that, once he loses contact with the Absolute, he ends up losing even himself.¹³

When presenting the consequences of original sin as transmitted by the Bible, it is consequently to relational factors of human living that our attention must be drawn. Since the *fundamental relationship* for human beings is precisely the relationship they share with God and which has been distorted by sin, all other relationships remain distorted as well: man with himself, between man and woman, between man and his fellow human beings, and between each human being and the rest of creation. It is neither nature nor matter, nor any physical laws that change after human sin—an assertion that scientific knowledge could easily disprove and which Scripture does not oblige us to support—but the way whereby human beings then regard creation. Similarly, in speaking of the consequences of sin, it is not on *biological* death that we must insist—which already was present in the terrestrial biosphere well before the appearance of humanity and in any case is linked inevitably to the thermodynamic cycle of every living being as biologically living, human beings included—but on the *existential wound* that original sin introduces into human life. It is this intimate laceration that makes man experience anguish and uncertainty at the end of his days, once his filial relationship with God has been put in crisis and man puts God's paternal goodness in suspicion. The close biblical correspondence between death and sin, which reaches a verbal homonymy, desires to highlight that man, without God, dies; he dies because sin defeats him and does not allow him to live according to the truth.¹⁴ It is important, therefore, for theology to find words to

¹³ John Paul II, *General Audience*, November 12, 1986.

¹⁴ Understanding the biblical reference to death above all as concerning the cessation of a relationship of grace with God, together with arguments of reason deduced from the natural history of forms of life on Earth, both suggest a better contextualization of the statements made by the Council of Trent (cf. DH 1511) and the Second Vatican Council (cf. GS, 18). That is, the link between original sin and

demonstrate that those who live the experience of Christ's grace really possess a life restored by the Risen One. Wounded relationships are healed by charity, and human existence is lived thenceforth without any fear of life and death, as well manifested by the witnesses of the saints.

We come to the fourth and final affirmation of biblical Revelation (d), whose compatibility with the scientific data we intend to show. It concerns God's propaedeutic care of the human race through the choice of specific men and women, and especially a definite people, who serve as the protagonists of salvation history, a history that unfolds from promise to fulfillment. It is not surprising that God willed to bring about the salvation of humanity *through humanity*, choosing a path that many Christian authors pointed out as highly convenient. Along its gradual progression from the figures of the patriarchs to the formation of the people of Israel, divine revelation is increasingly shaped by its categorial contents, now being in an era of human history that no longer arouses the perplexity of a too distant past. Just as God "molded" Adam and Eve, he now "molds" a people, acting within human history so that this history can express his Promise. To do so, this history requires the appearance of culture, religion and language, and the appearance of a woman's womb—the womb of Mary of Nazareth. There is no more reasonable pathway for the Creator's descending love than that of willing to be man among humans, and there is no other pathway for restoring human fallen nature by inserting it into an even higher life (*felix culpa*), a virginal generation which guarantees a *new* descent and a *new* humanity — from Mary, full of grace. But these are recent times — times that now look to Christ.

Regarding the meaning that the times of salvation history possess when assessed against the chronological background of natural history, further considerations come to light. At first glance, the time from now back to the Incarnation, to God who becomes man, may seem so close to us as to be one with the history of Israel. If, by descriptive analogy, we were to compare the time that has passed since the beginning of the cosmos' expansion to the present

the appearance of "death" should be understood in the sense that man's biological death, something due similar to all other living beings, after original sin would acquire additional consequences at the existential and relational levels; in the face of death, human beings are now abandoned to anguish and pain due to the loss of their filial condition toward God.

time as being within the period of one calendar year, placing the origin at January 1, then Jesus of Nazareth would be born in Bethlehem at 11:59:55 p.m. on December 31, that is, only five seconds ago. If we now were to represent by the same extension (one year) and origin (1 January) the time that separates us today from the first testimonies of lithic manufacture and elementary social organization of *Homo habilis*, then the birth of Jesus would be placed at 5.00 p.m. on December 31, just seven hours ago. Consequently, when evaluated with the yardstick of our planet's history or with the yardstick of human race's history, the birth of Jesus is a very recent event. An echo of the affirmation of the Epistle to the Hebrews seems present here, when its author qualifies the times of the revelation of the Son as "last times," times of the *eschaton* (cf. Heb 1:2). In reality, upon closer inspection, we cannot say anything objective concerning this proportion, that is, about how "eschatological" are the times of the revelation fulfilled by the Son. In fact, we do not know what the global extension of the history of humankind will be, when projected into the world to come. The future extension of this history depends not only on the windows of life survival that the biosphere will provide for humans, but also on the free choices of peoples, who can decide to live together peacefully or to destroy themselves and each other. The "fullness of time" given in Christ (cf. Gal 4:4; Eph 1:10) could be either the chronological pinnacle of a very long evolutionary process that covered most of the human history or the moral summit of a journey destined to extend much more time into the future, until God will be all in all.¹⁵

As was the case with the widening of horizons brought about by contemporary cosmology, the new viewpoints due to scientific knowledge of the origins of human race on Earth neither brings forth any apodictic argument against the reasonableness of biblical Revelation nor deprives it of meaning. However, such developments in the field of cosmology oblige theology to seek new categorizations and to explore innovative ways of explaining the intersections between natural history and the history of salvation. Only by taking care of understanding what scientific knowledge tells us today are we able to proclaim the Gospel in a credible manner, as the Second Vatican Council exhorts.¹⁶ Proclamation of the Gospel to the

¹⁵ An early attempt to frame this problem correctly is found in Augustine of Hippo, *The City of God*, XII, 12-13.

¹⁶ "Let those who teach theology in seminaries and universities strive to collaborate with men versed in the other sciences through a sharing of their

scientific world should be carried out through a kind of intelligent “inculturation,” similar to what missionaries realize, when they carefully study the language and culture of peoples to which they are sent to preach the Word of God.

10.3 The appearance of life in the cosmos: the theological debate about intelligent extraterrestrial life

10.3.1. The status of the problem

The question about the presence of extraterrestrial life in the cosmos (ETL), and of intelligent life in particular (ETI), has always fascinated humanity, as testified by many works of literature from different historical periods and, in times closer to us, by cinema as well as science popularization. This query implicitly motivates a considerable part of contemporary astrophysical research and represents one of the driving forces behind technological progress in the field of astronautics. There are good reasons to affirm that such an issue entails very deep existential implications and responds to a need for understanding and meaning, to the point of acquiring even religious significance.¹⁷ The hypotheses of encounters with other civilizations are endowed with an implicit meaning of “revelation,” thinking to the possibility of being informed about a knowledge that is inaccessible to us and perhaps is capable of answering our ultimate questions. By questioning the possibility of extraterrestrial

resources and points of view. Theological inquiry should pursue a profound understanding of revealed truth; at the same time it should not neglect close contact with its own time that it may be able to help these men skilled in various disciplines to attain to a better understanding of the faith. This common effort will greatly aid the formation of priests, who will be able to present to our contemporaries the doctrine of the Church concerning God, man and the world, in a manner more adapted to them so that they may receive it more willingly.” *Gaudium et spes*, n. 62.

¹⁷ “The powerful theme of alien beings acting as a conduit to the Ultimate – whether it appears in fiction or as a seriously intended cosmological theory – touches a deep chord in the human psyche. The attraction seems to be that by contacting superior beings in the sky, humans will be given access to privileged knowledge, and that the resulting broadening of our horizons will in some sense bring us a step closer to God. The search for alien beings can thus be seen as part of a long-standing religious quest as well as a scientific project. This should not surprise us. Science began as an outgrowth of theology, and all scientists, whether atheists or theists, and whether or not they believe in the existence of alien beings, accept an essentially theological world view.” Paul C. Davies, *Are We Alone? Philosophical Implications of the Discovery of Extraterrestrial Life* (Harmondsworth: Penguin, 1995), 137–138.

intelligent life, man questions himself and desires to clarify the meaning of his life within a cosmos that he is progressively learning to know, and where he is surprised to have opened his eyes.

It must be said that, until now, there is no scientific evidence concerning the presence of living organisms in environments other than the Earth.¹⁸ Certain bodies of the solar system, such as Mars and some of Saturn's satellites, once possessed water and probably still have it. Water is probably present as well somewhere under the Moon's solid surface. Across interstellar space, different types of molecules identical to those characterizing the chemistry of living organisms have been detected, such as water, carbon monoxide and dioxide, ammonia, methanol, formaldehyde, various compounds of carbon, silicon and nitrogen, and also a number of amino acids. Some of these molecules have been found directly on meteorite debris or observed on comets, raising questions about their possible role in prebiotic processes or even their possible origin from existing biological processes. In the vast environment of interstellar space, however, no nucleic acids or other biochemical structures of cellular origin have been observed that would suggest the presence of microorganisms. Direct tests of the soil of Mars so far have shown no trace of life, either present or past. Research aimed at listening to radio signals produced by any intelligence of extraterrestrial origin has been underway since the 1960s, but at the moment it has not led to any affirmative results. On the other hand, information on the presence of planets around stars (exoplanets) has grown considerably, and their number is increasing constantly thanks to the observations made by sophisticated space telescopes dedicated to this purpose. Among these, more than a few with characteristics similar to those of Earth are beginning to be detected.¹⁹

¹⁸ The scientific bibliography on the search for life in the universe is obviously open and in progress. Since 1982, the International Astronomical Union (IAU) has established Commission n. 51 "Biastronomy." For an overview of this ongoing research, see: Monica Grady, *Astrobiology* (Washington D.C.: Smithsonian Institution Press, 2001); Steven J. Dick, James E. Strick, *The Living Universe. NASA and the Development of Astrobiology* (New Brunswick, NJ: Rutgers University Press, 2004); Karen Meech et al., *Commission 51 - Bioastronomy. Search for Extraterrestrial Life*, IAU Transactions (Cambridge: Cambridge University Press, 2007); Woodruff T. Sullivan III and John Baross, *Planets and Life. The Emerging Science of Astrobiology* (Cambridge: Cambridge University Press, 2007); and Chris Impey, Jonathan Lunine and José Funes, eds., *Frontiers of Astrobiology* (Cambridge: Cambridge University Press, 2012).

¹⁹ Updated information on the statistics of extrasolar planets is available at

Beyond these direct or indirect observations, which reach only a negligible part of the whole cosmic scenario, our knowledge of stellar evolution and of planetary formation dynamics is sufficient to inform us that in the universe, on the basis of simple statistical calculations, a very high number of bodies must exist whose physical and chemical conditions, in principle, can be similar to those of Earth. It is much more difficult, if not impossible, to make the next inference, that is, how from the presence of environments *suitable for life* one could deduce the *real existence of life*, since it means to shift from necessary conditions to necessary and sufficient conditions. The latter, in fact, would be computable only once all variables of the phenomenon of life are known (i.e., what life is, how it evolves from inert matter, why it arises, etc.). To have a computational analysis of all necessary and sufficient conditions, we would need to possess a comprehensive scientific knowledge of the phenomenon of life, one that exceeds not only our data, but also our current theories. This is the reason why contemporary debate includes different positions, which span from the tenet that we are certainly alone, up to believing that the universe teems with life. Nevertheless the hypothesis that life is not a phenomenon limited to planet Earth but is also present elsewhere, can be considered highly reasonable. For some researchers, as those belonging to SETI community, it has become a theoretical certainty and an existential commitment. The processes that led to the appearance of life on Earth, and in a certain way also of intelligent life, are still largely unknown to us, and the physical-chemical conditions of Earth's biosphere seem truly extraordinary. As a result, there are also scientists who believe that human life can be considered a *unicum*.²⁰ Despite these constraints, it should not be forgotten that of the approximately 10^{23} stars populating our accessible universe, those similar to the Sun and with planets similar to Earth still remain a significantly high number. The possibility of establishing contact between different extra-terrestrial intelligent civilizations (ETI), essentially through radio waves, is not proportional to the number of possible *actors* present on the scene, but rather depends on many other factors, including the average life of a civilization on a planet.²¹

<http://planetquest.jpl.nasa.gov> and <http://exoplanets.org>.

²⁰ Cf. Simon Conway Morris, *Life's Solution. Inevitable Humans in a Lonely Universe* (Cambridge: Cambridge University Press, 2003).

²¹ The probability of expected contact with other intelligent beings is determined by the well-known "Drake's equation." However, there are very different opinions

Even a total absence of any ETI contact could never indicate, in an apodictic way, the uniqueness of life on our planet, since the region of space-time we are observing or hearing could never cover the extension of the entire universe.

In the past, theology has dealt occasionally with the theme of intelligent extraterrestrial life, sometimes confronting it only indirectly. From a theological viewpoint, it is worthwhile to wonder whether current scientific knowledge, as briefly sketched above, obliges theologians to take this subject seriously.²² It is difficult to provide an objective answer to this question as theological reflection certainly cannot address every hypothetical problem that could arise. However, as Paul Tillich observed some time ago, in this case we are not faced with a totally abstract or ideal problem: we deal, rather, with a theological issue which points to a self-understanding of Christianity. In fact, to understand the meaning of Jesus Christ's headship for the entire cosmos implies knowing how large the cosmos is, and what this greatness implies in terms of the spreading of life.²³ In addition, the growing sensitivity that has arisen in the field of science concerning this subject, especially its repercussions on religious thought, now has repercussions on public opinion as well. In some cases, such as in the writings of the former SETI Institute director Jill Tarter, it is the dissolution of religion that contact with extraterrestrial life would inevitably imply, Christianity in particular.²⁴ Science-fiction literature and cinema, in general favorable for emphasizing the transcendent dimension of human life in the cosmos, also includes movies, such as the influential film *Contact* (1997), produced with the collaboration of Carl Sagan, in which the search for extraterrestrial life is placed in direct contrast to the religious establishment of an entire nation. On many occasions, it is the alleged "delay" of Christianity with respect to newly presented scientific contexts, that these screenplays or other writings intend to denounce. Theology, for its part, although invited

concerning the correct use of this equation, especially with regard to actual knowledge of the parameters that appear in it.

²² Cf. David A. Wilkinson, "Why Should Theology Take SETI Seriously?" *Theology and Science* 16 (2018): 427-438.

²³ Cf. Paul Tillich, *Systematic Theology* (Chicago: University of Chicago Press, 1957), 2: 95-96.

²⁴ Cf. Jill Tarter, "SETI and the Religions of the Universe," *Many Worlds. The New Universe, Extraterrestrial Life and the Theological Implications* (ed. Steven Dick; Philadelphia - London: Templeton Foundation Press, 2000), 143-149.

to provide deeper insight, must bring to the table some epistemological clarifications, necessary for addressing better this entire, certainly compelling, discussion. On these clarifications I will turn below, in short, asking which epistemology should we apply to the ETI question.

10.3.2 *Historical antecedents of the theological debate*

Concerning the interdisciplinary debate over the presence of life, and intelligent life, in the universe, there are numerous studies and contributions, especially from historical, literary, and philosophical approaches.²⁵ This subject has never occupied the attention of the Magisterium of the Catholic Church in modern times, while in previous eras it is possible to find only fragmentary data. A letter from Pope Zachary (741–752) to the presbyter Virgil disapproved of the idea that there were inhabitants at Earth’s antipodes, on the moon, or on the sun,²⁶ seeking to avoid introducing elements of novelty that could weaken the unity of the human family. Such inhabitants would have made it more difficult to understand the relationship to God of men who were not descendants of Adam, including their moral position with respect to original sin. The mediaeval debate concerning a multiplicity of worlds, in which Bishop Étienne Tempier of Paris also intervened in 1277, is not directly applicable for knowing what the position of the Catholic Church or of theology was at that time with regard to extraterrestrial life, for the concept then of “many worlds” was not equivalent to what we mean today when speaking of the existence of many planets, and the possibility of their habitation. In the climate of hesitation that dominated the transition from a geocentric to

²⁵ Cf. Steven J. Dick, *Plurality of Worlds. The Origin of the Extraterrestrial Life Debate from Democritus to Kant* (Cambridge: Cambridge University Press, 1982); Michael J. Crowe, *The Extraterrestrial Life Debate 1750–1900: The Idea of a Plurality of Worlds from Kant to Lowell* (Cambridge: Cambridge University Press, 1988); Steven J. Dick, *The Biological Universe. The Twentieth-Century Extraterrestrial Life Debate and the Limits of Science* (Cambridge: Cambridge University Press, 1996); Steven J. Dick, *Life on Other Worlds. The Twentieth Century Extraterrestrial Life Debate* (Cambridge: Cambridge University Press, 1998); David Lamb, *The Search for Extraterrestrial Intelligence. A Philosophical Inquiry* (London - New York: Routledge, 2001); Michael J. Crowe, ed., *The Extraterrestrial Life Debate. Antiquity to 1915. A Source Book* (Notre Dame, IN: Notre Dame University Press, 2008); David Wilkinson, *Science, Religion and the Search for Extra-terrestrial Intelligence* (Oxford: Oxford University Press, 2017); and Ted Peters, ed., *Astrotheology: Science and Theology Meet Extraterrestrial Life* (Eugene, OR: Wipf and Stock, 2018).

²⁶ Cf. Zachary, *Epistola XI ad Bonifacium*, PL 89, 946–947.

heliocentric system of thought— despite the fact that already two centuries earlier, the cardinal and humanist Nicholas of Cusa (1401–1464) claimed a “pluralist” thesis²⁷—some clergymen, expressing their personal opinion, believed that to lower Earth to the level of other planets could lead some innovative minds to go even further, so as to admit there to be inhabitants on those planets, bringing consequences already anticipated by Pope Zachary in the 8th century.²⁸ The entire 17th century was characterized by a general attitude of prudence on this issue, as demonstrated by the fact that the book by Bernard Le Bovier de Fontenelle, *Entretiens sur la pluralité des mondes* (1686) initially was included by the Holy Office in the Index of Forbidden Books.

Christian theology was directly called into question at the end of the 18th century by the work of Thomas Paine (1737–1809) in *The Age of Reason* (1793). For the first time, an author claimed radical incompatibility between Christianity and the existence of intelligent extraterrestrial life, the discovery of which according to Paine would inevitably lead the faith toward a profound crisis: “Are we to suppose that every world in the boundless creation,” he affirmed ironically, “had an Eve, an apple, a serpent and a redeemer? In this case, the person who is irreverently called the Son of God, and sometimes God himself, would have nothing else to do than to travel from world to world, in an endless succession of death, with scarcely a momentary interval of life.”²⁹ A Christological problem—in spite of the provocative and hasty style employed by Paine—is certainly present here. Paine’s theses were not taken up by theologians and apologists of the time,³⁰ nor were they echoed by astronomers of certain reputation, sincere believers in favor of a pluralist hypothesis, such as T. Wright, J. Lambert, and W. Herschel, among others. In Italy, Virginio Schiaparelli, Angelo Secchi and Francesco Denza—the last two being priests and all being directors of

²⁷ Cf. Nicholas of Cusa, *De docta ignorantia*, II, 12.

²⁸ See the letter by Giovanni Ciampoli to Galileo, February 28, 1615: cf. Galileo Galilei, *Opere* (ed. A. Favaro; Giunti-Barbera, Firenze 1968), 12: 146. See also a letter by Abbé Le Cazre to Pierre Gassendi: cf. Pierre Gassendi, *Oeuvres* (Lyon, 1658), 6: 451.

²⁹ Thomas Paine, *The Age of Reason* (1793), §12, 87; in Paine, *Representative Selections* (ed. H. Hayden Clark; New York: Hill and Wang, 1961), 283.

³⁰ Cf. Thomas Chalmers, *Astronomical Discourses* (1817); Timothy Dwight, *Theology Explained and Defended in a Series of Sermons* (1818); Thomas Dick, *The Christian Philosopher* (1823).

important astronomical observatories – supported the possibility of life in the cosmos. On the Christian side, the main argument in favor of the admissibility of intelligent life in the cosmos beyond Earth resorted to the greatness of the Creator and to the unfathomability of his plans over the entire universe, of which men could know only a limited part.

The “positive side” of the thesis is presented in the theological work by Joseph Pohle entitled *Stellar Worlds and their Inhabitants* (1884), which was re-edited many times for approximately 20 years, where the author plainly favors the hypothesis of a plurality of inhabited worlds. Given the physical universe’s vastness and given the scope of creation to praise the glory of God, Pohle deduces that such a glory must be bestowed by many intelligent beings dispersed throughout the cosmos who, unlike the multiplicity of angels whose nature is purely spiritual, are called to praise the Creator within the material universe. Asserting that the greatness and glory of the Creator were compatible with the divine will to communicate the gift of life even in cosmic places other than Earth, while concurrently confessing human ignorance about God’s plans for these creatures, provided an indirect response to Paine’s criticism, albeit only as a first approximation. Redemption from original sin, as far as we knew, concerned only the human race and consequently could not be transposed into the lives of other rational beings.³¹

This form of “dogmatic optimism” can be found in later theological works, as for example in an important textbook of Dogmatics, the volume that Michael Schmaus dedicates to the theology of creation. Written in the middle of the 20th century, this text offers an echo of Pohle’s thesis, proposed in almost the same words.³² The greatness of God, the immensity and beauty of the cosmos as a reflection of His Creator, and the humble spirit with

³¹ The same observation was offered centuries ago by the Franciscan William of Vorillon (1390–1463): cf. Grant McColley, W. Miller, “St Bonaventure, Francis Mayron, William Vorilong and the Doctrine of a Plurality of Worlds,” *Speculum* 12 (1937): 386–389.

³² Cf. Michael Schmaus, *Katholische Dogmatik* (Munich: Max Hüber, 1957), § 109. “Assuming that not only on Earth but also in other celestial bodies there are beings endowed with reason, we can also say that in such parts of the cosmos an aspect of the glory of God may be visible, one that, on the contrary, escapes the inhabitants of the Earth. In this way creation would announce the glory of God to man on Earth, to the blessed in heaven (saints and angels) and to the inhabitants of the other planets.” Translation is mine, from the Italian edition, Michael Schmaus, *Dogmatica Cattolica* (Casale Monferrato: Marietti, 1959) 1: 534.

which men must approach His works seem to represent the determining elements for the pluralist choice, or in any case for the optimism in facing the whole question. Dogmatic questions are left in the background, assumed to be resolvable in light of Revelation. It is noteworthy that this attitude is maintained currently, as highlighted by an interesting study by Ted Peters and published in 2009. According to Peters' paper, only a minority of believers, including Christians, think that the discovery of extraterrestrial intelligences could lead to a personal crisis of faith or cause problems for the contents of institutional religions.³³

During the second half of the 20th century, some Catholic and Protestant authors touch on the subject to different degrees of depth. Pierre Teilhard de Chardin dedicated a short essay to it, highlighting the importance of the theme and the need for theology to address it, suggesting theology reflect on the "cosmic" nature of the mystery of Christ and advising a renewal of the doctrine of original sin.³⁴ Paul Tillich complained about the lack of in-depth theological study on this subject that he considered to be of major importance for the understanding of the mystery of Jesus Christ.³⁵ Karl Rahner warned theology not to veto the possibility of extraterrestrial intelligences and, in principle, did not consider the idea of a multiple incarnation across different histories of salvation to be inconceivable, even though he considered the uniqueness of the human being in the cosmos to be more plausible. However, he does not offer any particular development of the whole issue.³⁶ Other authors, theologically less renowned, have entered to a greater or lesser extent into this subject matter, offering considerations that mix more properly theological elements with hypothetical visions and imaginative solutions, sometimes scientifically impracticable; among them, the idea of a special mission of the human species, informative or even sacramental in scope, towards other civilizations.

³³ Cf. Ted Peters, "Astrotheology and the ETI Myth," *Theology and Science* 7 (2009): 3–29.

³⁴ Pierre Teilhard de Chardin, "A Sequel to the Problem of the Origin of Man. The Plurality of Inhabited Worlds", June 5, 1953, published in *How I Believe* (New York: Harper & Row, 1969).

³⁵ Cf. Tillich, *Systematic Theology*, 2: 95–96.

³⁶ Cf. Rahner, *Natural Science and Reasonable Faith*, 51–52. See also Christopher Fisher, David Fergusson, "Karl Rahner and the Extra-Terrestrial Intelligence Question," *Heythrop Journal* 48 (2006): 275–290.

However, such perspectives seem to oscillate between a desire to maintain the centrality of the relationship between Jesus Christ and the cosmos, even within a pluralistic context, and the abandonment of such centrality in favor of a marginalization of salvation history as presented by Judaeo-Christian Revelation, seeking analogies with the scheme of the relationship between Christianity and religions, once understood according to a pluralistic theocentric model. Thinkers motivate the latter choice on the basis of avoiding any supposed anthropocentrism or reinforcing the transcendence and incommensurability of God the Creator, whom our salvation history would make known only in a partial and incomplete way.³⁷

In recent decades, interest has increased in the subject, although within rather restricted intellectual networks. Nevertheless, major volumes have appeared, not merely isolated articles or comments.³⁸ A certain echo has resounded from Armin Kreiner's book, *Jesus, UFOs, Aliens* (2011), one of the few cases in which a Fundamental theologian has chosen to write on the subject.³⁹ I do not endorse Kreiner's approach, both because of his choice to associate theological discussion with issues having no scientific basis (such as the debate on UFOs and their alleged visits to Earth), and due to his insistence in alleging the destabilizing effect this theme would have

³⁷ Cf. Eric Mascall, *Christian Theology and the Natural Science* (London: Longmans, 1956); Kenneth J. Delano, *Many Worlds, One God* (New York: Exposition Press, 1977).

³⁸ Cf. Douglas A. Vakoch, "Roman Catholic Views of Extraterrestrial Intelligence. Anticipating the Future by Examining the Past," *When SETI Succeeds. The Impact of High Information Contact* (ed. A. Tough; Washington: Foundation for the Future, 2000), 165–174; Guy Consolmagno, *Intelligent Life in the Universe? Catholic Belief and the Search for Extraterrestrial Intelligence* (London: Catholic Truth Society, 2005); Mary George, *Christianity and Extraterrestrials. A Catholic Perspective* (New York: iUniverse, 2005); Ilia Delio, "Christ and Extraterrestrial Life," *Theology and Science* 5 (2007): 249–265; Thomas F. O'Meara, *Vast Universe. Extraterrestrials and Christian Revelation* (Collegeville, MN: Liturgical Press, 2012); Douglas A. Vakoch, *Astrobiology, History, and Society. Life beyond Earth and the Impact of a Discovery* (Berlin - Heidelberg: Springer 2013); Ted Peters, *UFOs: God's Chariots? Spirituality, Ancient Aliens, and Religious Yearnings in the Age of Extraterrestrials* (Pompton Plains, NJ: New Pages Books, 2014); David Wilkinson, *Science, Religion and the Search for Extraterrestrial Intelligence* (Oxford: Oxford University Press, 2017); and Ted Peters, ed., *Astrotheology: Science and Theology Meet Extraterrestrial Life* (Eugene, OR: Wipf and Stock, 2018). I have contributed to the debate with my article *Extraterrestrial Life* (2008), INTERS, DOI: 10.17421/2037-2329-2008-GT-1, whose main contents are proposed again in this volume.

³⁹ Cf. Armin Kreiner, *Jesus, UFOs, Aliens. Außerirdische Intelligenz als Herausforderung für den christlichen Glauben* (Freiburg: Herder, 2011).

on the theological establishment. Kreiner pays less attention to addressing arguments that, on a positive side, could have taken advantage from what already belongs to faith and Christian tradition. The questions posed by Guy Consolmagno and Paul Müller in *Would you Baptize an Extraterrestrial?* (2014) also have contributed to keep the debate alive in public opinion.

10.3.3 Which epistemology can be applied to the ETI question?

Beyond what Christian theology can or cannot say about this subject, the strong existential value of the theme imposes a preliminary clarification concerning the “attitude” with which the believer should face this delicate question. It must be said immediately that it would not be logical to attribute to any eventual encounter with alien civilizations the value of a *decisive event* for establishing the truthfulness of Christian faith or of religion in general. Indeed, many hastily think the opposite and often invoke such an event as the final opportunity for knowing the existence (or non-existence) of a Creator God. In reality, such a meeting, if it were to take place, would not be adequate for bearing such a burden. The prohibitive distances between one civilization and another (even the closest stars would take tens of years to be reached by our radio waves, and we would need the same time to receive theirs) exclude any form of genuine “conversation.” Even if they were to transport massive information prepared with the goal of communicating their physical, biological, and living context to other intelligences (as we terrestrials already have done on some occasions), the messages of a possible extraterrestrial civilization only could be heard, without becoming the object of active dialogue (*detection, not dialogue*). The reception of any message of philosophical, existential, or religious content—if there were common canons for understanding such issues—would represent extremely stimulating information of the highest emotional value, but it would remain an isolated message, awaiting for a better contextualization. With regard to information sent from Earth, there is a circumstance that leads us to reflect. The scientific agencies that prepared specific “bottled messages” directed outside the solar system, both by radio transmissions and through iconographic material, while sending data on humans and their lives decided not to communicate the belief shared by most of the inhabitants of planet Earth that there is a Creator God. The non-apodictic value that an ETI contact would have in religious matters also depends on the fact that any statement for or against the

existence of God (or of *God-like* subjects) communicated to us by any extraterrestrial intelligence, if it were to exceed our empirical knowledge, should be subject to the same criteria of credibility and reasonableness that we apply on Earth for discriminating what could be claimed to be divine revelation and what, on the contrary, could not.

Those who have encountered Jesus Christ and have known the credibility of his love approach the ETI subject with respect and a desire to understand, not with the aim of knowing finally whether their faith in Christ, Son of God, was right or wrong. When it is authentic, the experience of faith invests the believer in such a radical way that he thinks it unnecessary to trade it in favor of approximate or generic information. Such prudence is even more reasonable when we lack the cognitive tools to be able to contextualize correctly information on God or the divine coming from an extra-terrestrial horizon. The analogy of faith and the truth of a love that the believer already has experienced, guide him or her to face the possible news of an extraterrestrial contact with emotion but without dismay, with attention but without anxiety. Reason also should play its part. Metaphysical reflection, for example, would continue to teach us about the reasonableness of the need for an ontological foundation, one that transcends the level of empirical phenomena. On this planet or elsewhere, the quest for a Creator to solve the philosophical problem of contingency of being and time would continue to hold. A good philosophy, certainly shared by any creaturely being, would continue to address questions concerning the formal and final causes of material reality, and would wonder over the ultimate origin of information in nature. From an existential, and thus *intelligent* perspective, it would be unreasonable to think that the main religious questions posed by human life—our discomfort in the face of death, the ultimate reason for one's personal existence, the origin of moral conscience, the meaning of pain and sorrow, especially that of innocent people—will be resolved definitively in materialistic terms by new alien philosophers, given that terrestrial materialists have not been able to provide us with convincing answers despite having many centuries at their disposal to do so. Reason must run its course, on Earth and in other places, most likely reaching the conclusion, on the occasion of a possible meeting with other intelligences outside our planet, that these supreme questions are shared but not resolved through a simple progress of *scientific* knowledge. All human beings who

believe in God certainly would see any possible encounter with non-terrestrial civilizations as a truly extraordinary experience. As worshippers of one God, supreme Life and supreme Goodness, they would be inclined to recognize in other minds a common origin, experience feelings of amazement and deep respect, and see such a historical encounter as a new possibility for understanding better the relationship between God and the whole of creation. If it were not restricted by severe space-time limits and could develop ideally in the form of a true dialogue, the human encountering of ETI would possess a genuinely “religious” dimension, in the highest sense of the term.

From the point of view of a reasonable theological epistemology, there are questions that scientific thought can, and perhaps must, ask to Christian theology: Is faith in God the Creator of heaven and earth, revealed to be One and Triune in Jesus Christ, consistent with the presence of intelligent life in the cosmos? Does our image of God Creator remain meaningful for us, or does it run the risk of betraying an anthropomorphic naïvete, falling into contradictions? What relationship could life in the cosmos have with a God believed to be the ultimate source of all life? There are, instead, other questions that look inconsistent and could not be addressed to Christian theology. For example, we cannot ask theology to explain whether any extraterrestrial intelligence has or does not have “original sin,” whether or not God should incarnate or die on the cross on other inhabited planets, or whether the presence of life on planets other than Earth is confirmed or denied by Sacred Scripture. If theology is not obliged to deal with such questions it is not in order to spare headaches, but simply because they are questions that contain some pre-understandings. Such pre-understandings already condition from the outset the way of approaching this entire, difficult subject matter. The Christian God is not a Platonic god, from whom everything can be deduced. Theology does not have enough data to provide any answer: believers do not know what the economy of revelation of a Creator God should or should not be towards extraterrestrial intelligences, nor what economy of salvation possibly should operate for them. This absence of answers – and this is an important point – does not bias, nor is it detrimental to the “consistency” and “coherence” of the Christian faith, particularly when explained within a scientific context.

Revelation and the history of creation and salvation, certainly open to those canons of universality already mentioned here on several occasions, manifest their hermeneutical, linguistic, and contextual consistency when read and understood in a manner consistent with the purpose for which such revelation and history have been entrusted to us: *propter nos homines et propter nostram salutem* (for us and in order to our salvation), as the Church declared in the Nicea profession of faith (325). The universality and uniqueness of one Creator God undoubtedly imply the universality and uniqueness of the history of the physical cosmos, the same cosmos in which life could originate elsewhere, but they do not necessarily imply the uniqueness of the same history of revelation and salvation.

It is legitimate, instead, to ask theology to indicate whether the question of intelligent life in the cosmos has been addressed by thinkers or theologians over the centuries, examining for example whether prejudicial arguments have been formulated and for what reasons, or to consider whether important doctrinal positions can be deduced from some interventions of the Catholic Magisterium. In the field of Fundamental Theology, it also makes sense to endeavor to show whether and how the image and attributes of the One and Triune God, as revealed by the words of Jesus Christ, continue to be meaningful within a cosmic context, were intelligent life was a fairly widespread phenomenon. And because of the better self-understanding Christianity achieves when addressing to contemporary people shaped by a scientific mentality, theology should explore what the mystery of the Incarnation of the Logos on planet Earth would mean in such an enlarged scenario, what the Easter event would imply for the whole cosmos, and what the headship of Christ over the created universe might entail.

10.4 The meaning and intelligibility of Christian teaching in facing a possible diffusion of life in the cosmos

The possibility and theoretical consequences of the existence of a free and conscious life, outside the canons of unity of the human race as outlined by the Bible, represents one of the greatest speculative efforts for Christian theology. Thus, it is not surprising that many questions perhaps will remain unanswered. The only analogy available is the study of the relationship between Christianity and other world religions, a relatively young discipline albeit of increasing importance in an era of globalization. The study

of this relationship provides useful guidelines for our problem as it obliges us to reflect on the salvific universality of the Incarnation of the Word, on the singularity of the hypostatic union, and on the need not to separate the richness (and in some way the unpredictability) of the creative and salvific action of the Holy Spirit from the mission and role of the Son, to whom the Spirit necessarily must lead. A theology of religions that desires to maintain the singularity and absoluteness of the salvific mediation of Christ recognizes an “inclusive Christocentrism” as the only viable way forward. When our gaze widens and goes beyond earthly religions to also include intelligent life in the cosmos, this road offers only a first approximation, yet it serves as the only one along which we can advance. The challenges that we are facing here truly are unprecedented. The issue of life in the cosmos goes beyond the unity of the human race, which has been created and redeemed in Christ, posing a completely new problem compared to that presented, for example, by the discovery of the American Indians, for whom Pope Paul III (1534–1549) had no difficulty in recognizing their belonging to the descendants of Adam (cf. DH 1495). The only thing we can do is to approach this question in progressive stages. I will consider the topic by privileging, as usual, theological-fundamental aspects related to the significance and credibility of the Word of God.

10.4.1 Appraisal of the “classical” solution, and the universal intelligibility of the image of the One Triune God

The proclamation of the Gospel within cultural or scientific contexts where the question of life in the cosmos could take on the character of challenging the Christian faith, in the first instance, can benefit from the observation that neither the teachings of the Church Magisterium nor most of the theological tradition provide prejudicial arguments against this possibility. The omnipotent will and unfathomable freedom of God the Creator continue to be valid reasons for avoiding any *a priori* preclusion concerning the possible existence of ETL as it is a knowledge belonging to the order of facts. Only history and science can make ETL migrate from the world of possibility to the world of events that have taken place. Acknowledgement of the intrinsic value of life, especially the dignity of intelligent life wherever it may occur, helps us to avoid prejudicial positions. It belongs to the Christian heritage that biological life always has been understood as a participation and reflection of that Life (with a capital L) that believers know

pertaining to the living God, who is the transcendent source of all life. In the same direction, the idea seems to work that biblical Revelation speaks of the existence of *angels*, intelligent living creatures different than human beings, thus showing that the meaning and purpose of creation are not exhausted entirely by the relationship between man and God, and thus remain open to other creatures. Although dependent on God, angelic creatures have a history and an economy of salvation different from that of the human race; they serve the mystery of Christ the Incarnate Word and recognize his headship over them. The reference to angels – and Thomas Aquinas gave reasons of convenience to maintain that their number would be very high, overcoming any material multiplicity⁴⁰ – may help for understanding why an incalculable amount of personal beings, even if different from the human race, are convenient in principle for expressing the wealth and vital fecundity of God the Creator.

Maintaining the singularity of the human race as the only form of intelligent life in the cosmos would represent a sort of “classical solution” for theology. Similarly to what happens in physics, classical solutions express something true that can be interpreted as a particular case of larger solutions, for example relativistic or quantum solutions. In the presence of particular conditions (such as very high speeds or infinitely small dimensions), classical solutions (valid for ordinary speeds and macroscopic bodies) must be abandoned, but the “truth” that they express must be recognized as a particular case within the new, more general system of equations. If the solution interpreting the human being as the only form of intelligent life and free will in the material cosmos were to be abandoned due to evidence of ETL or ETI, then the truth of what the Christian faith is professing concerning the relationship between man and God (classical solution) would be interpreted as a particular case within a new theological framework compatible with a broader notion of divine revelation (new solutions).

From the viewpoint of Revelation’s credibility, a question soon arises for theology. Could a theology that chooses to opt for the “classical” solution be qualified as obsolete and anti-scientific, consequently having its content disqualified when dialoguing with scientific culture? I do not think so. There is no compelling scientific argument today, in the absence of further evidence, that prohibits us

⁴⁰ Cf. S.Th. I, q. 50, a. 3.

from considering the human being as a *unicum*. In this respect, the enormous size of the physical universe does not necessarily mean “redundancy” or cosmic fertility but rather is linked primarily to an anthropic need: the long times required for stars to produce the chemical elements essential to life inevitably lead in an expanding universe to enormous spaces. The long time involved in a cosmic and then biological evolution capable of arriving at the appearance of the human being necessarily results in large space-time horizons and thus in a large quantity of matter, either formed or in formation. Consequently, the probabilistic argument that derives a great diffusion of life in the universe starting solely from the great size of the cosmos, proves to be weakened. On the other hand, this also would weaken the theological argument affirming that many intelligent beings have been created to give glory to God in regions where man could not do so. Even contemporary biology does not veto the uniqueness of the human being. Still ignoring the “ultimate reasons” for life's origin, science cannot know whether life responds to a categorical imperative, as Christian de Duve often affirmed, or if it is a highly unlikely event, as Simon Conway Morris has argued.⁴¹ Finally, Drake's equation, elaborated to calculate the number of active alien civilizations in our galaxy, does not prevent us from considering intelligent life as a unique event. It is well known that this equation is able of expressing and calculating the “necessary,” not the “necessary and sufficient” conditions for the presence of intelligent life. In the absence of compelling scientific data that would oblige theology to adopt a broader, interpretative framework, those who maintain the “classical” solution could not be charged, in my opinion, with naïvete or irrationality.

The image of God conveyed by Judaeo-Christian tradition is neither geocentric nor anthropocentric. It is universal and transcendent, the subject of a creative omnipotence whose extent is as large as the cosmos itself, and certainly not confined to what happens on a local scale. If we were to think of ETI as having the attributes of a free and conscious life, and ETL in general as something implying life's transmission and generation, then the Trinitarian image of God would remain meaningful, universal, and worthwhile also on a cosmic scale, even if ETL or ETI were to become

⁴¹ Cf. Christian de Duve, *Vital Dust. Life as a Cosmic Imperative* (New York: Basic Books, 1995) and Simon Conway Morris, *Life's Solution. Inevitable Humans in a Lonely Universe*.

an experimental fact. The intelligibility of a transcendent and subsistent Paternity and Filiation is linked precisely to the generative process common to every living being, at least when we are no longer concerned with the realm of bacteria and are ready to ascend towards more complex forms of life. In God, as a pure spirit, generation does not involve changes in time or any biological dimension. However, any dissemination of life in the material universe, insofar as it is *life*, can reasonably be considered a reflection at a biological level of God's Trinitarian life. All this would transpire within a cosmos – it should not be forgotten – where everything has the seal of the Word-Son, in whom and through whom all things have been made (cf. John 1:1–3). The existence of a Love-Gift, the Holy Spirit – whose understanding recalls the idea of communion, altruism and donation, certainly not extraneous to the dynamics of a conscious life wherever it has arisen and developed – also maintains an unaltered significance when considered within a cosmic context. In fact, every form of life implies relationships also among subjects who do not belong to their own generative line and thus involves the possibility – or better said, the necessity – of sharing and communion according to a dynamic of gratuitousness. This assertion would be sufficient for discarding the opinion that Christian Revelation, in opening itself to the possibility of ETI, inevitably would have to set aside God's Trinitarian image and accept a sort of “Copernican revolution,” by which all civilizations of the universe would revolve no longer around their own God, but begin to revolve all together around a common but still unknown God, as some today ask Earth's different religions to do.

10.4.2 The cosmic headship of the mystery of the Incarnate Word over the whole creatural order

A crucial point for theology is to be able to demonstrate that the supremacy of the Incarnate Word over all creation, when assessed within the wider context of ETL and especially ETI, leads neither to becoming naïvete, nor anthropomorphism, nor to contradictions. The headship of the mystery of the Incarnation, I emphasize, is neither geocentric nor anthropocentric, but Christocentric; it is logocentric and theocentric in character. It is by virtue of this truth, not in relation to man, that the Paschal Mystery of Christ possesses universal revelatory and salvific value, even though such value has been expressed and realized by means of a truly created humanity. The meaning and value of the Incarnate Word's actions depend

primarily on the divinity of the subject, who is also the only subject of the hypostatic union; it is in a derived and indirect way that they depend on the humanity taken on by the Logos. In this sense, the headship of Jesus Christ, as God and man, over angelic creatures (cf. Heb 1:3–14 and 2:5–18) may be understood as a revelation of his headship over all conceivable creatures (cf. Eph 1:10; Col 1:20). According to such a perspective, if we wish to introduce an analogy of proportionality, we could say that the planet Earth stands at the cosmic-creatural headship of the Incarnate Word, just as the village of Bethlehem stands at the universality of humanity assumed by the Word-Logos in the womb of Mary. Both the planet Earth and Bethlehem are conditions of possibility for something universal to occur. Just as the assumption of a true humanity by the Logos causes all representatives of the human race to be involved normatively in it—even if (and for the most part) unconsciously—likewise the assumption by the Logos of the “creaturality” that humanity entails, that is, His taking on matter and life in space and time, causes every creature in the universe mysteriously to be involved in it, even if unconsciously.

The infinite greatness of the hypostatic union, descending from the infinite pole of the Word-Logos, attributes an infinite meritorious value to the sacrifice of Jesus Christ and to his Paschal Mystery, the creaturely and finite pole toward which this descent is directed. The “absolute” character of what Christians believe happened on Earth in the person of Jesus of Nazareth does not depend on whatever importance a specific biological species, the human race, might hold in the eyes of God, in a way that becomes normative for the whole universe. It depends rather on the importance of the salvific decision through which the Creator Logos of the universe, entering into space and time and taking upon himself the matter of the cosmos, desired to become flesh, that is, a “creature” in the womb of Mary, who is the womb of a people experiencing a specific salvation history. Christians affirm that all peoples of every nation and culture—past, present, and future—participate in the mystery of Jesus Christ because they are *human beings*. Analogously, Christians also reasonably could affirm that any intelligent creatures, wherever conscience and freedom have flourished in the physical universe, all participate in the mystery of the Incarnate Word because they are *creatures*.

How such revelatory and salvific value is applicable to the whole universe remains a mystery for Christian theology. However,

theology can affirm reasonably that it is not by multiplying incarnations or sacrifices of the cross that the headship of Christ, the Incarnate Word, achieves cosmic meaningfulness and becomes more intelligible. Just as, by analogy, it is not by multiplying sacrifices that the celebration of the Holy Mass applies the fruits of redemption across different times and places, but by re-presenting one and the same historical event, having occurred once for all. Supporting the uniqueness of the Incarnation is not opposed to a cosmic understanding of Christ's headship over the whole of universe. Starting from the data that theology knows, and in light of our scientific understanding of the physical universe, I do not think that the uniqueness of the Incarnation should imply a sort of "cosmic mission" for humanity. The idea that human beings are the interplanetary mediators of a universal economy of salvation to be administered according to some future modality does not seem tenable. As we know, the times and spaces for communication, interaction or dialogue with any extraterrestrial civilizations are incompatible with the space-time window in which *Homo sapiens* expresses its vital parable, at least in the only future that we could imagine today, one in which our physics will continue to hold. The cosmic extension of any mission of revelation and salvation, wherever necessary or convenient, must be guided and administered only by the Holy Spirit, who certainly is the Only One able to ensure such a mission's universality and interiorization, according to a logic that is independent of human history and might operate in ways unknown to us. As it occurs in the earthly economy of salvation, also within a cosmic context the Holy Spirit would lead to the Logos and make him mysteriously present somehow, for the Creator has his ways of being recognized by his creatures and manifesting his salvific love in every place and time.

As already indicated, we cannot speak to the moral vicissitudes of possible intelligent beings responsible for their personal freedom before God the Father and Creator of all (cf. Eph 4:6). However, we can say, *creatures as they are*, that the mystery of Christ the Incarnate Word is not foreign to them. God has assumed in Jesus of Nazareth a created nature, and a finite will and freedom, making His own the experience of limits and creaturality. This descending love has a value that certainly goes beyond the human creature insofar as he is "human." Jesus Christ also took upon himself the reality of death, revealing that death is not the last word over creation. In his risen body, Jesus prefigured a destiny that concerns all of creation and not

only humanity (cf. Rom 8:22–23), because the entire universe belongs to the Paschal Mystery of Christ. What significance might this association to Christ's mystery have now for other creatures whose original (and originating) relationships with God we ignore?

Within a perspective in which biological death is understood to be a consequence that depends directly, totally and exclusively on Adam's original sin, Christian theology would have nothing more to say, and we still would have to wait for theological clarification to improve our comprehension of what creation is before its Creator. From a theological perspective that, instead, reads biological death as something intrinsic to finite creaturalty—as the end of the life cycle of every living being, for life is nothing but a thermodynamic system open to the environment that follows a progressively inevitable degradation—then the reality of death would belong to every living being insofar as it is *living*. In particular, every free intelligent being who inhabits the cosmos and is aware of this inevitable stage of his life could experience death as the existential place of the conscious acceptance of his own creaturalty and finiteness, the place of a supreme experience, one to which Christ's death on the cross would still have much to say. We understand, then, why Christ's resurrection would also have much to say to any finite creature subject to death. This assertion holds true even if Christ's resurrection were to remain formally unknown to other intelligent beings, as is already the case for the vast majority of people on planet Earth who, according to the Second Vatican Council, nevertheless mysteriously are able to be reached by the merits of Jesus Christ (cf. GS, 22; LG, 16). The mystery of the Incarnate Word, therefore, maintains profound meaning even within a large cosmic horizon characterized by the presence of intelligent and free extraterrestrial creatures, far from any criticism of those who see in that mystery a naïve anthropomorphism or a no longer sustainable anthropocentrism.

Concerning the huge issue of the connection between sin and freedom, such a potential link would involve the personal, free history of other intelligent beings in ways unknown to us, and thus it is impossible to formulate any deductive *a priori* hypothesis in this regard. In the only two cases that theology knows, the human race and the angelic creatures, we should conclude by induction, that this association has always occurred. Sin certainly does not belong to the perfection of freedom, when freedom is understood as recognizing and achieving the good—and then the ultimate good which is God

himself. However, the possibility of committing sin seems to be at least one of the conditions for freedom, and this notion also would contribute to making Christian redemption less extraneous to any free creatures not even belonging to the human race.

I do not feel that the debate on extraterrestrial life represents for Christian theology, as maintained by some, the crucial forum for critical verification of its central content in the face of scientific reason. In any case, it represents a point of great importance for a better understanding of the core of Christianity, and an extraordinary stimulus for increasing the intelligibility of a number of theological formulations. I think that the essential Christian dogmatic content, when explained and “translated” in an appropriate way, would keep its meaning unchanged even in the midst of such newly challenging and always possible cosmic contexts. In all of these issues, there are some firm points and open room for further reflection. As pointed out previously, there is a “classical” solution, that of the uniqueness of the human race, which in the absence of compelling evidence would not seem correct to consider as obsolete merely on the basis of the opening of horizons brought about by contemporary cosmology. The last word on the question of extraterrestrial life must not come from theology, but from science. The existence of intelligent life on planets other than Earth is neither required nor excluded by any theological argument. Theologians, like the rest of the human race, will just have to wait and see.

CHAPTER 11. PHILOSOPHICAL DARWINISM AND THE CRITIQUE OF GOD'S REVELATION IN NATURE AND HISTORY

From the first half of the 19th century, the idea that the natural world has been entrusted to itself and contains its own dynamisms has gained ground progressively, first in the scientific field and then in the more general fields of philosophy and culture. The study of biological evolution has revealed the existence of competition between different species, while at a physical level it has become increasingly clear that natural history has led and continues to lead to substantial changes, destructions and renewals. There has come to be a growing awareness of the fragility of life – and of human life in particular – against the background of a relationship with nature that no longer can be described in terms of intuitive harmony, nor interpreted as the result of a naïve and well-disposed finalism. Periods of stability and equilibrium are only short windows in a natural world marked by continuous transformations and upheavals. The idea of a cosmos capable of revealing, spontaneously and without any special philosophical mediation, the presence of a Providence that presides over and guides the fate of nature and the development of life with wisdom and gentleness while directing everything towards its end, is thus questioned progressively. Within a classical harmonic vision, the occurrence of events appearing as deviations from the established order was understood easily as the action of Divine Providence, aimed at healing and correcting. Now every natural event, whether auspicious or inauspicious, is described in terms of autonomous laws to which the material universe obeys without exception. The physical and biological cosmos knows not only laws of life but also laws of death. During the second half of the 19th century and then into the 20th century, the lack of familiarity with a metaphysically inspired philosophy of nature, capable of satisfactorily addressing the relationship between Creator and creature, contributed to transforming this new understanding of nature into a critique of God's revelation in the world and of his providential action in history.

The thesis that the main person responsible for this conceptual and substantive change was Charles Robert Darwin (1809–1882) persists to the present day. However, it would be much more precise to attribute the cause of this change of vision to the system of thought commonly referred to as “Darwinism,” which is much more philosophical than biological in character. Philosophical Darwinism attempts to explain on a large scale—but also extrapolates and manages in various ways—the insights gained by the English naturalist in the field of biology, especially those related to the struggle for life: survival of the fittest is caused by chance genetic mutations that turn out to be more useful for feeding and sexual reproduction. Only history will tell us who is the winner in this contest for survival. Thus understood, Darwinism flows into historicism and evolutionism, philosophical stances that were prior to Darwin and developed by G.W.F. Hegel and H. Spencer. In addition, atheistic materialism and the dialectical philosophy of nature, both rooted in the social and political thought of K. Marx and F. Engels, made substantial use of this view. All of these thinkers handed down a legacy that led to the progressive elaboration of a new and keener criticism of religion: a denial of God commonly called “evolutionary materialism,” the contemporary variant of which is represented by philosophical “naturalism.” The scientific context of Darwin's studies and the scientific import of the term “evolution” made it possible for such philosophical criticism to be perceived by wide layers of public opinion as a “scientific negation” of God or, in any case, as a scientific vision of nature alternative to the religious view of nature widely accepted until that time. The variety of morphologies shown by living beings and their harmony with an environment that appeared aimed solely at life, especially at human life, until then explained through the idea of Providence and divine causality, afterward became interpreted as the effect of chance and natural selection. Contemporary times have inherited this state of affairs, but without providing due clarifications concerning the difference between the scientific and philosophical levels, thus generating ambiguity and misunderstanding. Evidence of this is in opposing interpretations of Darwin's work still present today. Some authors attribute to the English naturalist the merit of having rendered great service to the faith, purifying religion from a false image of God, while others consider him praiseworthy for having freed humanity from all kinds of anti-scientific beliefs, including the Christian faith.

The sheer number of historical, philosophical, and theological clarifications that have developed over time in order to provide a correct hermeneutics of Darwinism preclude me from providing detailed reference to them here. They include: biographical aspects, as Darwin never intended to use the theory of biological evolution through natural selection as a tool to deny the existence of a Creator God; epistemological aspects, on the basis of which one may easily highlight the metempirical and extra-scientific dimensions that Darwinism assumes when grounding claims in the field of philosophy or religion; and theological aspects, for we certainly can develop a Christian theology of creation that is compatible with the idea of an evolving world, independently of the mechanisms proposed to drive evolution (natural selection included). Finally, aspects are also present internal to the scientific debate itself, with some authors believing that classical Darwinian mechanisms should be flanked, and in part completed, by other mechanisms for a more satisfactory interpretation of the global action of biological evolution in determining the emergence and transformation of species. Despite the aforementioned clarifications—effective within a restricted intellectual field, but difficult to convey to the general public—the idea still holds that the two basic mechanisms invoked by Darwinism, namely random and aleatory mutation in the transmission of hereditary traits (which today we know is expressed by the genetic code) and the survival by natural selection of the fittest individuals, have stripped nature definitively of all traces of meaning and purpose.¹ In this manner, the thesis that natural

¹ As known, the studies of Gregor Mendel (1822–1884) on hereditary transmission, which highlighted the existence of dominant and recessive characteristics as well as the difference between genotype and phenotype, remained neglected for a long time, and they had to wait the development of molecular biology and genetics as such to gain further attention. Beginning in the 1940s, authors such as E. Mayr, T. Dobzhansky, G. Simpson, and L. Stebbins, using the knowledge acquired from the discovery of chromosomes and the development of genetics, formulated a “synthetic theory of evolution,” the so-called “Modern Synthesis,” from which contemporary neo-Darwinism originates. The cause of random variations in hereditary characteristics as reported by Darwin would be identified by scholars of the Modern Synthesis as random mutations of genetic material. According to their theory, the most suitable characteristics are “filtered” by natural selection within a given historical-environmental context. It is worth mentioning that, nowadays, a potential “paradigm shift” in evolutionary biology is taking place, with several scholars in the field advocating an “Extended Evolutionary Synthesis”. This novel theoretical development, supported by several new findings, tends to acknowledge that the causes of the emergence of biological

phenomena, particularly those of a biological nature, could reveal some form of finality at the level of philosophical analysis would be invalidated forever. The world of life would be governed solely by the casuality with which different morphologies succeed one another and by the struggle for survival that leaves the most suitable ones alive, causing the weakest to perish. Here, suffering and groaning have taken the place of joy and praise.

Thus understood, philosophical Darwinism would attack the foundations of the Christian vision of Providence, at least as the latter is commonly perceived. God's revelation in creation is denied, stripping nature of those characteristics of harmony, beauty, and finality that were (and still are) invoked to show the signs of an intelligent Creator. A theology of Revelation within an interdisciplinary context then should tackle two main issues. The first is to question whether and to what extent it is still significant today to guide the interlocutor's gaze towards nature, so as to exhort him or her to recognize the traces of a finalism capable of leading from creatures up to the Creator—in other words, whether nature still serves as a preamble of faith, as a sign that might prepare us to listen to divine revelation. The second issue concerns how to defend the significance (and credibility) of a God-Creator who providentially loves his creatures, if physical evil is now recognized as an intrinsic characteristic of the natural world. I refer here both to cosmic evil proceeding from the harmful action of laws of nature and to physical evil in a biological perspective. Regarding the latter, natural selection and survival of the fittest would reveal the evolution of life and the progressive appearance of increasingly complex and organized forms to be a truly dramatic and bloody process.

11.1 Knowing God starting from Nature: the Darwinian criticism of Natural Theology

11.1.1 Darwinian mechanisms of biological evolution and natural theology

The criticism of Darwinism by natural theology also indirectly affects the theology of Revelation. Even though Revelation and natural theology concern two different perspectives, it is basically the “connection” between them that philosophical Darwinism puts

novelties (those that will eventually undergo natural selection) cannot be reduced to genetic mutations and that organisms are able, by shaping their environment, to buffer the selective pressure on themselves and their progeny.

into question.² If philosophical reflections on nature aimed at manifesting it as a work of God are no longer possible; if nature no longer can host any sign capable of referring to God—if all this is true, then any claim to present nature as a place for God's revelation inevitably fails. An evocative biblical expression, such as “The heavens declare the glory of God; the firmament proclaims the works of his hands” (Ps 19:2), would no longer have anything to evoke or mean. Therefore, it is necessary to understand what specific natural theology Darwinism has criticized (successfully) and which natural theology instead is foreign to such criticism because it transcends the conceptual categories accessible to the scientific observation of nature.

Originally, Darwinism confronted (and clashed with) the natural theology defended by William Paley in his work *Natural Theology* (1802).³ Paley's work, although with some differences, was representative of an apologetic tradition that is usually referenced in terms of Robert Boyle (1627–1691), but whose prominent exponents in Britain included John Ray (*Wisdom of God*, 1691) and William Derham (*Physico-Theology*, 1713). Following dissimilar, and sometimes naïve yet sometimes more balanced philosophical paths, these authors sought to demonstrate the existence of an intelligent Creator by drawing attention to the order of the cosmos, the regularity of the motion of celestial bodies, the morphology of the living and the complexity of their organs. This “demonstration” also was supported by observing the surprising agreement between living beings and the *habitats* in which they had developed and dwelled. Strictly speaking, these authors did not develop metaphysical arguments or compelling logical inferences, but rather considerations of a heuristic nature. *Design*, and thus a divine Author, could have been recognized in nature simply by observing the natural world, just as by observing the complexity and coordination of the pieces of a clock—this was the metaphor

² See the essentials of this debate in: Alister McGrath, *Darwinism and the Divine. Evolutionary Thought and Natural Theology* (Oxford: Wiley - Blackwell, 2011); John Haught, *God after Darwin. A Theology of Evolution* (Boulder, CO - Oxford: Westview Press, 2000); and Robert Spaemann, Reinhard Löw, *Natürliche Ziele* (Stuttgert: Klett-Cotta, 2005).

³ William Paley, *Natural Theology. Or, Evidences of the Existence and Attributes of the Deity Collected from the Appearances of Nature* (London: R. Faulder, 1802). The work was reprinted for over a century, with more than 50 editions in Great Britain. It was most widely disseminated from 1835 onwards.

originally introduced by Paley—one could have guessed the existence of a *designer*.

Since the publication of Charles Darwin's *The Origin of Species* (1859), the situation has changed. Following the English naturalist, it is argued that the random occurrence of heritable characteristics, along with the subsequent natural selection of those same characteristics, was able to cause a biological evolution of forms and organic functions, giving rise to precise relationships between the living and the environment. The final products of this *natural* process are precisely the regularity and harmony observed in the world of living beings, and which until then falsely had suggested the presence of a divine Agent. Those features that Paley intended to be a demonstration of a design conceived by a Creator were then explained without the need for any project or designer. Those morphologies whose beauty and complexity were so surprising could now be read as a product—one among many possible—that natural selection and survival of the fittest had “filtered” through the long natural history of biological species and their progressive transformations. Unlike what Paley and the entire cultural-religious establishment had claimed up to that moment, the forms of living beings had not been “willed” directly and immediately by anyone, but were simply the effect of numerous trials, failures, and adaptations. The evolution suggested by Darwin had followed roads taken in a totally contingent way, and as these could lead to many other destinations, they had led fortuitously to the biological species that we know, including the human species. What was denied, therefore, was the image of a God-Creator responsible for having willed all natural things as they are. The forms appearing in nature, in reality, had not been foreseen by anyone but simply presented themselves like this. What for naturalists before Darwin could be imagined still as a “tree of life” then became manifested as a “bush”: You grow where and how you can. The most shocking aspect of the new vision was that biological evolution did not show a harmonious and idyllic process at all: species struggle to survive, habitat is often adverse to life, and the history of life on Earth—even that of the genus *Homo*—has experienced natural disasters, suffering, and extinction. Therefore, the image of a God-Creator who prepares an adequate habitat for the living beings of the planet, and provides for a gradual ascent of the various biological species up to man as the royal crowning glory of all creation, seemed no longer credible. In more severe terms, so understood, evolution would deny

Providence. Even if Darwin did not directly support such conclusions, which are clearly pertinent to a philosophical and not to a biological plan, the new vision of nature brought about by his theory seemed to imply them and soon ended up demanding them mandatorily.

The weakness of William Paley's natural theology became more evident as the observations he had judged to be empirical effects of God's existence were susceptible to alternative explanations. Paley presented a static view of nature, implicitly derived from a naïve reading of the biblical texts that seemed to describe an immediate and coeval creation of all the different biological species. This natural theology did not consider the phenomenon of the extinction of species (which already was available in part from a correct interpretation of fossils) and excluded chance as a component of natural history, something that should be taken into account at some level. Indeed, the philosophical weakness of natural theology so conceived was evident prior to Darwinism. Paley's arguments did not provide any metaphysical framework for the relationship between First Cause and secondary causes. Moreover, he mistakenly assimilated secondary causality to the action of instrumental causes, which receive their operativity from an external agent (while, on the contrary, secondary causes work due to their own and intrinsic capabilities). In a sense, Paley's *Natural Theology* was a popular work of apologetics for common people, not a philosophical study addressed to intellectuals. It looked a bit more like a catechism for children, certainly not a mature work of synthesis between faith and reason. Its author did not imagine that in a mechanistic system, basically the one that he was handling, adaptability and proper functioning could be a "downstream" result without referring necessarily to the existence of an "upstream" design. Darwin's opposition to a natural theology thus understood—one that his theory of natural selection easily replaced—was clear and easily understandable:

The old argument from design in Nature, as given by Paley, which formerly seemed to me so conclusive, fails, now that the law of natural selection has been discovered. We can no longer argue that, for instance, the beautiful hinge of a bivalve shell must have been made by an intelligent being,

like the hinge of a door by man. There seems to be no more design in the variability of organic beings, and in the action of natural selection, than in the course which the wind blows.⁴

Thomas Huxley's reading of Darwinian work is likewise sharp and clear: "teleology, as commonly understood, has received its deathblow at Mr Darwin's hands."⁵ As mentioned above, *starting from biological evolution* we will not find in Darwin a denial of the existence of God, or of the plausibility of a theological notion of creation. We will find only the rejection of the kind of natural theology with which he had come into contact through Paley's work. Concerning Paley's stance, Darwin above all could not accept the idea of a "special creation," that is, the idea of a divine immediate creation of all the different biological species, understood as one near the other.⁶ Nevertheless, beginning from Darwin's work (and in a certain way beyond it), the conviction of an irreducible and unavoidable opposition between Darwinism and teleology would be affirmed progressively in cultural circles and public opinion, however content one wished to associate the term with "teleology." As a result, Darwin's theory of biological evolution was considered by the majority of people to be "the triumph of dynamic and non-teleological accounts of nature; of chance and change over design and permanence; of secularism and naturalism over clericalism and supernaturalism."⁷

Claiming that Darwinian mechanisms of biological evolution contradict *any* teleological views of nature, thus excluding any path that might lead from creatures to Creator, would be the same as affirming ingenuously that natural theology was born and ended with William Paley. Augustine, Thomas Aquinas, and Calvin, just to mention a few, developed a natural theology based on arguments very different from those used by Paley, whose approach also was

⁴ Charles Robert Darwin, *Life and Letters of Charles Darwin*, 3 vols. (London: John Murray, 1887), 1: 309.

⁵ Thomas Huxley, *Lay Sermons, Addresses and Reviews* (London: Macmillan, 1970), 301.

⁶ Darwin supports this thesis in his second *Essay on the Origin of Species* (1844). In the *First Essay* (1842), whose material, together with the notes of the 1844 *Essay*, then would merge into *The Origin of Species* (1859), Darwin considers that the role of a hypothetical Creator, correctly understood, can be in harmony with the evolution of biological species.

⁷ McGrath, *Darwinism and the Divine*, 108.

not shared by other English apologists or thinkers such as Lord Brougham (1778–1868), William Whewell (1794–1866) or, a short time later, John Henry Newman (1801–1890). None of these authors speak of “evidence” of the existence of an intelligent Creator, deduced from empirical analysis. When only scientific observation of nature is working, and not metaphysical or philosophical inference, they invite recognizing “clues” and “signs” in nature of the presence of a Creator, not a scientific demonstration of his action. Signs and clues, it should not be forgotten, are grasped by a personal subject and not by the scientific method; they appeal to common sense and informal judgments, not to mathematical proofs. From the Fathers of the Church to the present day, more strictly philosophical paths and different forms of natural theology were proposed to infer the existence of an Absolute, the Foundation of the Being. All of these paths start from observable reality and end with propaedeutic, yet not demonstrative, philosophical images of the one God who created heaven and earth. It is in this sense that a famous statement of J.H. Newman should be understood: “I believe in design because I believe in God; not in God because I see design.”⁸ The God to whom Newman refers here is not a philosophical image, but the personal God of Revelation, the only one capable of ensuring that, beyond disorder or suffering, a providential design must exist and the only one capable of showing himself as a Subject of mercy and love. In any case, beginning from the 17th century onward, proper evaluation of the relationship between the God revealed in Jesus Christ and the philosophical images of God associated with certain forms of natural theology remains a delicate matter. Such difficulty is evident, for instance, in the twofold direction that natural theology took at the time. A first direction led to deism, affirmed in the Enlightenment as the polemical alternative of reason to the God of Revelation; the second concerned the “God of the gaps,” or the attempt made by a concordist apologetic to “confirm” the God of Scripture by providing some scientific, empirical reasoning. As we know, both results presented ambiguity and led to misunderstanding.

⁸ John H. Newman, *Letter to W.R. Brownlow*, April 13, 1870, in *The Letters and Diaries of J.H. Newman*, 31 vols. (eds. C. Dessain and T. Gornall; Oxford: Clarendon Press, 1963–2006), 25: 97.

11.1.2 Teleology and intentional, purposive finalism

In order to assess whether Darwinism constitutes an irreformable criticism of teleology, a brief clarification of the very concept of “teleology” is necessary here. The semantic range of this notion is much wider than that implied in the original debate provoked by Darwin's theory of evolution. The latter, as we have seen, was concerned with showing that there was no reason to invoke a finalistic principle outside the natural order. Operating at the level of empirical phenomena like the actions of an extrinsic agent, this principle would have guided and changed the morphology of living beings and their organs towards the appearance and characteristics observed today. Such morphologies and characteristics were to be interpreted, on the contrary, as due totally to the natural selection of individuals who were successful in the process of the struggle for life.

In philosophy however, the idea of finality in nature has had different facets and meanings, well beyond those raised by the original debate on Darwinism. The Platonic perspective, for example, placed the cause of finality in the world of Ideas, thus understanding it as a motion having transcendent origin. The Aristotelian perspective instead recognized finality as immanent to the natural world. Indeed, Aristotle saw this notion expressed in the meaning of the very concept of nature (Gr. φύσις), something growing and developing according to an inner law. Aquinas chooses the Aristotelian approach but linked the ultimate reason for having a φύσις, as well as the ultimate reason for the being of all things, to the *transcendent* and creative causality of God. The “solution” to the problem of relationship between Creator and creature, and of how to ascribe true autonomy to the latter, is sought successfully by Aquinas within the framework of the metaphysics of *actus essendi*.⁹ By applying a methodological reductionism necessary for the mathematization and reproducibility of phenomena, XVII-century scientific thought would leave implicit those concepts which concerned philosophy of nature (by forgetting them): the formal and final causes were placed in brackets, while only efficient causality, concerning the level of experimental measures, was addressed. Doing so contributed to eliminating reference to any question

⁹ Cf. Tanzella-Nitti, *The Aristotelian-Thomistic Concept of Nature and the Contemporary Scientific Debate on the Meaning of Natural Laws Acta Philosophica*, 6 (1997), 237–264.

dealing with purpose, up to that moment being necessary for understanding what happened in the natural world and *why* it happened. The subsequent confluence of methodological reductionism into forms of ontological reductionism, as well as the materialistic outcome of much of the scientific thought of the 19th century, became bound ever more closely to the negation of finality (reductionism) and to the negation of a principle of creation (materialism). These details illustrate the intellectual climate that welcomed Darwinism in Europe during the second half of the 19th century. Today's denial of teleology still follows that philosophical climate in its intention to have recourse, rightly or wrongly, to Darwinism.

Once a principle of creation is involved, the debate is no longer about whether or not it is possible to recognize the presence of purposes in nature, and their origins. Rather, it is aimed, in a direct way, at denying the existence of a creative purpose and, therefore, of the *intentional purpose of a personal Creator*. The instrument used to deny the existence of personal intentionality is precisely the invocation of chance and contingency as factors governing the Darwinian mechanisms of biological evolution. In more precise *philosophical* terms, the presumed denial of teleology operating within Darwinism can then be translated into a confrontation between chance and purpose, or between chance and personal intentionality. The point at stake is to understand whether the ways in which chance can be thematized biologically by Darwinian mechanisms are adequate or not for denying the existence of a finality at the intentional level, an expression of the intelligence and providence of a Creator God. In reality, the philosophical affirmation of such finality—a “condition of possibility” so that nature can speak of God and God can speak through nature—concerns the highest level of purpose. Here, the debate over finality does not concern the mere existence of regularity or forms always showing the same behavior at a physical or biological level, nor the presence of teleonomies immanent to biological processes, such as homeostasis, self-repair, or embryogenesis. The affirmation or negation of teleology here implies the affirmation or negation of the finalistic project of a Creator, of an intentional personal intelligence understood as the ultimate reason for why things are as they are and not otherwise. The crucial question, then, is the following: Is this *the kind of teleology* that Darwinism has dismissed? After having clarified the different levels of finality, this is the matter I address now.

A balanced judgment summarizing the way of approaching the problem still current today is that formulated as early as 1887 by Thomas Huxley, in a conference entitled *On the Reception of the "Origin of Species."* On that occasion, the English biologist made it clear that the Darwinian perspective had not radicalized the use of chance when invoking it as a general explanation of everything that happened in the world of the living nor even less as the ultimate explanation of reality.¹⁰ This non-radical interpretation of chance, as if it were a philosophical absolute, can be traced back to Darwin himself. In his correspondence, Darwin couples the action of randomness – typical of the variations occurring in what we know today to be genetic material – with the action of stable laws of nature necessary for evolutionary processes to follow their course.¹¹ A philosophy of nature continues to be necessary even for an evolving world. In such a world, there is still a need for formal causes, information, and stable laws. According to Huxley, Darwin did not replace teleology, but rather *a certain type* of teleology. One could, and indeed had to continue reasoning in terms of ends and purposes in order to understand the development and meaning of biological phenomena. Darwin's theory could not be presented as an antitheistic vision. As Darwin himself repeatedly stated, biological evolution was neither in favor of nor against the existence of God.

Darwinian evolutionary mechanisms do not oppose a teleological outlook on life if teleology means here, in its strongest sense, how the world is the purposeful effect of a Creator God, that is: a transcendent God *intentionally willed* every living being as we know it, and thus he also willed the human being. Only the idea of a "radical, philosophical chance" could oppose such an outlook, as happened in the past in the atomistic materialism of Democritus and Lucretius. Darwinian mechanisms, however, do not concern any notion of chance philosophically understood as the direct denial of any final intentionality; rather, they concern empirical randomness and, therefore, with computational randomness. It expresses our

¹⁰ Cf. McGrath, *Darwinism and the Divine*, 186–187 and 160–166.

¹¹ "I cannot anyhow be contented to view this wonderful universe and especially the nature of man, and to conclude that everything is the result of brute force. I am inclined to look at everything as resulting from designed laws, with the details, whether good or bad, left to the working out of what we may call chance. Not that this notion at all satisfies me. I feel most deeply that the whole subject is too profound for the human intellect." Darwin, *Letter to Asa Gray*, May 22, 1860, *Life and Letters of Charles Darwin*, 2: 312.

inability to predict in mathematical terms the occurrence of a certain phenomenon, or even the impossibility of calculating the probability that it may occur. We refer to this type of randomness when speaking of “random” genetic mutations, like errors in the transcription of genetic material from one generation to another. To this notion of randomness, we also refer different contingent phenomena responsible for directing the slow evolutionary path along roads leading to different living species, their morphologies and their transformations.¹² The randomness that operates during evolution by natural selection, to put it in a certain way, “navigates” in the sea of physical and chemical laws, which certainly are not a prototype of philosophical chance. The exploration of environmental characteristics by new biological forms and varieties that evolution produces is not completely aleatory; success in the improved coordination of a new function with other existing functions of the living being is not aleatory; and the general law that prompts the living being to survive, to safeguard its life and reproduce, is not aleatory.

Randomness certainly is one of the drivers of the evolutionary process. However, we know today that the *final result* may not be random, as shown by the debate between the positions of two contemporary authors, Stephen J. Gould (1941–2002) and Simon Conway Morris (b. 1951). Gould interprets the results “downstream” as due totally to contingent and never reproducible phenomena. If the ideal film of natural history were to be restarted, evolution always would lead to different forms. Conway Morris argues rather that the evolutionary process necessarily tends, even in very different environments, towards converging morphologies, as an expression of stable solutions achieved by the living.¹³

A scientific reading of empirical phenomena, such as a reading of biological evolution limited to the analysis of random processes, remains in itself incapable of denying the presence of intentional

¹² With regard to the first form of randomness, it also should be noted that it is largely due to our ignorance of the causes of so-called “transcription errors” of the genetic code, errors hitherto attributed to random phenomena, but that in the future could be accounted for satisfactorily due to connections with laws thus far unknown.

¹³ Cf. Steven J. Gould, *The Structure of Evolutionary Theory* (London - Cambridge: Harvard University Press, 2002) and *Wonderful Life* (London - New York: Norton, 1990); Simon Conway Morris, *The Deep Structure of Biology* (West Conshohocken, PA: The John Templeton Foundation Press, 2008) and *Life's Solution: Inevitable Humans in a Lonely Universe* (New York: Cambridge University Press, 2004).

purposes that transcend the empirical order. In fact, from a scientific point of view, it would not make sense to ask whether it was a blind game of chance or the existence of a transcendent finality that "guided" evolution. Who would assert, for example, that what appears in our eyes to be pure gambling does not follow the hidden purpose of Him who possesses all the rules of the game, that is, a transcendent Creator? Let us think, by analogy, of what happens in the process of human fertilization. We know that only one of the many male reproductive sperm cells reaches the female egg cell and does so in a completely random way, that is, in a manner formally unpredictable, nor algorithmically representable. Nevertheless, from this randomness we cannot conclude that the *ultimate reason* for the very existence of the new human person resulting from this fortuitous encounter is pure and simple chance. We cannot deny, at the philosophical level, that *this* baby is intentionally loved and willed by God the Creator. A false opposition between science and theology can arise when the randomness or indeterminism of a natural phenomenon is transformed into some philosophical stance, affirming that the world does not answer to any project, as if it had no Creator. From this point of view, classical Darwinism easily could be turned into a *philosophical* thesis, as its mechanisms could be read (and so was done by many) within a materialistic perspective based on the randomness of genetic mutations and on the survival of the fittest.

Consequently, we understand why, when Pius XII blames evolutionism in his encyclical *Humani Generis* (1950), he speaks within the context of historicism and materialism, that is, by referring to philosophies closed to transcendence (cf. DH 3877-3878). It is not evolution that opposes God the Creator, but materialism, a view still present today in some pseudoscientific ways of commenting on Darwin's work. A completely materialistic conception of evolution does not seem feasible. If evolution seeks to describe consistently what happens in nature, it must presuppose the presence of natural laws, of formal causes, and of a positive quantity of information beyond matter, randomness, and pure chance. In short, evolution needs notions that are partially non-material in scope, concepts belonging to a philosophy of nature that is open to the causality of a transcendent Logos, something beyond the empirical order.

11.1.3 *Speaking of God starting from nature*

In the study of the physical and biological phenomenology of the universe, the scientific method does not oblige us to deny some forms of teleology that can be interpreted as “signs,” that is, clues that appeal and make plausible a *philosophical* reflection on the dependence of the cosmos on a Creator God, the Final Cause of all that exists. Indeed, the testimonies of many men and women in science seem to provide indications supporting that such signs exist, and they are available for semiotic analysis, which is meaningful for framing the relationship between faith and reason. Such analysis begins with the observation of nature but transcends the scientific method. It performs a heuristic judgment of synthetic character, capable of linking scientific knowledge to the other experiences of the knowing subject.

Upon closer inspection, there is no lack of natural phenomena available for being interpreted in teleological terms. Time has an irreversible direction and is linked to the irreversibility of the second law of thermodynamics, which governs both physical phenomena and the world of life, with each living being as an open thermodynamic system in interaction with the environment. Although regulated by random phenomena and travelling in an ocean of contingencies, the universe historically has progressed from consisting of very simple and elementary forms to compound and increasingly complex forms. The chemical elements that originated at the beginning of the universe’s cosmological expansion, essentially hydrogen with a small portion of helium, have transformed gradually within the stellar nuclei into heavier elements, which are responsible for better efficiency in energy production: carbon, nitrogen, and oxygen, among others. Historically, physical laws made it possible for elementary particles to give rise to atoms, and then to molecules with complex and organized structures. Specific laws have regulated the concentration of matter in galaxies, within which several generations of stars have transpired and given rise to planets around them. This passage from simple to complex also is representative of what happened in the origin and development of life. From very simple unicellular organisms that have dominated the oceans for over two billion years, organized forms of life subsequently have evolved, with increasing functionality and complexity—from the sea to the conquest of the earth, and then finally up to the conquest of the air. On the earth, a slow path began from mammals towards primates

according to a progressive cerebralization, which reaches its most complex structure in the human brain. It is also part of our scientific observations that humans possess functions not shared with other primates (for example, culture, progress, free will, or in any case an incomplete dependence on the instinctive sphere), which place them at the top of an evolutionary path that in a certain way is unique. Despite the fact that several hundred million years have transpired from the beginning of the Cambrian era to the present day, no other animal species have yet appeared having characteristics even similar to those of *Homo sapiens*.

Whether or not one uses the term “teleology” to indicate phenomena such as those just mentioned may be a matter of taste. However, it is philosophically reasonable to argue that these phenomena are clues signaling continuous progress, signs of a “direction” that seems to lead first life on Earth, and then the human being as a final result.¹⁴ What on the empirical and merely quantitative level appears as coordination, organization, or teleonomy does not imply the inference of a personal, intentional purpose. Purposiveness is recognizable only thanks to a philosophical abstraction, yet scientists can judge that inference as acceptable and reasonable. The whole history of the cosmos, with its progressive organization and orientation towards life, is itself a sign – a sign that appeals and, to a certain extent, amazes.

The Creator's intentionality, a *Logos* existing beyond phenomena and at the ultimate foundation of reality, can reasonably serve as the author of those “ends” that, at the empirical level, result in “directions” observable by science. A scientific context that hosts lively debate on the possible directionality taken by cosmic evolution is the Anthropic Principle, namely the observations that gave rise to its weak form, to which I referred previously. Although belonging to a material universe where Darwinian mechanisms are at work, the fine-tuning of the cosmic conditions necessary to host life cannot be interpreted in terms of natural selection. They could

¹⁴ It is noteworthy that Theodosius Dobzhansky, one of the fathers of the Modern Synthesis and among the authors who have contributed most to the theory of biological evolution, in the last chapter of one of his philosophical essays supports the idea that the evolution of life manifests a direction – that of an ascent. He explicitly mentions the Christian vision of the world as the historical-cultural humus in which the concept of evolution could arise and develop, recognizing Teilhard de Chardin's merit in having highlighted this correspondence. Cf. Theodosius Dobzhansky, *The Biology of Ultimate Concern* (New York: The New American Library, 1967), 116–118.

be explained within a “Darwinian” stance only by resorting to meta-empirical hypotheses, which are idealistic in character and somewhat detached from scientific data. It happens, for instance, when endorsing the *Many Worlds Theory model*, invoked to eliminate any element that makes us think of finalities in our universe. According to such an idealistic view, our universe luckily has been selected among many others possible. Our presence would serve as conscious evidence of this victory. The laws of physics, life, and humanity would not be random products, but our entire universe nevertheless would be randomly selected. This circumstance would be a lucky one for us, *our* universe being the only one in which we humans could have appeared as observers. These are always possible speculations, and even plausible models within specific theoretical cosmologies. However, they do not have the status of scientific results capable of generating compelling implications for philosophy or theology regarding a possible Creator.¹⁵

The reasons that, starting from a philosophical reflection on the cosmos, make the reading of a finality in nature possible are basically the same reasons that make possible a discourse on God, understood as the foundation and ultimate explanation of reality. Scientific observations do not deny the existence of teleology, just as science does not deny a room for a *logos*, at both a logical and ontological level, according to the analysis I have proposed earlier in this volume.¹⁶ This makes the notion of God to be meaningful also within the context of scientific culture.

The existence of natural ends also can be ascribed to the existence of formal causes, that is, to the givenness of reality, which causes nature to be what it is and not otherwise, possessing specific formal properties. It is legitimate to attribute the origin of this formal

¹⁵ The formation of many space-time regions independent of each other is provided for by some cosmological models that describe the early phase of inflation, immediately following the Big Bang. Inflation would give rise to many universes that are spatially unconnected and non-communicable. The concept of “multiverse,” however, is not the origin of all things but is something that comes forth after the “origin.” The multiverse takes shape once certain essential characteristics and fundamental constants of nature already have been established. It is interesting to note that Thomas Aquinas addresses this question *ante litteram* in an article of his *Summa Theologiae*. Although very different within a conceptual framework than from the contemporary one, Aquinas concludes that one or more universes, as contingent beings, always need a causal origin from a Creator, Someone who is necessary in Himself. Cf. S.Th. I, q. 47, a. 3.

¹⁶ See Part I, chapter 4.

causality – or, if one prefers, the origin of *information* in nature – to the free intentionality of a personal Creator understood as a *dator formarum* (that is, he who has in mind and creates all essences and forms). It is not surprising, considering the natural order, that the existence of a final causality can be approached through a reflection on formal causality. In fact, the latter is recognized implicitly by scientists whenever they perceive the order and lawfulness of nature in the fundamental properties of material entities. Formal causes do not belong to science but make science possible, and science cannot deduce them in a self-referential way but must receive them as given, by discovery. The end is revealed by the tendency that the form expresses, by its operativity, or by its very *nature*, as Aristotle and Aquinas would say. Formal causality and final causality are somewhat inseparable. Speaking of a Creator God who as the cause of being and the cause of the specific nature of everything, continues to be meaningful even within the context of scientific knowledge. Also meaningful is the ascent from creatures to the Creator, when one looks at nature “more in depth,” with metaphysical eyes capable of grasping the need for a Foundation, without limiting oneself to a descriptive explanation of the origin of the forms. *The world of ends is a world of personal beings*. Both forms (in the strong philosophical sense) and information are notions adequate only for personal intelligence. They are not recognizable by algorithms nor by the empirical method impersonally understood: as signs of the *Logos*, they need a *mind*. As long as nature is observed and studied by personal beings and not analyzed solely by computers and numerical methods, the question concerning the existence of finality and its reference to intentionality will continue to remain meaningful, and thus likewise the reference to a Creator. The recognizability of signs belongs to the world of persons, and likewise the aesthetic feeling, amazement, and moral dimension that scientists experience when studying reality. The appeal of these signs is not frustrated by explanations that make use of Darwinian or other evolutionary mechanisms. Strictly speaking, these mechanisms do not generate a world of (philosophical) forms, nor do they generate information, but rather only describe the history of nature.¹⁷

¹⁷ It seems that these signs are still recognizable today within the context of *personal* scientific activity. Cf. Francis Collins, *The Language of God. A Scientist Presents Evidence for Belief* (New York: Free Press, 2007); Antony Flew and Roy Varghese, *There Is a God: How the World's Most Notorious Atheist Changed His Mind*

An exemplary way to illustrate how the vision of nature provided by evolution through natural selection does not remove any meaning to the question of God comes from employing the logical process of “abduction” as introduced by Charles S. Peirce (1839–1914).¹⁸ The process consists of three steps: a) in nature, fact *F* is observed; b) if hypothesis *C* is true, then fact *F* is expected; c) therefore, it is reasonable to consider hypothesis *C* as an explanation of *F*. In our case, signs, events, or facts *F*, are observations whose explanation does not seem totally ascribable to the action of causes immanent to the empirical level, and therefore unintentional. Facts *F* are those that arouse questions such as: What is the origin of DNA language or of the functional coordination of a cell? What is the origin of purposes that cannot be interpreted through recourse to natural selection? Why is the behavior of human beings so different from that of other higher primates? Or, more radically, why does information exist in the natural world, and what is the origin of the laws of nature? Hypothesis *C* is that of the existence of an intelligent Creator, as transcendent cause of the being and nature of all things. If *C* exists as the cause responsible for the intentional project of the world and the forms (formal causes) contained therein, then one expects to observe signs, events or happenings such as the facts *F* we observe. Hypothesis *C* is introduced not by *deduction*, but by *abduction*. Abduction offers a logic based on semiotics. According to Peirce, the process of abduction can be found in Greek philosophy’s deployment of logic. In Aristotelian logic, abduction is the syllogism in which the major premise is certain, the minor premise probable, and, therefore, the conclusion has a degree of certainty no greater than the minor premise. It is a conceptual reasoning that puts forward, on the basis of the observation of a fact, an explanatory hypothesis of the fact itself. Abduction thus belongs to the genre of intuition, of the illative sense, and of reasonable, non-apodictic hypotheses. The fact that the existence of *C* is not the subject of

(New York: Harper & Collins, 2007). “I now believe that the universe was brought into existence by an infinite Intelligence. I believe that this universe’s intricate laws manifest what scientists have called the Mind of God. I believe that life and reproduction originate in a divine Source. Why do I believe this, given that I expounded and defended atheism for more than a half century? The short answer is this: this is the world picture, as I see it, that has emerged from modern science.” Flew, *There is a God*, 88.

¹⁸ On Charles S. Peirce’s theory of abduction see the classical work by K.T. Fann, *Peirce’s Theory of Abduction* (The Hague: Martinus Nijhoff, 1970). I follow here the reasoning proposed by McGrath, *Darwinism and the Divine*, 197–202.

logical deduction is well understood, since even hypotheses other than *C* could explain the facts observed, *F*. The benefit of abduction, however, rests in showing that the question hypothesizing the existence of *C* is a meaningful one, and hypothesis *C* is qualified as reasonable. In our case, this argument founds the reasonableness of acquiring information regarding a possible Creator, that is, listening to and evaluating a claim of divine Revelation.¹⁹ Within the context of the contemporary scientific knowledge of nature, the question of God is justified at least as a meaningful one.

The reasonableness of hypothesis *C* must be placed in relation with other sources of knowledge that could confirm its plausibility or not, preceded by the convergence of clues within a “logic of signs.” Such logic does not constrain the subject’s freedom but leaves room for exercising an option—in this case acknowledgment of a Creator God—which maintains a character of entrustment and of personal self-giving. Since hypothesis *C* is not the only possible hypothesis, the various hypotheses capable of causing fact *F* are able to be compared critically. This possibility provides the conditions for exercising a choice in favor of the “most reasonable” hypothesis, one that ensures a better explanation of the facts *F* as possible within a grid of criteria guiding the option. Among these criteria is the importance of obeying Ockham's razor, which requires hypotheses not to be multiplied unnecessarily. At this point, the process of abduction can be developed further in order to verify whether, at the level of observables, hypothesis *C* necessarily implies other effects *E* as well, and whether these are contradicted by other unquestionable observations. If this were to happen (i.e., if there were effects *E*, parallel to *F*, that could never descend from *C* or contradicted what reasonably could be expected from hypothesis *C*) then there would be good reasons to reject hypothesis *C* as an explanation for facts *F*. This logical extension, in the case of the Intelligent Creator that we are examining, now introduces a crucial question: If, among the effects *E* that the hypothesis *C* of an intelligent and provident Creator implies, there is also the loving care of His creatures, then is it contradicted by the presence of evil in the world? In particular, God's loving care of creatures *E* seems to be refuted by the presence of “cosmic evil,” whose responsibility, unlike moral evil, cannot be attributed to a bad exercise of human freedom. Cosmic evil seems to

¹⁹ An example of how practicable such an itinerary is that leads to listening to a possible revelation of God is found, once again, in Flew, *There is a God*, 157–158.

oppose the idea that God loves his creatures and takes care of them and represents for most people a major difficulty for admitting His existence. Consequently, it is this logical node that, albeit briefly, I wish to explore.

11.2 Natural selection and the problem of cosmic evil

It is not my intention to address the broad question of evil at large, nor how this problem flows into different forms of theodicy. I will confine myself here to examining only what scientific observation of an evolving world might add in this regard.²⁰ As a matter of fact, natural selection and the struggles for survival, extinction and death are to be considered intrinsic to a world that exhibits biological evolution. They are necessary moments of the process that makes life progress because they diversify forms, develop the most adequate forms, and specialize functions. To those who had stated that the theory of biological evolution did not contradict the image of God who providently governs his creation, Darwin answered with hesitation, pointing to the ruthless forms that struggles between the living have taken in the natural world.²¹ Influenced by Thomas Malthus' *An Essay on the Principle of Population* (1798), which stressed a growing critical gap between population, territory, and resources, Darwin immediately recognized its effectiveness for the whole natural world:

We behold the face of nature bright with gladness, we often see superabundance of food; we do not see, or we forget, that the birds which are idly singing round us mostly live on insects or seeds, and are thus constantly destroying life;

²⁰ On the role of suffering and evil within the evolutionary perspective, cf. Cornelius G. Hunter, *Darwin's God. Evolution and the Problem of Evil* (Grand Rapids, MI: Brazos Press, 2001); *The Work of Love. Creation as Kenosis* (ed. John Polkinghorne; Grand Rapids - Cambridge: Eerdmans, 2001); Nancey Murphy, Robert J. Russell, William Stoeger, eds., *Physics and Cosmology. Scientific Perspectives on Natural Evil* (Vatican City: Vatican Observatory - The Center for Theology and the Natural Sciences, 2007); and Christopher Southgate, *The Groaning of Creation: God, Evolution, and the Problem of Evil* (Louisville, KY: John Knox Press, 2008). Of great relevance are the spiritual reflections offered by the geologist Xavier Le Pichon, who for a long time has thought about the role of suffering in the cultural path of the human being within an evolving world: cf. Xavier Le Pichon, "Les failles dans l'histoire de l'univers," *Communio* 15.1 (1990): 93-102 and Xavier le Pichon, *La raíces del hombre* (Santander: Sal Terrae, 2000). For a theological viewpoint, see the classical work by Charles Journet, *The Meaning of Evil* (London: C. Chapman, 1963).

²¹ Cf. Darwin, Letter to Asa Gray, May 22, 1860, *Life and Letters of Charles Darwin*, 2: 312.

or we forget how largely these songsters, or their eggs, or their nestlings, are destroyed by birds and beasts of prey; we do not always bear in mind, that though food may be now superabundant, it is not so at all seasons of each recurring year.²²

If in some circumstances Darwin had no difficulty recognizing the need for God as an ontological Foundation for the being of the cosmos, it was much more difficult for him to admit that certain events in the natural world correspond to specific purposes imprinted by the Creator.

11.2.1 *Scientific and philosophical aspects*

A first question to ask is why, starting from the time of Darwin, the problem of the struggle for survival and competitiveness between different biological species has taken on an acute anti-finalistic and anti-theological connotation. The fact that the largest fish ate the smallest one, the land produced not only tasty fruits but also poisonous mushrooms, or that telluric upheavals and natural disasters endangered human life have always been known phenomena, well before the birth of the English naturalist. The critical weight of these phenomena for a vision of nature governed by God already had been considered by Augustine and Aquinas in pages that by then had become classics.²³ What new challenge did Darwinism now bring about? In my opinion, there are two novelties introduced by the theory of evolution in this regard. Classical solutions to the problem of physical evil, aimed at bringing local disorder back into a more general order established by God, used mainly a metaphysical and impersonal approach, typical of reflection on the material cosmos. These solutions took on a moral connotation only in those implications of physical evil that concerned humanity, being always ascribable to a divine justice wiser than human justice. The philosophical context was not one of reflecting on suffering, which in fact did not concern the material or animal world, but rather concerning the relationship between disorder of the parts and order of the whole, and between accidental imperfection and essential perfection. The philosophical framework

²² Charles R. Darwin, *On the Origin of Species* (London: John Murray, 1859), 62.

²³ Cf. for instance, Augustine of Hippo, *On Order*, I, 1-3; *Confessions*, III, 7,12; VII, 12,18; *The City of God*, XI, 22. Thomas Aquinas, *S.Th.* I, q. 48, a. 2, ad 3; I, q. 49, aa. 1-2; C.G. III, chaps. 6, 8, 14, 71; *De malo*, q. 1, a. 1.

was metaphysical-cosmological in character, according to a perspective common in the Middle Ages. It did not underscore the existential dimension as we have done from the Modern Age onward. Instead, the new perspective introduced by Darwin specifically emphasized this last aspect of existence in history. The evolution of species reduced the “distance” between human beings and other animals, projecting onto the latter the pain and suffering that until then had been characteristic only of the anthropological domain.²⁴ The legacy and development of this vision have continued to the present day, being conditions for recognizing, for instance, the implications that an alleged continuity between humans and animals has introduced into certain areas of law, science, and social behavior. A second novelty presented by Darwin involves the fact that, due to the encompassing and unifying scope of the theory of evolution, competitiveness and the struggle for survival could no longer be read, as in the past, in terms of “local disorders” pertaining to a logic concerning only the (imperfect) parties within the (perfect) whole. Struggle and suffering now were interpreted as an explanation of the whole as such. Physical evil ceased to be an accident and instead became the rule. The suffering present in nature, perceived with more acute sensitivity, proved necessary, and only thanks to it could new morphologies and species emerge, allowing life to progress successfully.

Thanks to the theory of evolution, the logic of the species was strengthened. But the individual manifested all his fragility, driven back into oblivion and indifference to the point of generating suspicion of the absence of God in the human being. What was the divine plan behind birth and death if the human being, just like any other animal, seemed abandoned to the fate of contingency and enslaved by his or her intrinsic weaknesses? This question was anything but theoretical for Darwin, having had to deal with the painful loss of his little daughter Ann Elizabeth, who died at the age of only 10 years in 1851.

Beyond the debate over how philosophically consistent it is to associate humans with animals in a discourse on suffering, contingency, and death, the contemporary scientific worldview tells us that life—human life included—can originate and flourish only

²⁴ Convinced of the emotional and psychic continuity between human beings and animals, Darwin dealt with this matter in his essay *Expression of the Emotions in Man and Animals* (1872).

in narrow windows of time. Thanks to a more documented memory of natural phenomena that occurred in the past on our planet, and a more reliable prediction of what the future may hold for us, we are also able to make estimates of how long these windows may be. For example, the reproductive success of small mammals, which later gave rise to the higher primates, was only possible thanks to the sudden and catastrophic extinction of large reptiles. Also, the stable evolution of a species like the human race is only possible within time intervals between major catastrophic meteoric impacts, approximately every 100 million years. Our human species has had (and will have) to go through great natural climate changes such as periodic glaciations and desertifications, and withstand volcanic eruptions, tidal waves and earthquakes whose effects we know have been largely destructive in the past. These are events to which human beings were (and are) as vulnerable as the rest of Earth's wildlife.²⁵ It is in light of facts like these that one may wonder how a provident God could be presiding over an evolving world, "a world created in a state of journeying," following the expression employed by the *Catechism of the Catholic Church* (cf. n. 302). What does it mean that God takes care of his own creatures, or that he leads the world towards its perfection, if natural history seems to be marked by such serious obstacles that seem continually to affect the course and development of life? It is not without interest to note that Teilhard de Chardin, an author who certainly approached the theme of evolution – and all that evolution entailed for the history of Earth – in an "optimistic" way, wanted to compare the path leading to *Homo sapiens* to a sort of *via crucis*. He recognized that the "evil" present at different levels from the biosphere to the noosphere was not an accident in natural history, but rather something intrinsic to the structure of the cosmic system.²⁶

A first level of reflection aimed at shedding light on this severe objection moves from the field of empirical observations, that is, from the same field that raises the question of physical evil. We observe that the struggle for survival and competitiveness, leading

²⁵ To this should be added the great pandemics of the past that remain largely unknown. In the case of the black plague of the 14th century, the number of deaths is thought to have been of the order of several tens of millions, that is, a substantial fraction of the world's population then present in Europe.

²⁶ Cf. the Appendix *Some Remarks on the Place and Part of Evil in a World in Evolution* (1948), Pierre Teilhard de Chardin, *The Phenomenon of Man* (New York - London; Harper Perennial, 2008).

to death and extinction, is not the only driver for spreading life and diversifying morphologies in an evolving world. Cooperation, symbiosis, and sharing also contribute significantly to the development and establishing of life. Life proceeds not only because of selection in the environment, but also as it learns to adapt and cooperate. Cast onto the anthropological level, natural selection and competitiveness suggest suffering and death, but cooperation suggests altruism and solidarity.

A second important observation also concerns the empirical order. Vulnerability and death belong to the sexual world, whose progressive evolution has led in mammals to the very special care of offspring and of young. To reproduce themselves, asexual bacteria simply duplicate DNA, giving rise to an almost equal individual without the need to bring together two complementary parts. In the realm of bacteria, adults generate adults and remain in a certain sense "immortal." They do not have a life cycle that has to pass through growth, aging, and death. Death can occur only because of their occasional destruction due to the action of an external agent. In terms of Darwinian selection, the transition from an asexual to sexual form of reproduction certainly does not seem advantageous, requiring some additional effort such as developing a strategy for sexual encounter and energy spent on the generation and care of the young. It is precisely mammals that will exalt the "evolutionary disadvantages" of sexual generation. They survive by generating only a few young individuals, in whom they must invest a lot of care, unlike for example fish, which survive by generating a huge amount of offspring without any need to take care of them. In the human species, these disadvantages reach their highest level, but there is a crucial element to consider. The evolutionary conditions that have introduced the fatigue of care, risks of growth and the inevitability of death are also the same conditions that, in the anthropological sphere, provide the natural basis that allows us to speak of personal relationship, self-giving, an love. Only within the logic of sexual reproduction that implies growth, and finally death, is there room for the bond between parents and children, protection of children and their cultural growth, and all activities fostering empathy and sensitivity to the point of giving meaning to the sacrifices and suffering endured out of love for others.²⁷ And it is still within an

²⁷ Also for consideration is the role played by parental sensitivity and care for children in the development of the human brain and language. Bipedalism is a

evolutionary logic that the complexification of the nervous system and an increasing cerebralization—conditions necessary for accessing the anthropological sphere—in turn become conditions for bodily sensitivity in closer dialogue with the brain, thus giving rise to greater physical and psychological suffering. The appearance of death, therefore, seems progressively to have generated behaviors and meanings that, in the human species, transcend the biological levels of nutrition and reproduction, such as love for others and the possibility of giving new meaning to sacrifice.

Finally, there is a third empirical observation to consider. Regardless of whether or how some form of “suffering” also is perceived by animals other than humans, in the case of human beings suffering and death are an integral part of their ascent to be what they are, and have structured the society in which they live and work. Unlike other animals, only the human being knows how to acknowledge and value suffering and its consequences: this criterion allows us to recognize a society as human, and it is precisely one that takes care of weakness, suffering, and death. Our language uses the same word “humanity” to indicate both our species and what qualifies it, namely comprehension, hospitality, and empathy—all characteristics that mean treating someone or something “with humanity.” The most distinctive element of what qualifies us as humans then is precisely the meaning given to pain and suffering, whose appearance within our evolutionary path we wondered about when beginning these reflections. From a theological viewpoint, God does not create the human being so that he or she may be allowed to suffer later, but sensitivity and suffering seem specifically to be part of our created humanity. They are what makes us human. This perspective obliges theology to clarify better the relationship between suffering, death, and human sin, but it also enables it, on the positive side, to shed some light on the relationship between God and physical evil, between a provident Creator and an evolving world.

necessary condition of this development, but it is not sufficient as the upright position is necessary for the cranial box to support a greater weight. But bipedalism has preceded — by almost three million years — the rapid anatomical growth of the brain found later in *Homo sapiens*. This notion suggests that the “dialogue” between the free hand and the brain, available since the beginning of bipedalism, was not the determining cause on its own for progressive cerebral complexing, whose acceleration seems to have occurred only in later periods.

For those who welcome and love a suffering person, this “reveals” the sensitivity possessed by the human heart, showing in depth that the human being finds his or her happiness only in a love capable of including sacrifice, as required by solidarity and self-giving. Although suffering, vulnerability, and death are also experienced by other living beings, the fact remains that only in the human race do suffering and death become a crucial evolutionary hallmark. According to the perspective of existential philosophy, from Kierkegaard to Heidegger, while animals perish, only humans die. These phenomenological considerations open the way to possible theological interpretation, believing that the very capacity to transcend suffering and death and seeking its qualifying and relational meaning has “torn” humanity from the animal world. Christian theology emphasizes that solidarity, compassion, and love are consequences in us humans of our having been created in the image and likeness of God. On the other hand, the biological journey of our species suggests that such a creation has required some psycho-physical predispositions and, in a certain manner, also implies a biological history.

Taken together, these three empirical observations do not provide a “comprehensive answer” to the question of physical evil, that is, our fragility, suffering, and death. Nevertheless, they prevent us from seeing this “evil” as a lacerating absurdity or a contradictory element that puts the existence of a Creator into question. Physical evil and suffering seem rather to be a mysterious presence accompanying life on its way from asexual reproduction to the logic of sexuality and allowing *Homo sapiens* to reveal to himself his proper *human* condition. What we call physical evil – if we wish to speak of evil – becomes synonymous with limit, finiteness and, from a theological perspective, creaturalty. A finite creature is not God but rather is temporal, limited, and fallible. In the human being, however, limit and creaturalty are something “suffered” perhaps to bear witness to his vocation to transcend them.

A further level of reflections aimed at clarifying whether physical evil and the fragility of creatures are effects that might contradict the existence of God as a provident Creator comes from philosophical argumentations. How and why are evil in general – and physical evil in particular – understood and grasped? How are creatures aware of that? Why do creaturely suffering and fragility make us uncomfortable? In a materialistic worldview, the precariousness and fragility of life should not surprise anyone. If we

grasp these realities as a *privation*, as something that demands explanation, we can do so only against the backdrop of thought open to the basic idea of Good, longed for and recognized as something qualifying for us. We would be unable to recognize evil or feel discomfort if we were not created in the image of Good and naturally eager to embrace It. Aquinas extends this philosophical argument up to a courageous conclusion: Because evil exists, then God exists – *quia malum est, Deus est*.²⁸ I would argue that whoever adduces the struggle for survival and the drama of extinction—which certainly has involved, at some level, forms of *Homo* before *Homo sapiens* – to conclude that if God exists, then He would intervene to halt what physically damage his creatures, seems to fall into a contradiction. He would be asking God to “intervene in the world” in order to stop evil, almost in competition with the dynamics of natural laws and biological processes, in a somewhat mechanistic way. In so doing, one would be introducing precisely that image of God that scientists criticize and consider unconvincing, for it assimilates God to being an architect or watchmaker. Evil, including also physical evil, is a “problem” for those who have espoused the idea of a God-designer whose design seems to have failed. Instead, evil is perceived as a “mystery” by those who are willing to acknowledge God not only as the final cause, but also as the *transcendent* cause of the world, that is, a cause that knows and possesses ways inaccessible to us for achieving His ends.

Again within the philosophical context, it should be noted that death and life, struggle for survival and altruism in cooperation, suffering due to physical evil and aspiration to goodness and fullness ... all of these are deeply *existential* notions. We do not learn these concepts from biology but rather see them *reflected* in biology and in living beings. If they impact the human being, leading us to question our life, it is because the human being transcends nature. These existential notions belong primarily to the world of being *personal*, in a sense to the world of the spirit. It is only in reference to this world that they are able to be addressed and eventually resolved. If the problem of evil evokes a mystery, the place of that mystery is not material nature but rather something able to transcend it. Every question concerning evil is in itself a *sign of transcendence over nature*, a testimony that the answer to the problem of evil should not be sought in the natural world but elsewhere.

²⁸ Cf. C.G. III, ch. 71.

11.2.2 *The inescapability of the laws of nature between philosophy and theology*

The universal, and not accidentally local, dimension that the problem of physical evil has acquired within the historical-evolutionary perspective of nature calls into question the relationship existing between the universality of the laws of nature and a personal Creator on whom these laws finally depend. The “evil” that derives from their ineluctability certainly can have a global reach. Think, for example, of some catastrophic effects of gravity, of the processes of the hydrogeological settlement of our planet, of the irreversibility of the thermodynamic processes leading life and the cosmos towards dissolution. Ponder in the biological domain what the nutrition of living implies, with food being the matter of other living beings. However, we must not forget that the positive, structuring function of these same laws of nature also has a universal range for sustaining the cosmos and preserving its existence. The logic of nature may seem cruel, but it is the same logic that ensures life and its successful evolution in the course of history. Catastrophes achieve new balances both physically and biologically. Every crisis is a natural way of breaking a balance that could no longer withstand or would allow any significant progress. It is the obligatory way of realizing a new situation, which ensures greater stability and future prospects. Drawing attention to the comparison between order and disorder certainly must not make us forget the existential meaning of the problem of evil, previously highlighted. However, it is within the context of the preservation of order, passing through a crisis of disorder, that the laws of nature operate and are disclosed for our study. In this respect, the classical solution does not lose any relevance, where a provident God can be the final (and transcendent) cause of the laws that govern matter and rule relations between living beings, even if such laws embody evil and destruction, as He knows how to make them achieve a greater good. In formal terms, adopting the logic of abduction discussed earlier, saying thus would be tantamount to stating that, given the transcendence and incommensurability of Creator *C*, we do not know exhaustively what are the effects *E* that manifest his loving custody over all things. In other words, we do not know with absolute certainty which effects truly contribute to a positive balance, even if they might seem to contribute to a negative one at the level of appearance. In other words, we are not able fully to

establish what contradicts God's loving care and what confirms it. It is reasonable to assume that the Creator of the world has his own ways of taking care of what he has created, ways that we do not know in detail given our finite and creaturely condition. It is reasonable to think that his transcendence over nature and history implies that his care extends beyond finiteness and death. The sciences alone are not competent to judge the existence of providence beyond evil. The idea of divine providence, in fact, *necessarily refers to the whole*. In order to recognize its effectiveness, one would need a "view of all things together," a view possible only for God. Since scientific analysis is never analysis of the whole but only of parts, a doctrine on divine providence is always compatible in principle with scientific analysis and any action of the laws of nature.

Why should the order and regularity of natural laws also imply ineluctability, turning them into causes of damage, destruction, and death? The question easily migrates from the philosophical to theological domain. It is only in this latter domain, in fact, that the idea of a personal and provident Creator is up for debate. Here, the notion of the law of nature no longer refers to an impersonal Absolute, to an architect or to a watchmaker God, but alludes openly to the God of Israel, He who reveals himself as faithful and merciful as the subject of a salvific covenant that includes all of creation. This topic, then, requires further theological insight. According to the biblical view, natural laws are part of a logic of personal gift, as they manifest the Creator's fidelity and love. It is true that their ineluctable dynamism also can serve as the origins for calamity and despair, but it is equally true that the very observation of such regular and constant dynamism arouses feelings of abandonment to and trust in a provident God. The idea of Providence, which helps humans to hope for an overcoming of pain through renewal, restoration and divine justice, could not arise without the human experience of cosmic laws. Humans observe the rising and setting of the sun, the seasons of sowing and harvesting, the propagation of life, and the many biological processes that occur within the earthly biosphere. One of the biblical books dealing more dramatically and vividly with human suffering, *Job*, is also where one of the most beautiful calls to observe creation and trust in the goodness of the Creator appears. God asks the protagonist – who wonders about the reason why physical evil has fallen hard upon him, to the point of qualifying it as a horrible injustice – to go out into the open and

contemplate the beauty of creation. God explicitly asks Job to observe the cosmos and its laws, and the harmony existing among living things in spite of that suffering that is also inevitably present (cf. the discourses presented from Job 37:14 to 40:4). Man cannot “give himself reasons” for physical evil, yet the careful observation of a nature governed by those same laws that can sometimes generate pain and sorrow, helps him to understand that such reasons exist. It is through such laws, ultimately, that God the Creator manifests himself as wise and transcendent. It is worthwhile noting that in these pages it is God, and not Job, who poses questions. Job recognizes that in addition to the causes of suffering, he is ignorant of many other things. Job simply cannot have a complete, all-embracing view over all of creation. Only God has it.

However, the main contribution that the theological perspective offers concerning the problem of evil is in remembering that everything in the world related to suffering and pain shares in the mystery of the humanity and death of Jesus Christ, that is, in the mystery of His headship over both the first and new creations. Suffering and pain must remain available so as only to be fully understood within the horizon of that mystery, and not outside of it. It is within this horizon that creaturehood and limit can aspire – and also legitimately claim – a way of being reconverted, overcome, and healed. Within such a horizon, the creature acknowledges that such healing cannot depend on itself but requires God's new action, namely a new creation.

Therefore, the laws of nature that cause physical evil are also the same laws that allow for the stability and conservation of the world, and the growth and reproduction of living beings. The fact that the Legislator, in whose providence one trusts, does not suspend or remove these laws even when in certain circumstances they might generate harmful effects (for example, earthquakes, floods, growth of cancer cells, and viral diseases), can lead Christian theology to two conclusions. The first is to think that the relationship established by God with his creation implies a certain “radicality.” This relationship is maintained firmly across history as it is the image of God's fidelity (cf. Jer 31:35–37): fidelity toward a created cosmos whose autonomy God founds and respects, and fidelity toward Himself as Creator. The value of such fidelity for the good of the world and its inhabitants seems to be greater than any possible suspension, modification or manipulation of the laws of nature.

The second conclusion is that the relationship between God and nature—a nature created by the Word and in view of the Incarnate Word—"passes" through the mystery of Christ's humanity and becomes comprehensible only in light of the mystery of his death and resurrection. Since the Incarnate Word, assuming a true humanity and entering into history also took upon himself space and time, the laws of nature thus belong in a certain sense to the logic of the historical flesh of Christ. It is precisely this association with Christ's Paschal Mystery that confers meaning and value onto pain, suffering and transience, in view of a future transfiguration.

The chiaroscuro of a world where not only order and beauty reign, but also destruction and death, thus would express the intimate solidarity of the cosmos with the Incarnate Word. This solidarity would be mysteriously present in the Creator's plans once the science of God, knowing the project of creation, also would have known human sin and man's voluntary rejection of God. The classical Catholic doctrine that regards human sin—and more specifically original sin—as involved in the profound reason for the existence of evil and even physical evil in our world—thus would be understood in a new light, that of a certain solidarity between natural history and the cross of Jesus. Human sin—or if one prefers, sin in general, since human beings are not the only creatures to have rejected God, but also angels have done so—should not be seen as the cause of "retroactive" effects on the cosmos. Natural history and the sciences tell us that such retroactive effects do not exist and thus they reasonably deny them. Sin, instead, should be seen as an element that, from the very beginning, divine foreknowledge sees implied within the logic of a created world, a world that insofar as it has been created is also limited and finite, the latter being a condition of possibility due to freedom's failure and to man's offense toward God. The statement of the Book of Genesis that the world God created was "good," and everything was "very good" in His eyes (the Greek version of the Bible interprets the term "good" also as "beautiful"), should not be understood as a naïve expression of a primordial order, or an archaic and abstract harmony that later would be altered and cosmically upset. Rather, it articulates a proleptic goodness of mercy and redemption. Good, and very good, is a world redeemed by the Paschal Mystery of Christ because the highest goodness of love is represented by forgiveness and compassion. It is the goodness and beauty of a work that God carries out so as to overcome both the finiteness of creaturality and the

failure of human sin, thus winning definitively over the evil—physical and moral—that will be present in the cosmos, for the Creator always has known not only the possibility of sin and its consequences, but also the finiteness of a world that, being a creature, can never be God. This is the same goodness and beauty of the Paschal Mystery of Jesus Christ, the goodness of him who now has *fulfilled everything* (cf. John 19:30), because in the silence on the cross and in the quietness of the tomb, the Creator, can finally rest on the seventh day. It is the goodness and beauty of a splendid work, completed on the eighth day, at the dawn of the Resurrection on Easter Sunday. It is the goodness and beauty of a work that elevates and redeems, summarizes and reconciles. With it, God enables human beings to take part in a life of grace that otherwise would not belong to them ontologically, forgives the *aversio Dei* that their bad will and their finiteness had caused. This work is the day made by the Lord (cf. Ps 22:32; 118:24) and not by humanity.

11.2.3 The finiteness and incompleteness of a world created in a state of journeying, embraced and elevated by love

The scientific-evolutionary and theological perspectives can dialogue fruitfully when considering the created world as a cosmos in transformation and always open to history, as a world in a *state of journeying*. This world is governed by thermodynamics and by the physical-chemical laws that we know produce a variety of biological species, while natural selection filters the appearance of increasingly complex forms and functions. However, the beauty of the forms and the vivacity of the colors, the most attractive of the plumage and the sweetest of the songs, are due not only to the actions of genetic mutations but originate in time also because of extinction and death. An evolving world is a world which includes failures, trials, and clashes. This seems to be the way, as theology would say, whereby God continually creates and leads everything to its end. It is not a perfect world, even from a material point of view. It will become perfect only in the *eschaton*.

The finiteness and fragility of creatures, which are subject to transformations and replacement, are highlighted today especially by science. Provisionality, vulnerability, and suffering would seem to belong to creatures as something constitutive, without exceptions. A widespread theological perspective especially during the Scholasticism of the Middle Ages stated that vulnerability and suffering did not belong originally to creatures but instead should

be interpreted as consequences of human sin. In the case of the human creature, this thought had led to the well-known doctrine of “praeternatural gifts” associated with a state of holiness and original justice, prior to the test and moral fall of our progenitors. In contemporary theology, this doctrine has been resized by the Catechism of the Catholic Church which simply points out that if he had remained in divine intimacy, “man would not have to suffer or die” (CCC 376). It seems to me that the theology of original sin is not obliged to endorse that, after the moral trial of our progenitors, a change occurred in the biology or neurophysiology of the human species. What sin fundamentally modified (and still modifies) concerns *the domain of relations*, first and foremost those between man and God, from which all other relationships derive.²⁹

A created evolving nature – and what God reveals through it – seems to possess the character of a *promise*. This is a promise of life, because we see that death plays the role of an instrument of transformation and progress in the natural world, as if the world were a reality under construction. We already have pointed out that the Cross of Jesus Christ and the universal meaning of his sacrifice can be understood as a manifestation of “divine solidarity” with the created world. Within the context of the natural laws we know, nature could not be different from what it is, including fragility. In order to express its biodiversity, forms and beauty, the world of living things *must* also involve suffering, extinction, and death. If evil and pain are intrinsic requirements for the transformation of the material world; if they indicate an opening towards progress and transcendence; if evolution is *creative evolution*, as Henri Bergson would say – then it is reasonable to believe that evil and pain are not the ultimate word, nor the final value, but only a “temporary” stage.³⁰ The transcendence towards which matter and life tend becomes visible in the phenomenology of human beings, in how

²⁹ From a theoretical view-point, before original sin, the comprehensive filial relationship between God and man could have implied, for example, the special care of God for His creature and a loving intimacy aimed at protecting his constitutive fragility and avoiding the harmful consequences of the laws of the material cosmos as causes of *physical* suffering. This same intimacy with God also could have implied a certain, relative lordship of the human being over nature, as an expression of the superiority of the spirit over matter – a supremacy still reflected, in a certain sense, in the lives of the saints, with the integrity of their filial relationship being fully restored in Jesus Christ.

³⁰ Cf. Henri Bergson, *Creative Evolution* (1907) (trans. A. Mitchell; Westport, CN: Greenwood Press, 1975).

they are able to integrate suffering and pain into their own psychological life and in their social organization. Man and woman inherit an *unfinished* Earth; however, before their appearance among living beings on the planet, no capacity existed for “accepting” the suffering necessary to fulfill what still remained unfinished. Without death, there would not have been a sequence of generations, and thus no evolution would have taken place. However, without evolution, in particular without cultural evolution, the human being would not have had a history of freedom. Human beings, in fact, became aware of possessing free will when realizing that their behavior exceeded mere survival and reproduction.³¹ Finally, without freedom there would be no *love*. It is only thanks to this last step—love—that the human being truly can accept suffering and death. The only answer to suffering is not indignation, but love, a response that the human being matures right along the development of his or her own cultural, social, psychological, emotional, and in a broader sense spiritual evolution. As Xavier Le Pichon observes, the nature of humanity, inherited from the living sexualized world, implies aging and death, and consequently suffering. The process of humanization has led to a deeper understanding of suffering. Having inherited death and suffering, we must overcome and transcend ourselves, to open death and suffering to love.³²

In an emblematic and archetypal form, this answer is offered to us precisely by the Cross of Jesus Christ, a condition of possibility so that the logic of love can be followed and lived out by human beings. In a certain sense, the creation of man on the sixth day, in Christ the new Adam, finds fulfillment on the Cross, where the limits of being creatures are transcended in filial abandonment and suffering is transcended in love. On the Cross, God himself reveals definitively

³¹ Recent studies show that human evolution is no longer fully understandable as merely genetic evolution, but needs to be understood as culture-driven evolution: cf. Daniel Dor and Eva Jablonka, “Why we need to move from gene-culture co-evolution to culturally driven co-evolution,” *Social Origins of Language* (eds. D. Dor, C. Knight and J. Lewis; Oxford: Oxford University Press, 2014), 15–30; Kevin N. Laland, John Odling-Smee and Sean Myles, “How Culture shaped the Human Genome: Bringing Genetics and the Human Sciences Together,” *Nature Reviews Genetics* 11 (2010): 137–148.

³² Cf. Le Pichon, *La raíces del hombre*. By these words, John Paul II addresses the relationship between suffering and human self-transcendence: “Suffering seems to belong to man’s transcendence: it is one of those points in which man is in a certain sense ‘destined’ to go beyond himself, and he is called to this in a mysterious way.” *Salvifici doloris*, n. 2.

that love “includes” suffering. Jesus Christ does not eliminate suffering and death, but removes the chains that kept them bound to evil: evil and suffering cease to be synonymous. In addition, evil and incompleteness, evil and fragility cease to be synonymous as well. As the experience of grace in the Christian spiritual life come to show, the human heart is capable of very deep suffering that is linked to neither evil nor sin, but instead to love. Such is the suffering of those who see their love as still being far away, unfulfilled and not fully possessed. Such is the suffering for the absence of someone, or the suffering of the lover who moves in search of the loved.

For this reason, a God who is Love is also, mysteriously, a God capable of suffering. What this suffering means, we know only to a small extent. Jewish mysticism teaches us that creation, as such, is already a sign of the humility of a God who “withdraws” himself, making room for the world and its autonomy. A world created “in the state of journeying” is a world capable of revealing even more God's humility and his desire to be sought in silence, in hiding, and in abandonment, but also in the promise and hope of an incompleteness that cries out to be overcome and brought to completion. God works in the history of nature and humanity through a patient and silent presence, giving *space* to creatures, *time* to evolution, and *strength* to movement. God's way of working in nature and in the history of humanity must be recognized above all in this way, before trying to identify his “interventions.”³³

As mentioned above, the Cross of Jesus Christ speaks not only of a death that redeems from sin, but also of a love that offers to God the Father the finiteness and fragility of a creaturely condition, overcoming the pitfall of physical evil that finiteness and fragility once entailed. If physical “evil” is also associated with the limit and finitude proper to each creature, understood as suffering desire and unfulfilled promise for transcendent fulfillment even before understanding it as deprivation, then the mystery of the Incarnation and the Easter of Jesus Christ are the free gifts through which God the Creator allows created humanity to overcome its limit, a limit that humanity has insofar as it is *created*. In a more precise way, what is overcome is the “suffering of the limit” and not the limit itself, if the latter were to signify our creaturely condition, which even union with God in the eschaton will not erase.

³³ Cf. Jürgen Moltmann, “God's Kenosis in the Creation and Consummation of the World,” *The Work of Love*, 137–151.

From the mystery of the dead and risen Christ, theology receives light to suggest to scientific and philosophical thought that the last word is not death, but love. Indeed, love is, more than death, the word that builds and makes life advance, however necessary death may be for the changing of generations and for their evolutionary path. Indirect hints of this logic already exist in the natural world, when we see the fruitfulness of relations in symbiosis, altruism, and collaboration, certainly present in addition to those relations of a competitive or belligerent kind. However, it is above all by looking at the human species that we understand the full value of the fruitfulness of these non-conflicting relationships. In the human being, where suffering has been transcended structurally, we recognize that the logic of the struggle for survival—and thus, indirectly, the logic of violence—cannot be the last word, nor the word that most gives reason for the progress of our species on the planet or in the cosmos. From the viewpoint of competitiveness and natural selection, the increase in human technical capabilities would imply a continuous growth of our destructive—more precisely, our self-destructive—potential. Moreover, if we deny that the source of truth dwells in a Creator's love, the human being would be left to the outcomes of a relativist ethic, without any creaturely bond having a normative value. Such an ethic would not be able to curb this disruptive *escalation*, being itself subject to the law of the strongest, that is, the law of those who are able to influence public consent more than others, due to their greater power.

Without a Creator God, the human being not only fails to understand the truth of his own origin but also the truth of the future to which, in freedom, he or she is called. Jürgen Moltmann is right when he says that the future of the human species is in our hands and depends crucially on how we shape our social and planetary relationships. The struggle for existence and the behaviors stemming from that struggle now must be replaced by models of life that make creativity and love possible. This goal can be achieved through new rational relationships that man must establish with the world and with his fellow human beings. The *ethos of the struggle for existence* must be changed into an *ethos of peace in the existence*. The principle of self-preservation against others must become the principle of self-fulfillment *together* with others and, therefore, the *principle of solidarity*.³⁴

³⁴ Cf. Jürgen Moltmann, *The Future of Creation* (London: SCM Press, 1979).

In Jesus Christ, dead and risen, humanity receives the example and the source of grace to build its own future through humility, charity, and cooperation—behaviors that are existentially much more demanding than merely dialogue and tolerance. Building the future of society and of the entire planet on charity, fostering the development of relationships and thus making humanity a single family corresponds to a project of grace. This was the the global movement that Teilhard de Chardin thought to be the very meaning of evolution and the hidden engine of noosphere, to which the humans belong.³⁵ This project of grace suggests behaving in a way that the analysis of the sciences would qualify as *anti-Darwinian*, because it includes forgiveness and love for one's enemies: “You have heard—we read in the Gospel according to Matthew—that it was said: ‘You shall love your neighbor and hate your enemy.’ But I say to you, love your enemies, and pray for those who persecute you, that you may be children of your heavenly Father, for he makes his sun rise on the bad and the good, and causes rain to fall on the just and the unjust. For if you love those who love you, what recompense will you have? [...] So be perfect, just as your heavenly Father is perfect” (Matt 5:43–48). This approach signifies an exceeding logic, and even more, a scandalous logic, a logic given from above, not reached from below. Enriched by this perspective, Christian believers look to the future with realism but also with hope, as God's plan for creation is also God's plan for glory. If it is true that creation is an “open system” governed by dynamics that sometimes could cause suffering and disconcertment, it is also true that it is a personal Creator, not an impersonal fate, who guides history, natural history included. He alone possesses the keys of history, and only he can open the seals of the book (cf. Rev 5:9). But God does not use his power in a capricious way. Rather, he guides history as someone who, from all eternity, has desired to conceive protology and eschatology in a single project, a project of love to which he has desired to remain, and will remain for ever, faithful.

³⁵ Cf. Pierre Teilhard de Chardin, *The Divine Milieu* (London - New York: Harper & Row, 1960).

CHAPTER 12. DIVINE ACTION IN NATURE WITHIN THE CONTEXT OF THE EPISTEMOLOGY OF THE LAWS OF NATURE

Christian faith is faith in a God who acts in nature and history, and it is announced to the world in this way. The God of Israel, fully revealed in Jesus Christ, is not a *Deus otiosus* (idle God). Faith in him does not involve the mere confession of a transcendent principle, or that of an ontological or moral foundation whose face is ignored and to whose heart man cannot appeal. In Christ, God accompanies human beings, is beside them, listens to their invocations, and does not forget them, even when seemingly absent, inactive, or deaf to their laments. It always has been an essential condition for Israel's faith to believe that the living God can intervene on behalf of his people. Similarly, this was also a necessary condition for the disciples of Jesus of Nazareth to believe in his works as Messiah; and this same faith motivates believers in God today when they pray, trust, hope, and give thanks. Faith cannot but express itself in such filial dialogue, which acknowledges God as being close to humanity and assisting it. When the Gospel is announced, it is precisely this salvific and consoling action of God that is proclaimed, the liberating message that *man is no longer alone*.

In an encounter with the scientific rationality of our time, this proclamation of God close to human beings and working for the sake of man, can be unusual as it speaks of divine actions that go beyond our ordinary knowledge, actions that overwhelm reason and seem to work out of its control. To support the veracity of such a message, theology is called upon to satisfy two main requirements. The first is to provide a convincing explanation of what faith in miracles implies for human reason. I refer here essentially to the miracles of Jesus as reported by the Gospel narratives and then, secondarily, to the miracles that may occur still today (for example, those formally recognized by the Catholic Church in the canonization process for saints). The second requirement, philosophically more demanding, is to provide elements that may help in understanding the meaning of God's action *in nature* and *through nature*, and how such action could be effective and recognizable. The context in which I intend to examine these

questions is primarily philosophical and epistemological more than biblical or hermeneutic in scope, and it has in the background the relationship between God and nature.

12.1 Philosophical criticism of the possibility of miracles and the problem of their recognition

The occurrence and recognition of miracles has been, and still is, the subject of critical consideration on the part of both scientific and philosophical thought, albeit with different nuances. In the case of science, attention is given mainly to what vision of nature those who affirm the existence of miracles may have; in the case of philosophy, how is God's image involved in these miracles. In addition, biblical-hermeneutic criticism examines the value to be ascribed to the narratives of the miracles as reported by the Scriptures and the meanings they may have (literal, allegorical, realistic, spiritual, etc.). Finally, there is also a properly theological criticism that questions the apologetic value of miracles and their role in the interplay between faith and reason. Dealing with a Fundamental Theology in a scientific context, I will focus here especially on the first two areas, discussing miracles that seem to challenge science and philosophy.

It is noteworthy to observe that both philosophical and theological critical insights are intended to be based, at some level, on considerations taken from the domain of the natural sciences. Such considerations also (and above all) are called upon by the fact that the theological definition of a miracle, if any, or at least the criteria for its unambiguous recognition, must refer to the behavior of nature, to its laws, to what belongs or not to its realm. These are all issues, it is easy to note, on which scientific thought demands legitimate competence. If theology wishes to maintain some realism concerning the theme of miracles, avoiding the *ontological* dimension of a miracle (something that truly happened in reality) to be absorbed within the *anthropological* one (something that amazes and attracts) or within the *semiological* one (what this happening could mean or convey), then engaging the natural sciences turns out to be necessary. When this engagement is accepted, miracles become one of the major interdisciplinary topics in the study of science and theology – perhaps the topic *par excellence*.¹

¹ Reflections on the theology of miracles that take into account a scientific view of nature have been suggested, among others, by: Stanley L. Jaki, *Miracles and*

The notion of miracle is certainly very general and involves phenomena that are also quite different. To limit myself to the miracles described in the Gospels, a miraculous fishery—always possible but highly improbable—is quite different from a multiplication of the loaves, which reveals a much more radical divine action upon matter and things. Healing from a disease whose pathology could be a partly reversible phenomenon (as with many types of illness), is not the same as the resurrection of a corpse, which presents itself as overcoming a totally irreversible phenomenon. Consequently, even when theology speaks of the “ontological dimension” of a miracle, it indicates different ways in which God the Creator manifests himself and reveals his causality over all things. According to the Gospel narratives, God (i.e., the God who Jesus is, or the God who acts in him and through him) seems fully capable: to make it easy for unlikely events to happen; to restore in human beings and in material things what is wounded or damaged, or even what would seem to be lost irreparably; and, finally, to make possible what would be physically impossible, thus giving rise to a sort of “new creation.” Despite these differences, which I will seek to take into account, the questions that the sciences address to theology remain substantially unchanged, and can be summarized as follows: a) Is a theological discourse on the miracle still possible, a discourse respectful of scientific knowledge and ready to answer the objections raised in the philosophical domain? b) Should a theology that desires to reaffirm the ontological dimension of a miracle still refer to the notion of “laws of nature,” taking into account what scientific epistemology has to say in this respect? c) How should a theology of miracles be meaningful also for scientists, both at the personal-existential level and from the broader viewpoint of scientific rationality as such?

Physics, (Front Royal, VA: Christendom Press, 1989); Richard Swinburne, ed., *Miracles* (London - New York Macmillan, 1989); Pierre Deloof, *Les miracles. Un défi pour la science?* (Bruxelles: Duculot, 1997); Tim Mawson, “Miracles and Laws of Nature,” *Religious Studies* 37 (2001): 33–58; John Polkinghorne, “The Credibility of the Miraculous,” *Zygon* 37 (2002): 751–758; Mark Corner, *Signs of God. Miracles and their Interpretation* (Aldershot: Ashgate, 2005); Robert A. Larmer, “Miracles, Physicalism, and the Laws of Nature,” *Religious Studies* 44 (2008): 149–159; and Alan G. Padgett, “God and Miracle in an Age of Science,” *The Blackwell Companion to Science and Christianity* (eds. J.B. Stump and A.G. Padgett; Oxford: Wiley - Blackwell, 2012), 533–542.

12.1.1 Some criticisms coming from modern and contemporary thought

Among the main philosophical positions, Spinoza's (1632–1677) opinion is noteworthy. In *A Theological-Political Treatise* (1670), he dedicated an entire chapter to miracles.² Contrary to what we might think, and without hastily defining his thought as atheistic and pantheistic, we must admit that Spinoza's objections maintain a certain validity also today, even for theology; on the topic of miracles, Spinoza's influence on subsequent authors is comparable to that exerted by David Hume. Spinoza holds two principal beliefs: a) Nothing happens in opposition to nature or outside its laws, although our knowledge of these laws is limited and imperfect; b) A miracle, should it occur, does not provide a rational basis for God's existence or his Providence, as both are based on the natural order, not on what departs from it. Miracles are claimed by the perception of people, illiterate people particularly, used to deduce the divine from what is exceptional, from what is in contrast with nature and not from what governs it. A theological view that affirms miracles as "signs" of God becomes, for Spinoza, problematic. Miracles do not demonstrate God's existence, but rather they make us doubt it: God, in his perfections and omnipotence, is the cause by which nature follows a determined and immutable order, not by which nature violates that order. Actually, "in so far as it is conceived to destroy or interrupt the order of nature or conflict with its laws, to that extent (as we have just shown) not only would it give us no knowledge of God, it would actually take away the knowledge we naturally have and make us doubt about God and all things."³ A miracle, whether qualified "against nature" or "beyond nature," is precisely an "absurdity" in Spinoza's view. Everything against nature is also against reason, and what is against reason is contradictory in itself and should be rejected. In Spinoza, the critique of miracles is not contrary to Scripture, whose authority the Jewish philosopher does not deny; rather, it is the affirmation that such events do not provide authentic and unambiguous knowledge of God. Thought as miraculous, in reality they are events originated by natural causes, that have been omitted or unrecognized by Scripture.

² Cf. Baruch Spinoza, *Theological-Political Treatise* (ed. J. Israel; Cambridge: Cambridge University Press, 2007), ch. 6: "On Miracles," 81–96.

³ Spinoza, *Theological-Political Treatise*, 86.

Spinoza's criticism is not so much based on pantheism as on a strong link between God and the rationality of nature—an association already asserted in the 17th century but also present for the greater part of the 18th century. From the 19th century onward this association fell away, while the idea of the rationality of nature remained vibrant. Even today, it represents the scientist's spontaneous framework, a framework unperturbed by the occasional anomalous behaviors of some natural phenomena, which call for a more in-depth knowledge of the material world. Spinoza highlights a fact that still remains valid: the definition of an "event contrary to nature that happens within nature" is not easily comprehensible for those who make nature their subject of study, running the risk of being deemed an ingenuous, philosophically inconsistent attribution. The lack of a "metaphysics of being" and the difficulty in recognizing the preeminence of being over knowing led Spinoza to see the omnipotence of God on a flat gnoseological plane without understanding how God, being truly separate from nature, can be the transcendent cause of the world.

David Hume (1711–1776) conducts his criticism of miracles from the epistemological and historical-religious points of view, principally within a relevant section of his work *An Enquiry Concerning Human Understanding* (1748).⁴ In continuity with Spinoza's position, Hume observes that if we define miracles as a "violation" of the laws of nature, our direct experience of the stability and immutability of such laws leads us to conclude that miracles do not occur. A common-sense person could not reasonably lend them any credit. In this view, belief in miraculous and unusual facts is shared primarily by ignorant and barbaric populations, not by educated people. The accounts of miracles handed down to us are not reliable because they have originated within, and were conveyed through, a religious and mythical context, one that the advance of rational knowledge progressively has discredited. If Spinoza judges miracles absurd, Hume concludes they are simply "unbelievable." According to the Scottish philosopher, we should arrive at this same conclusion if we were to consider a miracle as an extremely rare, albeit possible, event. In this case, since the proof of regular laws is much more noticeable than their occasional violation, wise people—who base their beliefs on more general and better

⁴ Cf. David Hume, *An Enquiry Concerning Human Understanding, and A Treatise of Human Nature* (Chicago: Open Court, 1966), ch. X, "On Miracles," 120–145.

founded evidence—should not give credence to such events as uncultured and less informed people would do. Hume observes that the unusual character of events narrated in the past as miraculous is often seen as less surprising in the present; for this reason an eyewitness' testimony, however plausible it may seem, has little or no value. The incredibility of a fact invalidates the authority of the one who reports it.

Two observations should be made in response to Hume's argumentation. First, like Spinoza, Hume considers that the *empirical* understanding that the subject has of reality is a measure of the whole, not accepting in a prejudicial way that God can act over reality in ways that transcend our experience. According to Spinoza, new or unusual phenomena do not exist, or if they do exist they are natural and not miraculous; according to Hume, those phenomena are highly improbable. Both of these viewpoints show the importance of remembering Thomas Aquinas' distinction between the different levels from which it is possible to examine a phenomenon in relation to the knowledge (or ignorance) of a subject, and in relation to the special modalities by which a particular event or fact seems to "overpass" the laws of nature.⁵ Spinoza and Hume, although coming from different perspectives, both deny the possibility of what Thomas Aquinas defines a miracle "in the narrow sense." Aquinas describes miracles as phenomena that correspond to works done by God "outside those causes which we know," works "opposite from the effects and the way of acting of nature," and finally works that "go beyond nature in the very substance of the fact, a fact that nature could on no account accomplish." The significance of these events remains unchanged over time if, at a gnoseological level, we acknowledge the possibility of discerning between what belongs to nature and what belongs only to God, and if we admit on the ontological level a real distinction between God and nature, between Creator and creature.

The second observation refers to the loss of the eyewitness' authority due to the incredibility of the facts narrated. In reality, as Hume recognizes, we should compare evidence against evidence: "No testimony is sufficient to establish a miracle, *unless the testimony be of such a kind, that its falsehood would be more miraculous than the fact which it endeavours to establish.*"⁶ When we are told that a dead man

⁵ Cf. S.Th. I, q. 105, aa. 7-8; *De potentia Dei*, q. 6, a. 2.

⁶ Hume, *An Enquiry Concerning Human Understanding*, 127.

has come back to life—so Hume observes—we should consider which is more probable: whether the witness is deceiving us, being eventually himself a victim of deception, or if the fact referred to indeed has occurred. We must pit “one miracle against the other”: If the falsity of the witness (whether deceiver or deceived) were a “miracle” greater than the miraculous nature of the narrated event, then and only then does the witness possess sufficient authority to convince the audience.⁷ We are thus faced with a criticism which leaves the value of the testimony unchanged but requires such testimony to be expressed at its highest possible level. We return once again to the logic of martyrdom, of sanctity, of the unity of witness of intellectual life, the only reassurance that our assent to an event surpassing reason is itself reasonable.

In line with deism’s opposition to revealed religions, the Enlightenment also offered its own criticism of miracles. The authors of the Enlightenment affirmed God as guarantor of the laws of nature and the moral order, pushing back into unbelief and ignorance those manifestations of religiosity that invoke and confess a God close to man or claim to entrust him our own existential affairs. In his work *A Historical and Critical Dictionary*, the skeptical philosopher Pierre Bayle (1647–1706) had developed analogous arguments in which denying miracles did not include a denial of God, but rather the denial of a certain image of him that popular piety had endorsed and religions had nourished. In the entry “Miracle” of his *Philosophical Dictionary*, Voltaire (1694–1778) speaks of miracles as a *contradictio in terminis* (an intrinsic contradiction). They are a kind of “insult to God” as they ascribe to God the task of correcting, by means of his miraculous interventions, that which He himself has created and brought into existence.

⁷ In Part Two of Section X of his *Treatise*, Hume mitigates this position, stating that even the best witnesses are never completely reliable and are not free from psychological or environmental influence. However, this does not affect the logic of the previous argument, which remains valid: The degree of exceptionality of the event narrated, to which we ask adherence and belief, must be proportionate to the degree of reliability of the witness. Although with oscillations of thought, Hume himself confirms this criterion at the end of the entire discussion on miracles, reaffirming the primacy of experience: “It is experience only, which gives authority to human testimony; and it is the same experience, which assures us of the laws of nature. When, therefore, these two kinds of experience are contrary, we have nothing to do but subtract the one from the other, and embrace an opinion, either on one side or the other, with that assurance which arises from the remainder.” Hume, *An Enquiry Concerning Human Understanding*, 141.

The perspective of the Age of Enlightenment finds a philosophically mature expression in Immanuel Kant (1724–1804), who in his essay *Religion within the Bounds of Bare Reason* (1793) dedicates to miracles a *General Comment* at the end of Section II.⁸ Taking his cue from Jesus' reproach, "unless you people see signs and wonders, you will not believe" (John 4:48), Kant observes that the moral life, and the imperatives that should regulate it, cannot be based on hypothetical events. The high esteem he professes for morality and the need to provide a commonly held universal basis for it impose an opposition between two different ideas of religiosity: one based on reason and universal consensus, the other on credulity and emotionality. The latter would equate faith to personal and transient experiences, responsible for a demonstrative use of miracles. Although in principle a miracle could happen, its exceptionality when compared to natural and rational laws would compromise its recognition by reason. However, this would also endanger our capability of knowing the divine law, rational in character, a moral law that should be clear and accessible to everyone, by no means fickle or precarious:

If, however, we assume that God sometimes and in particular cases also lets nature deviate from these its laws, then we do not have the least concept, and also cannot ever hope to acquire one, of the law according to which God then proceeds in the arrangement of such an event [...] Now, here reason is as though paralyzed by this, because it is held up by it in its occupation according to familiar laws, but is not instructed by any new law, nor can ever hope to be instructed concerning one in the world.⁹

The relative incompleteness of scientific knowledge should not be invoked as a gateway to the irrational or the miraculous. Such incompleteness, Kant affirms, does not invalidate the rational approach that science always must maintain when judging facts. Rather, what seems to escape from natural laws should be accepted and endorsed by science. In fact, science is stimulated by the study of all observable phenomena in nature so as to perfect knowledge of its laws. Asserting that events extraneous to the laws governing the universe and our life are not objects of science would have

⁸ Cf. Immanuel Kant, *Religion Within the Bounds of Bare Reason* (Indianapolis - Cambridge: Hackett Publishing Company, 2009), 95–101.

⁹ Kant, *Religion Within the Bounds of Bare Reason*, 98.

devastating effects at a moral level: "If reason is deprived of the laws of experience, then in such an enchanted world it is no longer of any use whatever, not even for the moral employment therein, in complying with one's duty."¹⁰ In summary, all the thinkers mentioned here, each in his own way, present theology with a very specific demand: a theology of the miracle respectful of scientific epistemology should be able to clarify what constitutes the "non-natural" and "extraordinary" value of such events, explaining their relationship with our experience of natural and scientific laws. This necessary clarification regards both the *possibility* of miracles and their *recognizability*.

In the 19th century, criticism of miracles flows into the denial of God, as expressed by positive atheism and modern materialism. Miracles are considered a sign of credulity, directly proportional to the influence of religion on the minds of illiterate people and inversely proportional to the progress of science. The thinkers of the Hegelian Left understand religion as mere mythology that must be replaced by rationality and by the creative potentialities of the idealistic Spirit. They claim a purifying work of science for freeing humanity from irrational belief, a task already theorized in France by Auguste Comte (1798–1857).

In contemporary times, an interesting philosophical position in terms of depth and balance has been expressed by Antony Flew (1923–2010).¹¹ The English philosopher assumes Hume's perspective and places it alongside his criticism of the non-falsifiability of religious assertions, and thus their lack of any probative, cognitive value. He states simply that miracles are non-historical, unbelievable, and unrecognizable. Flew's criticism of the historicity of narratives concerning miracles is limited to observing that universality and repeatability are two decisive factors for sustaining the credibility of a certain event, and miracles lack both qualities, thus deducing that they never happened. This is a reposition of Hume's argument on the precepts of experience, applied here to the historical method. However, to be honest, we should observe that "non-reproducibility" is not always adequate for separating facts from groundless claims, as physical phenomena exist that are non-

¹⁰ Kant, *Religion Within the Bounds of Bare Reason*, 101.

¹¹ A long-convinced atheist who later migrated toward a theist position at the end of his life, Flew's original philosophical criticism of miracles is contained in Anthony Flew, "Miracles," *The Encyclopedia of Philosophy* (New York: Macmillan, 1972), 5: 346–353.

reproducible in earthly labs or can occur in principle only once. In any case, Flew's criticism of the "unrecognizability" of miracles is quite interesting and thus deserves to be examined here more in detail.

The English philosopher begins by arguing that miracles are not suitable for proving God's existence, nor the existence of a world that transcends nature, as they presuppose both entities exist. To be recognizable, miracles should in fact maintain cognitive reference to a supernatural dimension; if we were to confine them within the natural dimension, they would be unrecognizable. But miracles, by definition, are declared to overcome that dimension. In other words, we would be faced with a vicious circle: to recognize a miracle, we need a specific cognitive horizon (for example God, a supernatural, or a spiritual dimension), whose existence the miracle itself would like to prove, at least according to the apologetic function Flew believes should be assigned to miracles. If, following Augustine of Hippo, we affirm that miracles are not opposed to nature but rather opposed to our knowledge of nature,¹² then we are forced to accept – Flew says – that miracles surpass not only our capability of interpreting them, but more radically still our capability of identifying them.¹³ In short, if we desire to establish the possibility of a miracle by using a scientific-cognitive framework, the miracle would postulate precisely the overcoming of this framework (overcoming, suspending or violating nature and its laws, as these could be scientifically knowable for us). Then, we would be obliged to admit that, "within a rational framework," the miracle remains something unknowable and unrecognizable for us. Flew concludes that any use of miracles is excluded within arguments that desire to appeal to reason from faith.

Formally expressed, the English philosopher's criticism may be presented as follows: A miracle can be qualified only in two ways, namely, a) as a rare and unusual event, or b) as an event that goes beyond the order of nature, placing itself outside its knowable laws. The first case is a natural event and, therefore, not miraculous in the strict sense. The second case remains an event that cannot be identified or known. In both cases, the event cannot be used to "prove" anything. In the first case, as a rare but natural event would not be able to show that something exists beyond nature; in the

¹² Cf. Augustine of Hippo, *The City of God*, XXI, 8,2.

¹³ Cf. Flew, *Miracles*, 348–349.

second case, because of the absence of an adequate cognitive framework for identifying the event and its meaning.¹⁴ Flew affirms that a truly miraculous event, a miracle ontologically more qualified than what Augustine requires, should be “independent from nature” (and not merely beyond our present knowledge of nature). Otherwise, it should be qualified as an unusual event, strange but interpretable within a “wider framework” of natural laws and explanations and, therefore, without the possibility of pointing beyond nature.

A reason for interest in Flew’s criticism is that he takes note (and rightly reminds us) that any judgment on *miracles* as such does not pertain to the epistemology of the natural sciences. In this regard, the philosopher is correct. He is also correct when asserting that miraculous events cannot be used to support the existence of a Creator or to defend, as part of an apologetic program, the truth of any religious system. Strictly speaking, a miracle is an event through which God, already known through other sources, makes himself present as “responsible” for the action that caused the miracle, revealing himself and his personal will. However, it is the whole setting of the miraculous event – that is, the belief system shared by the people who are the recipients of the miraculous action and addressees of its message – which reveals the identity of its Author and his moral quality: the One God, Creator of heaven and earth, or a generic spiritual agent able to surpass the order of nature and matter. We observe that Flew’s criticism, as well as the considerations developed by a theistic defense in reply to this criticism, both support contemporary theology’s choice not to consider miracles as simply supernatural events but as *events of revelation*, referring to Christ and the context of redemption. Only the religious context of revelation, mercy and salvation – in which the event can be read and recognized – reveals the Agent’s character and his relationship with men. However, Flew is not right when limiting the recognition of miracles – and their apologetic value – to the significance that such events assume when considered against a background of empirical rationality, forgetting the semiotic value of these events and their meaning for humanity, a meaning certainly grasped thanks to non-formal, non-syllogistic kinds of rationality.

¹⁴ I follow here the formalism employed by Norman L. Geisler, “Flew Antony,” *Baker Encyclopedia of Christian Apologetics* (Grand Rapids, MI: Baker Books, 2000), 254–258.

In light of the philosophical criticisms just examined, and considering the fact that the Author of miracles is God—that is, a subject whose personal identity is not an object of the scientific method—theology understands that a discourse on miracles respectful of the natural sciences cannot ask the latter for either a definition of miracle or a judgment on how and when a miracle might happen. Moreover, the recognition of a specific “event” that theology qualifies as a miracle is necessarily entrusted to a gnoseology broader than that represented by formal scientific method: we also need common sense, illative sense, and religious sense. In other words, it is a personal subject who must recognize such an event as something meaningful, capable not only of astonishing but also of appealing and calling. Only a *personal subject* is capable of standing above the empirical level proper to the scientific method, discerning sources of knowledge that transcend that level.

Two of the theological questions mentioned above still need to be addressed. Regarding any definition or identification that might be given of miracles, could (or, perhaps, must) theology refer to nature and to its laws, as these also are known by the natural sciences? Consequently, how could we develop a *theology* of miracles that would be meaningful also for a person who lives and works in the world of science? I do not intend to discuss here what responsibility a scientist may have in the face of such events should they happen, but rather to investigate how theology should take into account, when discussing miracles, what scientific rationality would have to say. If it is true that *signs* concern the person, it is equally true that speaking about *events occurring in nature*, however unusual they may be, concerns scientific knowledge of nature and the method attaining that knowledge.

12.1.2 The object of miracles and the significance of their appeal within the context of scientific epistemology

Theology cannot renounce dialoging and confronting the natural sciences on the issue of miracles by simply invoking the non-overlapping magisteria of the respective domains. Interaction is inevitable. The contextual background of the natural world (and therefore of the sciences) continues to be an indispensable reference for a *theological* discussion of miracles that chooses not to relegate them to the realms of mere symbolism or purely psychological experience. Moreover, the believing community continues to

manifest its faith in miracles and the Church's Magisterium judges their reliability, also on the basis of opinions asked to scientists, physicians in particular. For an interdisciplinary debate on miracles to be fruitful, it is necessary to employ an epistemology that is both scientific and personalistic, attentive to the rigor of logic but capable of recognizing the existence of meanings and reasons beyond the horizon of the empirical method.

When referring to the behavior of nature in the theological discourse on miracles, we encounter three delicate epistemological questions. The first one, already pointed out by Hume and then strongly taken up by Flew, concerns the existence of a certain tension between the regularity and stability of the laws of nature (necessary as background for what eventually surpasses them) and the occurrence of exceptions to the laws themselves (necessary for identifying unambiguously an event that one wishes to highlight). According to Flew, this tension confers an “intrinsic instability” in the concept of miracle.¹⁵ The second question is that scientists do not change their cognitive approach in the face of the unusual and extraordinary, but rather confront the unknown so as to know and interpret it. In order to understand what it does not yet understand, science exclusively uses the tools of its method, including statistical analysis and the computation of probabilities as a “measure” of the improbable. In this sense—and in certain agreement with what Spinoza and Hume pointed out—for science (and partly also for its laws), it is as if “everything were natural” even if not yet understood. Science seeks reasons, even if they are still unknown, and seeks to investigate more and more if and how some causes might have particular effects. The third question, no less delicate than the previous ones, involves the somewhat problematic character of the notion of “laws of nature,” whose application is not always easy, especially in strategic areas of the sciences such as quantum mechanics, the study of complex systems, or the phenomenology of living beings. An appropriate distinction between “laws of nature” (referring to an ontological substratum, the object of the philosophy of nature rather than of the natural sciences) and “scientific laws” (the object of logical and mathematical formalism that empirical knowledge applies to phenomena through a necessary methodological reductionism) can mitigate the perplexities of those who find it difficult to understand or represent nature’s behavior

¹⁵ Cf. Flew, *Miracles*, 347.

through the notion of *laws*. However, this approach does not completely circumvent the complication arising from the presence of different epistemological perspectives, depending on the more or less realistic (or idealistic) philosophical framework adopted by contemporary philosophers of science when approaching the interpretation of natural phenomena.¹⁶

In order to resolve the first question, and partly to answer also the second, many thinkers opt to abandon the idea that a miracle is an action of God “against nature,” or an action suspending or breaking the lawful and scientifically knowable behavior of natural phenomena. More radically, some argue that considering miracles as events contrary to the course of nature would be the expression of a prescientific mentality unacceptable today. The French biblicist Xavier Léon-Dufour, for instance, prefers to speak of God's action “through” the laws of nature already known or in part still unknown. God is at the origin of the world and, therefore, as its author and restorer he does not contradict nature. Léon-Dufour affirms that the Bible does not endorse the view of a miracle as being a “derogation from the laws of nature”, since doing so would put God the Creator in contradiction with himself. To seek making of God a “First Cause” that replaces “second causes” would be like placing God outside the world and in competition with the natural elements.¹⁷ Many of the theological proposals put forward in recent decades have been moving in the same direction, avoiding any assertion of miracles as “derogations” from natural laws.¹⁸ Karl Rahner already warned that “the notion of miracle as an occasional suspension of the laws of nature by God is extremely problematic.”

¹⁶ The bibliography on the epistemology on the laws of nature is too extended to provide here satisfactorily for reference. For a concise review that also includes a theological outlook, see Giuseppe Tanzella-Nitti, *Laws of nature* (2008), INTERS, DOI: 10.17421/2037-2329-2008-GT-3. Cf. also Giuseppe Tanzella-Nitti, “The Aristotelian-Thomistic Concept of Nature and the Contemporary Scientific Debate on the Meaning of Natural Laws.” We find a distinction between “Scientific Laws” and “Laws of nature” also in Padgett, *God and Miracles in an Age of Science*, 535–539. Although Padgett does not employ an Aristotelian-Thomistic philosophical framework, what he does indicate by the term *principia naturae* is precisely what Aristotle would have called *nature* and Thomas Aquinas would have interpreted as a formal causality, whose ultimate origin is God’s free act of creation.

¹⁷ Xavier Léon-Dufour, “Modi diversi di affrontare il problema del miracolo,” *I miracoli di Gesù secondo il Nuovo Testamento* (ed. X. Leon-Dufour; Brescia: Queriniana, 1980), 9–35.

¹⁸ Cf. Carlo Borasi, “Un’analisi epistemologica del miracolo,” *Asprenas* 34 (1987): 375–395. Cf. also Padgett, *God and Miracles in an Age of Science*.

Rahner added that most of the miracles of the NT “can never or extremely rarely be shown certainly and positively to be a suspension of the laws of nature, even when they are shown to have really taken place historically.”¹⁹ I suggest that theology can move legitimately in this direction. We shall see shortly that there are good reasons for this perspective.

Generally speaking, theology should avoid two opposite tendencies. One tendency is toward the belief that any rejection of the notion of miracle as an “event that goes beyond the natural order” would oblige interpreting the miracles of Scripture in an exclusively symbolic or metaphorical way. The other tendency is to think that theologians must speak at all costs of miracles as events “against nature” or that “contradict nature,” in order to safeguard their core meaning. In reality, there is no need for a contemporary theology of miracles to endorse either of these positions.

Some interdisciplinary approaches aim to protect miracles from accusations of “irrationality,” and then defend the “possibility” of such events by resorting to a certain vision of nature sought within contemporary science. For example, nature’s behavior is thought to be much more complex and creative than we could imagine, an expression of potentialities largely unknown to us. This perspective would make it plausible that some exceptional events are actually due to the ordinary, though unusual, way in which God acts through natural elements. The idea that nature could have many hidden potentialities might suggest, for instance, that a quantum understanding of gravity would be able to explain the “natural” character of phenomena that have been considered for a long time to be completely unusual or even impossible. Other thinkers observe that scientific analysis leaves ample room for unpredictability and indeterminacy: physical or biological processes are not carried out according to strict and immutable laws but rather take place in a world of relationships and interactions that are impossible to determine and know in their full depth. If we assume an ever-changing and creative network of phenomena that is largely unknown to us, then divine action that surprises our attention in an unexpected event would no longer be an action against nature, nor would it require any derogation from any deterministic law. The events in question should also be considered within a probabilistic framework: a significant portion of events perceived and reported

¹⁹ Rahner, *Foundations of Christian Faith*, 258–259.

as miracles could be statistically very unlikely, yet still natural (think of a miraculous fishing harvest or a rapid recovery). We also could imagine a miracle as being a “configuration of events,” an improbable yet always possible series of coincidences of natural phenomena that, in their unexpected and coordinated occurrence, carry the sign and intentional message of a personal Creator. Other thinkers suggest confining divine action to our psychological and mental processes, which are considered to be more “ductile” than the laws of nature: what would appear externally as a miracle (e.g., the transformation of water into wine) actually would be only the result of our subjective impression caused by the influence of God on our psychic or sensitive sphere.

All previous attempts to demonstrate the “possibility” of miracles are driven by the desire to defend such events from accusations of irrationality and intend to make them more “intelligible” to the scientific mentality. Although inspiring, in my opinion they leave some important issues still unresolved. First, not all the miracles of the NT (to limit ourselves solely to this source) can be included in the typology of unusual events that are probabilistically possible due to natural causes, or not yet well known. Many events—consider for instance the resurrection of Jesus of Nazareth—seem unsuitable for such categories. The only way to interpret all miracles according to this view would be to expunge forcibly those narratives containing events that are “impossible,” judging them as historically unfounded. Second, I am persuaded that the “ontological dimension” of miracles must be preserved in order to *recognize* them. The ontological dimension becomes weakened and eventually erased when we merely refer to the generic and ordinary action through which God causes the being of everything happening in nature. The classical view about the ontological dimension of miracles (i.e., God acts here and now in nature) can be maintained without the fear of presenting miracles as being irrational. For instance, consider events reported by credible witnesses that are “physically impossible,” i.e., departing from any “naturalistic” interpretation, such as the multiplication of five loaves that feed a crowd or the resurrection of someone from the dead. Those who affirm the reality of these events are not accepting anything *irrational* merely because we do not have (and will never have) a complete and exhaustive *rational* scientific understanding of the ultimate, metaphysical reasons that found the physical world. In addition, we do not have (and will never have) a complete and

exhaustive *rational* understanding of what human life is, since many facets of human phenomenology escape the scientific method. At the same time, those who affirm the reality of the multiplication of loaves or of a resurrection from the dead are not endorsing the image of a divine action that violates nature, an action which *contradicts* nature or is contradictory in itself. Escaping any probabilistic or naturalistic interpretation and going beyond our possible future knowledge of natural phenomena, such events do not “suspend” the laws of nature, but rather achieve something “outside them.” Such events manifest something that is not against nature but rather is *other-than-nature*. For those who think the hypothesis of a Creator God to be reasonable, miracles are available as signs of Someone who is “totally-Other.” More than being someone acting *on nature*, He is a subject capable of creating nature, or restoring and recreating it. Signs of this kind transcend the empirical order and are captured by the human mind in a personal and existential way, not employing the scientific method or by means of formal, analytic language. Considering J.H. Newman’s insight, we could say that miracles are recognized thanks to a real and informal assent, not by means of a notional, formal assent. For this reason, the scientific method (concerned with formal, notional assents) is neither upset nor contradicted.

Science is not contradicted by miracles that correspond to events “not physically impossible,” that is, events for which naturalistic interpretations in terms of probability or due to our ignorance of the laws of nature are always in principle possible. Science is not contradicted either by those miracles corresponding to events that are “physically impossible” and for which a naturalistic interpretation certainly fails. In the first case (non physically impossible events), science can continue to examine them freely, also seeking an explanation (present or future) in terms of natural events. Leaving their semiotic and psychological dimensions unaltered—while being fully available to religious and theological discourse—the ontological dimension of miracles could be interpreted in terms of God’s ordinary and providential action. This first class of events could be interpreted as a hidden and discreet action of God, who causes the boundary conditions or the appropriate choices that allow open systems to give rise to ontologically new phenomenologies, as I will examine in a subsequent section. In the second class of events (physically impossible events), the radically divine action of bringing something into being by creating or re-creating does not

belong to nature, and so science can neither deny nor confirm it. In short, to accept the possibility of a miracle, one is not asked to accept any contradiction, either against the scientific method or against nature.

Let us now examine the third point of discussion between theology and science to which I referred previously: the difficulty we find when trying to define the “laws of nature.” This difficulty, however, does not affect the understanding of miracles in terms of probabilistic or indeterminate events, or events that in any case are possible and may happen in nature. Rather, it places some constraint when theology wishes to speak of some miracles as “physically impossible” events. In fact, the identification of such miracles would be prejudiced when evaluated within the framework of a phenomenology whose behavior would not admit universally valid and univocally recognizable laws. Now, if theology shifts its focus from the concept of *natural law* to the notion of *nature* and to the realism that such a notion incorporates, these alleged uncertainties diminish quite much. Recalling the difference between “natural laws” and “scientific laws” introduced elsewhere in this volume,²⁰ the problematic character of the epistemology of the laws of nature actually concerns the status of *scientific laws*, at times troublesome, the latter being our attempt at formally representing, in a provisional and revisable way, the former. It is not the revisable and relatively provisional character of scientific laws that the theologian must examine, nor the fact that the behavior of natural phenomena is represented within changing paradigms, and even in certain competition with each other. The uncertainty or ignorance that still reigns in various areas of our physical knowledge of the cosmos or about the origin of many processes in the living world does not prevent theologians from dialoguing with scientists concerning the recognizability of miracles. Rather, theologians must focus their own and their interlocutor's attention on the *metaphysical nature* of material entities and the *formal causes* on which scientific laws and our mathematical models are based, and whose stability and unambiguity are guaranteed not by the invariability of our scientific formulations, but by the intrinsic properties of material entities and their founding relationships. These properties and relationships make all things – an elementary particle, the components of a cell, or whatever other material entity – what they are and how they are,

²⁰ See Part I, Chapter 4, section 4.3.

and not otherwise. Philosophical (metaphysical) knowledge represents the permanent and truthful basis of scientific (empirical) knowledge, filtered over time by our experiences—mistakes included. It is this truthful basis, and no other, that must be regarded as a gnoseological benchmark for declaring what belongs to nature and what instead does not belong to it, what nature can do versus what is impossible for it to realize. The legitimacy of such a perspective is confirmed by both the existence of certain irreformable knowledge that acts as a matrix and premise for all new discoveries, and the positive, non-involutionary orientation of cognitive progress as such. Any theological discourse on miracles must appeal first to a proper philosophy of nature and then, in a secondary manner, to a proper scientific epistemology. All of this means that the notion of miracle, as addressed “from theology to the sciences,” is something that “stands or falls” not with the laws of nature (or with the understanding we may have of them). Rather, this notion stands or falls with the realism of our knowledge of nature, that is, with our ability to confront reality in an unambiguous way, recognizing that we can draw conclusions that are true and to a certain extent also irreformable, though partial and perfectible. This is, in my opinion, the epistemology with which any theological explanation of miracles “stands or falls,” to be meaningful also for the rationality of the sciences. It is in this sense that statements as “something other than nature”, or “something transcending the behavior of nature” are still (and will be for ever) meaningful for the world of science.

12.1.3 The use of science in understanding the ontological dimension of miracles

The task of an interdisciplinary study of miracles includes not only the development of a theology respectful of scientific epistemology; theologians also should explain how scientific knowledge should be employed for the *theological recognition* of miracles. Blaise Pascal already claimed, “If there were no rule to judge of them, miracles would be useless and there would be no reason for believing.”²¹ If theology were to discard the problem rashly without identifying precisely what a miracle is or is not, it would fail to assign miracles any specific role in the process of preparation for faith, thereby also undermining the value they have

²¹ Blaise Pascal, *Pensées*, n. 759.

within the economy of divine revelation (cf. for instance, John 5:36; 10:25; 10:37–38). Consequently, the issue is to wonder whether and to what extent scientific knowledge can contribute to the discernment of miracles.

As already pointed out, science is not qualified to define what a miracle is, simply because miracles are a theological-religious concept, not a scientific one. Any definition of this kind of event will always contain an explicit reference to God as agent, which suffices to exempt science from any burden of proof, as God's agency lies outside the scope of scientific investigation.²² What is, then, the role of science in the discernment of a miracle? Bearing in mind the three classical dimensions of miracles – ontological, anthropological and semiotic – science is not entitled to offer any conclusions concerning the semiotic dimension, as it is a domain of understanding pertaining to a personal subject and not to the scientific method. The content of the sign in question concerns solely the dialogue springing from God towards humanity; it is a sign that man can either comprehend or choose freely to overlook. Yet there is a certain role of science in *confirming* the psychological-anthropological dimension. Within this context, one may wonder legitimately if the “extraordinary marvel” experienced before a certain phenomenon should be justified by its real anomaly, exceptional character or impossibility to happen or, rather, if it is only the fruit of ignorance and of credulity. There are also *false* miracles that have to be unveiled.²³ The role of science regarding the ontological dimension of miracles is more complex and, so, requires more in-depth examination.

²² In the declarations of the Magisterium of the Roman Catholic Church, we do not find, even in the past, any “definition” of miracles, but solely clarifications regarding their content and finality. Their historical value is affirmed along with their inability to be reduced to purely symbolic or mythological narrations (cf. DH 3009, 3034, 4404). Their value in moving people toward faith is explicitly affirmed (cf. DH 2753, 2779). Also, the Magisterium refutes the intellectual position which maintains that while faith may be prepared to recognize miracles, reason is incapable of comprehending miracles, a position which is rooted in scientific agnosticism (cf. DH 3485). In any case, although they are not expressed in a systematic way, the three dimensions of miracles – psychological, ontological, and semiotic – are stated within the entirety of Church's doctrine. The definition of a miracle, therefore, is not a matter for the Magisterium's official teaching but is left to theology.

²³ St Augustine already had considered the aid of reason to be important for distinguishing true from false miracles. Cf. Augustine of Hippo, *The City of God*, X, 16–21.

It is helpful to remember that the Catholic Church asks scientists to certify that the causes of an event under investigation are unknown to those employing the tools of the scientific method. This process happens on the occasion of supposed miracles occurring in specific contexts, such as pilgrimages to shrines and devotions to saints in special places. As is known, the most common cases in which the problem of the “recognition of a miracle” is involved concerns the “Processes for the beatification and canonization of Servants of God.”²⁴ Reformed by John Paul II’s apostolic constitution *Divinus perfectionis Magister* (1983), the basic structure of the canonical procedure for evaluating possible miracles continues to be, in its general guidelines, what was arranged more than two centuries ago by Benedict XIV’s decree *De Servorum Dei Beatificatione et Beatorum Canonizatione* (1747). Mainly oriented towards judging the real occurrence of miracles of healing and recovering, Benedict XIV’s document required the simultaneous fulfillment of seven, quite demanding specifications. They are: 1) It is necessary that the illness is judged to be a serious and critical disease, highly dangerous for the patient’s health, with recovery being impossible or at least very difficult; 2) The extraordinary event under investigation cannot overlap with what might be considered to be the beginning of a natural recovery; 3) No medical treatments are to have been applied or, if applied, they are determined to have brought about no positive effect at all; 4) The recovery must have occurred instantaneously or at least without a time course that could have allowed a natural process; 5) The healing must have been general and definitive, and 6) without any strong physiological crisis that, at times, could resolve some pathologies in an unexpected and immediate way (for instance, expelling some harmful mass out of the human body); and finally, 7) the illness must not reoccur after some time.

Although proposed with a language typical of that time, Pope Lambertini’s criteria show good formal rigor and respectful

²⁴ On this matter, see: Jacalyn Duffin, *Medical Miracles. Doctors, Saints, and Healings in the Modern World* (New York - Oxford: Oxford University Press, 2009). Cf. also José Luis Gutiérrez, “I miracoli nell’apparato probatorio delle cause di canonizzazione,” *Ius Ecclesiae* 10 (1998): 491–529; John Collins Harvey, “The Role of the Physician in Certifying Miracles in the Canonization Process of the Catholic Church,” *Southern Medical Journal* 100 (2007): 1255–1258. On the relationship between Jesus’ miracles and bodily health, cf. Joseph Doré, “La signification des miracles de Jésus,” *Revue des Sciences Religieuses* 74 (2000): 275–291.

attention to the methodology then used by medical science. Nowadays, John Paul II's dispositions do not codify specific criteria but leave ample room for work by the Congregation for the Causes of Saints, especially its commissions of experts—doctors, in the case of healings—so that they may work in accordance with their research methods and in complete autonomy.

Today as in the past, for this type of process experts are not asked whether or not a “miracle” has occurred, nor are they asked to make any judgments about what a miracle is, but only to declare that we are faced with an event that goes beyond the order of known natural causes. On the basis of the current acquisitions of information, experts are asked to determine whether there is any chance whatsoever that such an event might have happened historically, and whether our ignorance concerning the causes determining this phenomenon might be overcome reasonably in the future. It then is up to theologians to evaluate all this information within their specific processes, depending on the “definition” of miracle they choose to employ. Strictly speaking, science cannot be asked to demonstrate whether a given event belongs to nature or not, or whether its causes originate from a realm *other* than the natural. As I noted earlier, the scientific method indeed would be incompetent to do so, as all phenomena studied by science are in some ways “natural,” and “natural” is the order of causes that science can research, known or still unknown.

From this point of view, only by proceeding *bottom-up* could scientists affirm that they are faced with a “physically impossible phenomenon,” certifying whether our ignorance regarding causes is not likely to change with the progress of knowledge. However, such a judgment is always very difficult to formulate, as it is something lying outside the scientific method *stricto sensu*. To judge that we are dealing with a physically impossible phenomenon would require the contribution of common sense, forms of real assent, and the aid of the illative sense. The medical sciences, therefore, can help to clarify the ontological dimension of a miracle only within an epistemologically broad judgment, which in a very limited number of cases can result in a verdict of physically impossible phenomena, such as full restoration to the original condition (a *restitutio ad integrum*, as said in Latin), or healings from irreversible damage. In these latter cases, science cannot add anything more, and shall stand in the attitude of an “impassive silence”: these are events, in fact, that rather than happening within nature, seem to manifest what

radically transcends nature, what only the action of the Creator of life can cause.

Let us resume, then, how theologians could read the three dimensions of miracles—ontological, anthropological, and semiotic—in light of their dialogue with the sciences, always taking into account the necessary distinction between extraordinary events (being highly unlikely or still unknown, yet in some way still natural), and physically impossible events (being radically associated with God’s creative action).

In the case of events belonging to the first category, the psychological aspect would refer to the subject’s amazement for the capabilities and beauty of nature, the coordinated and favorable unfolding of its processes. The ontological aspect would be absorbed into ordinary Divine Providence, that is, secondary causes depending on God as the primary Cause, or at any rate encompassed within divine action discreetly operating through choices left to act freely in the plies of nature. We would not be witnessing a “new” creative act by God, but rather the act by which He creates, sustains existence, and determines the phenomenology of all things. The semiological aspect would refer not so much to the objective and determinate content associated with that event, but rather to the subject’s interpretation of that certain event, by acknowledging it as a divine word that constantly is calling us. The events in question would be judged as extraordinary or highly unlikely happenings, but they would be “possible” for someone who thinks according to the canons of scientific rationality. The “objective” dimension of their recognition would depend on the confidence level (degree of certitude) provided by the scientific method and accepted by theologians for achieving their end, whereas the “subjective” dimension would be entrusted to the miracle’s recipient, as a sign *directed to him or her*.

In the case of the second category of events, labeled as “physically impossible,” the psychological aspect is paramount. As we have seen, a scientist only may confirm them approaching from below, as they are events beyond his or her understanding. At the very heart of the wonder that the psychological aspect expresses, lies the subject as a human being, not the scientific method alone. The ontological aspect, due to the radical character of the sign, would express a mysterious relationship with the “new creation,” pointing as it were to a window opening to a “new world.” The sign in question would show not only what nature is able to do or recover

when fully aligned, in Christ, with its Creator; above all, this sign would show what nature cannot do, as the sign must have as its author only Him who has the power to create and recreate. Such power implies a profound knowledge of natural forces as only the Creator could possess, knowing and governing them without any creatural mediation. Even if walking on water might be understood in the future in terms of our new knowledge about the force of gravity, which could include the action of gravitational screens, the act of walking on the Sea of Galilee would not cease to be a miracle. Only He who controls nature and its forces as their Creator could employ such knowledge, as Jesus did, in a way inaccessible to humans. Finally, the miracle's semiotic dimension of physically impossible events would acquire a wide objective significance, universal and easily communicable, and no longer confined to subjective amazement because of the exceptional value of the sign. In both types of events, extraordinary and physically impossible, we find the Creator's own signature; it is read, respectively, by those to whom the sign is addressed, or by all those who come across the miraculous event.

12.1.4. Perspectives and guidelines for theological work

Fundamental Theology must present the notion of miracles to a scientific audience, like any other audience, according to the first and principal meaning it holds, that of being a *sign*. It is here where its biblical roots and proper coordinates lie, those of a personal relationship between God and the human being. As already mentioned, the notion of miracles is incomplete if regarded solely as the record of an extraordinary event, even physically impossible, but something aimed exclusively at surprising and shocking humans. Miracles are prodigies, but they are such insofar as they are signs of salvation and of mercy, divine signs by which God himself manifests his presence alongside human persons – freeing them, enhancing their dignity, lifting them up, and comforting them. Powerful acts springing from nature or affecting nature do not exhaust what God wishes to communicate or reveal to humanity by means of miracles. Contemporary theological approaches must emphasize the Christological character of each and every miracle. Both the miracles reported by the Gospels, and those by which God has continued to work amidst humanity throughout history, are made manifest in a nature that belongs to the mystery of the Incarnate Word. From both philosophical and salvific viewpoints, miracles reveal how creation

“belongs to Christ,” and receives meaning and consistency from him. This dynamic illustrates why miracles are not any form of violence on nature. They could never be the product of a balance of power between the Incarnate Word and a creation that he wants to subjugate. Miracles show rather that, from both the semiotic and ontological points of view, all creation is ordained towards Jesus Christ, the Word by whom and in the sight of whom all things were made.

This necessary Christological reference affords us a decisive key for the proper understanding of miracles. As Romano Guardini (and many other theologians after him) pointed out long ago,²⁵ miracles are “signs” of future cosmic transfiguration and an eschatological foretaste. They safeguard and disclose the seminal grounds for a “new creation,” almost as a guarantee that it is “ontologically possible” in Christ, and does in fact take place for he is the author of creation, he who sums it up, recapitulating and renewing it. In this sense, every miracle occurring in nature—not only miracles detailed in the Gospel accounts—has a fundamental relationship with Jesus Christ’s Resurrection, the first fruit of the new heavens and the new earth (cf. Isa 65:17; 2 Pet 3:13; Rev 21:1). Those events previously qualified as “physically impossible,” not belonging to nature as they are other-than-nature, highlight each miracle’s eschatological profile. Even though miracles occur in nature, they do not spring from nature’s maternal womb, nor do they belong to any natural dynamic, be it known or still unknown, likely or unlikely. Such miracles can originate only from the One who creates and sustains nature itself, shaping it and establishing its causal relationships. Like Jesus’ risen body, physically impossible events serve as “windows” of the new creation; they proclaim it and generate it as first fruits. However, we must never forget that the new creation also mysteriously includes a dimension of restoration and reconciliation, both of which relate to the Kingship of the Risen Christ over creation, as shown by the writings of St. Paul and St. John. There is, then, a strong eschatological dimension in all miracles of healing and restoration, traditionally associated with messianic revelation of the new times, towards which they lead.

Underscoring the eschatological aspect of miracles may help theology to find appropriate language or images for presenting their

²⁵ Cf. Romano Guardini, *Wunder und Zeichen* (Würzburg: Werkbund, 1959), ch. III.

actions over nature. There is no need to insist upon the notion of a “suspension of natural laws” or on the idea of their “derogation,” nor are we obliged to speak of events “against nature.” In biblical language, the laws of nature are an expression of the divine covenant; their stability is a mark of God’s faithfulness, the sign of the irrevocable nature of His salvific plans (cf. Jer 31:35–36; Wis 11:20; Job 38:4–7). Hence, whenever Scripture refers to signs or prodigies, the main message conveyed is by no means one of violating, breaking, or overriding the laws of nature, but rather that of offering a divine act of mercy and salvation. When choosing words or images to express the *sign* that a miracle manifests over nature, theology should explore formulations in line with the biblical context and also compatible with scientific epistemology.

Some authors have suggested speaking of the “restoration of the pristine order of nature.”²⁶ This formulation would have the advantage of providing a connection to Christ’s redeeming action, restoring the natural order disrupted by human sin. However, it also has a potential disadvantage in presenting the normal course of natural events as something imperfect, thus bearing the difficult burden of explaining why humanity’s sin has induced physically intrinsic damage into nature rather than, more reasonably, into our relationship with it. The fact that the deeper truths of miracles should be sought out in view of restoration or healing seems to be suggested by the well-known Pauline image of the “pains of childbirth,” in which all of creation groans as it awaits the cosmic and final manifestation of the filial redemption already effected by Christ (cf. Rom 8:22). However, these pains are not related to healing or to repairing damage inflicted, but rather to a *new birth*, of generation that frees by re-creating. For this reason, expressions such as “transcending” nature, a “transfiguration” or an “uplifting” of nature, highlight more adequately, in my opinion, the eschatological dimension of miracles and are better suited for denoting acts directly connected with Christ’s Resurrection, offering closer reference to God’s creating power.

As a sign accomplished for humanity’s sake, a miracle is an *event of revelation*: a meaningful message revealing humanity’s destiny and salvation, and an awesome event revealing something about created nature. Miracles reveal that nature is an area ontologically unlocked and permanently open to God’s causality.

²⁶ Cf. Borasi, *Un'analisi epistemologica del miracolo*, 388.

God can recreate nature alongside nature itself; nature includes in its bosom something that transcends it, yet something still showed as natural. Miracles reveal what nature is able to do when fully subject to the Incarnate Word, in light of his Paschal Mystery. Miracles disclose nature's potential for "being associated with the mystery of Christ's humanity," inscrutably present from all eternity in the silence of the Father's Love. "A miracle," Romano Guardini explains, "is an absolutely positive process, set in the order governing the world's sustenance and enhancing its future prospects. The act of working a miracle, as such, belongs to God's own sheer initiative, and therefore precedes the realm of competence of all natural laws. As soon as it has been accomplished, though, its effect fits with utmost precision in the world's own setup. It is absorbed by its laws and fitted into its objective contexts. Due to a miracle, the world itself does not lose the slightest part of unity and precision—so much so that one could even say that a miracle constitutes their supreme evidence, as well as their accomplishment. The world is available for a miracle," Guardini continues: "It waits for it to happen."²⁷

The semiotic character present in all miracles authorizes theologians to hold that not everything we perceive as a miracle must necessarily require a divine causality formally distinguishable from the course of ordinary Providence. The Old Testament often applies to cosmic phenomena several terms used to indicate a miracle, such as the Lord's "mighty deeds" (Heb. *gedulôt*) or the "wonders" (Heb. *nipla'ôt*) made by God, so casting light on the "miracle" that the works of creation are, namely God's providential care for all things. Also the created world is in itself a striking and attractive sign, proof of the universe's ontological dependence on its Creator, a reality conveying a specific message from God to all human beings. Many of the events that people wholeheartedly deem to be miracles may have explanations that do not require any transcending of the natural order. Nevertheless, they may be perceived in this way because they participate in the miracle that creation is in itself. Someone could think, for instance, that the parting of the Red Sea during the Jews' Exodus from Egypt may have been made possible by the favorable event of an ebb tide lasting long enough for the transit of the fleeing people; or an unexpected healing, for which God was prayed by a sincere believer, may be

²⁷ Guardini, *Wunder und Zeichen* (Würzburg: Werkbund, 1959), ch. III, § 2.

accomplished thanks to the sick person's powers of recovery. The psychological-semiotic aspect of miracle remains unchanged and valid also in these examples, whereas its ontological aspect would be incorporated into the agency of ordinary causes, which in the ultimate analysis have the Creator's Providence as their first and final cause.

The necessary balance between semiotic and ontological aspects, however, does not allow Fundamental Theology to completely absorb the latter into the former. In other words, a theology of miracles must be something more than a theology of God's ordinary Providence. Causal actions of God upon nature or in nature, actions that must be considered extraordinary or special, cannot be excluded beforehand. Otherwise, theology would fail to explain the essence of miracles, understood as signs from God that are powerful and striking, signs capable of shaking the human being whenever they cross his or her path. In addition to ordinary Divine Providence, there also must be the possibility of miracles manifesting the character of being unexpected and extraordinary, events that in shaking and healing place the burden on man of recognizing the Creator's hand in them. The *event* that is Christ is also a miracle in itself, with all other miracles pointing to him and being derived from him. Across the entire history of salvation, Christ's life and works represent a sort of God's bursting into people's lives. They are works meant to stir up and confirm the faith of their observers. Such is the meaning of Jesus' appeals in the Gospel of St John: "Believe me that I am in the Father and the Father is in me, or else, believe because of the works themselves" (John 14:11). Or also: "If I had not done works among them that no one else ever did, they would not have sin; but as it is, they have seen and hated both me and my Father" (John 15:24). These "powerful works" (Gr. *érğa*), which no one else ever performed, are not *only* miraculous events; they refer to Christ's entire life, particularly His death and resurrection, but they are *also* his miracles, something that really happened in history.

A miracle is, and always will be, a *religious event*, for it concerns the relationship between man and God, and theology must always present it in this way. Yet, the wide semantic range associated with the notion of miracles makes it very difficult – perhaps impossible – to put forward a universal definition of it. Actually, miracles involve cognitive, philosophical, psychological, and scientific contexts, each of them undergoing a particular historical development.

Nonetheless, unambiguous traits pointing to a miracle's recognition can be brought together into a possible definition, a sort of working hypothesis useful for theology—Fundamental Theology in particular. By taking other authors' contributions as a starting point,²⁸ I offer here a tentative definition of *miracle* aimed at its recognition:

It is an event of divine revelation perceived by a human subject, within his/her religious relationship with God, as an extraordinary and wonderful sign of God's merciful and saving presence in his might and love; an event in which God manifests his presence as a Creator freely exerting his causal action from nothing and on nature: both by bringing about in nature and in history something other-than-nature, and by causing within nature what preempts and reveals in it the eschatological logic of the submission of the whole of creation to the Paschal Mystery of the incarnate Word; and, also, by bringing about the wise dispensation of his benefits to humanity, through his provident dominion over all things.

This formulation is meaningful also for those familiar with a rational scientific context. The relationship between God and nature is described in terms of a causal action that rests ultimately on God's status as Creator. Any possible difference between God's ordinary and special actions is not based on such categories as "intervention" or "efficient cause." Rather, the relationship between God and nature is made intelligible by radically stating his status as a Creator *ex nihilo*; articulating his universal design of creation and salvation, centered on Jesus Christ's Paschal Mystery and thus pertaining to the order of final and formal causality; and finally, expressing the cognitive perspective belonging to the personal and religious spheres as characterized by the notion of Providence. The ontological levels involved here also are relevant for scientists. Indeed, the scientific method, from within itself, is able to appreciate the need for those logical and ontological foundations that make scientific knowledge possible; the scientific method has no authority over such foundations but recognizes their existence as reasonable and understandable.

²⁸ Cf. René Latourelle, *The Miracles of Jesus and the Theology of Miracles* (New York: Paulist Press, 1988) and Padgett, *God and Miracle in an Age of Science*, 535.

Supported by a suitable metaphysical approach and an adequate philosophy of nature, theologians can show men and women of science that the Author of miracles can exert his radical causality on such foundations, as he is their First Cause and their ultimate reason. Theologians thus can introduce a miracle as something that, despite occurring in nature, *points to a Subject other than nature*. Reference to such “otherness,” that is to God as subject, does not point to the idea of intervention or the efficient causality of things, but rather to the concept of ontological and formal causality: a notion that, far from contradicting, degrading or overriding the scientific method, simply *transcends* or *underpins* it, providing nature with the “information” necessary for its own existence and action. Such otherness is perceived by researchers who reflect on science from a philosophical point of view; in some cases it is thoroughly postulated, as happens when scientists reflect on the “theory on foundations.”²⁹

What then about the relationship between science and religion concerning the question of miracles? What attitude should a scientist reasonably embrace when encountering a theologian’s claim that a miracle has occurred? Supplementing scientific method with common sense, spontaneous philosophy, and other reasonable sources of knowledge, and guided by their illative sense, scientists should not confine themselves merely to recording the occurrence of unusual events by unknown causes. They may also conclude realistically that such observed events are *more exceptional* than the mere ignorance of their causes might suggest. Such is the case, for instance, regarding the reversibility of irreversible phenomena, among which a resurrection from the dead would serve as the most eloquent example. From an epistemological viewpoint, the scientific method is consistent with the idea that the cause of such events, if any, must have a relationship with the cause of reality as a whole and with the very foundations of being and knowledge, foundations that the scientific method is inadequate to demonstrate or manage, but is nonetheless able to indicate their very existence. When presented in these terms, in my opinion, miracles do not make science suspicious: these events have to deal with the Foundation of being and, therefore, with the foundations of science.³⁰

²⁹Cf. Alberto Strumia, *The Problem of Foundations. An Adventurous Navigation from Sets to Entities, from Gödel to Thomas Aquinas* (London: Book Depository International, 2012).

³⁰ As remarked by Luciano Baccari, “Science assumes the very existence of its

12.2 Understanding divine action in nature: some historical and philosophical interpretations

A problem formally distinguishable from the miracle, but in some way linked to it, is understanding how God can operate in nature and history. According to a causality that concerns the order of grace but certainly occurs also in the order of nature, God is believed to act in many ways. He causes every new human life that appears in the history of the world, listens to the prayer of humans and intervenes in favor of the righteous, inspires and enlightens the minds of his faithful, and sustains their lives and actions. God has caused the first human form that bears the seal of His image. Even more radically, God entered into space and time to make Mary's virginal womb fertile and become man. Discussing miracles, we have seen the need to admit extraordinary divine actions, different from those assimilable to God's ordinary Providence. We now wonder if any "special" actions of God exist that are formally distinguishable from the causality with which God creates and supports everything, bringing all creatures towards their end. It is not from the perspective of miracles that I now intend to examine the possibility of such "special" actions, but from a more general view that abstracts from the "wonder of the subject" and directs mainly towards an "objective" understanding, if that were possible, of divine action in history and what this action could entail. How could God work in favor of human beings, accompanying them with his caring presence and listening to their invocations? What implications would this action have for our philosophical and scientific views of nature? As John Polkinghorne rightly indicates, God is not like the law of gravity, which is indifferent to the context and consequences of its own causal action. God's fidelity certainly is reflected in the laws of nature as part of the history of his covenant with creation, but the history caused by the laws of nature does not comprise the entire history of our relationship with God.³¹

It should be noted immediately that when we speak of an "action of God," we make a theological statement—or a philosophical one, if you will—but certainly not a scientific one.

object, which religion expresses in its cosmological eloquence; someone who is afraid of argumentative (cosmological) reason cannot be called religious, nor can someone who is afraid of miracles be called a scientist." Luciano Baccari, *Miracolo e legge naturale* (Città del Vaticano: Urbaniana University Press, 2005), 161.

³¹ Cf. John Polkinghorne, *Belief in God in an Age of Science* (New Haven, CT - London: Yale University Press, 2003), 49.

Theology is not obliged to justify before science the character or purposes of God's actions in nature and history, but theology proclaims such actions, helping us to understand them within an economy of revelation as words and signs addressed to humanity. Regarding a relationship with scientific thought, as seen in the previous interdisciplinary discussion on miracles, it is enough that the theological explanation of divine actions does not contradict what the sciences make known to us by their specific method. The language used by theology or by the Church also must avoid speaking of nature and its dynamisms in any naïve or ill-advised way. Making a divine action thinkable within an interdisciplinary framework implies the choice of philosophical paradigms suitable for representing such actions, as well as a certain philosophical deepening of the idea of Providence.

Before examining the current contours of the debate on the understanding of divine action, especially Anglo-Saxon authors active in the fields of theology and science, I would like briefly to consider, almost in a propaedeutic way, what was suggested centuries ago by Thomas Aquinas.

12.2.1 *The philosophical perspective of Thomas Aquinas*

Based on a vision of causality that achieves a synthesis between the Platonic perspective (form) and the Aristotelian perspective (act), both read in light of a Christian theology of creation, Aquinas develops a metaphysics of the relationships between God and nature starting from the idea that God works in every creature as the cause of the *act of being* and of the *metaphysical nature* of every created entity.³² The creature works thanks to its own autonomy, as a cause that produces real effects; however, all that is caused by a creature is also caused by God, and by God it is known, albeit at a level that transcends the being and work of the creature and thus without mixing or interfering with it. As highlighted by various authors, the articulation between the First Cause and the secondary causes that derives from Aquinas' perspective has important benefits for understanding the causal concurrence between God and creature

³² Among the authors who comment on the thought of Aquinas, see: François Pouliot, *La doctrine du miracle chez Thomas d'Aquin. Deus in omnibus intime operator* (Paris: J. Vrin, 2005); and Michael J. Dodds, *Unlocking Divine Action. Contemporary Sciences and Thomas Aquinas* (Washington D.C.: The Catholic University of America Press, 2012); cf. Marius Tabaczek, *Divine Action and Emergence. An Alternative to Pantheism* (Notre Dame: Notre Dame University Press, 2021).

and, at the level of scientific analysis, for understanding of relationship between creation and evolution, as an ongoing development of the world and of life. Aquinas' metaphysical perspective supplies a kind of "philosophical background" for understanding the different modalities of divine action.

Generally speaking, God's action is "mediated" by the action of creatures, an action that the Creator owns and knows because of his transcendence of nature and history. The entire natural order of the cosmos is directed towards an end that is known and willed first of all by God, an end achieved thanks to the cooperation and dignity proper to each creature. God is provident because he "sees first," or "foresees" but also "provides," that is, he wisely dispenses the dynamic order and causal articulation achieved by various creatures.³³ To the question "how God acts in nature and in history," a first answer could be that he acts in a true and realistic way through the autonomous action of secondary causes and all the created entities, and also that he acts because of his condition of First Cause, as the all-powerful and all-knowing Creator. Aquinas also says that, due to His condition as Creator and *dator formarum*, God may also act in a non-mediated way as the principal agent upon instrumental agents. This second type of action does not involve violence or acting against nature but, according to Aquinas, is part of a broader understanding of Providence, which concerns not only the natural order as normally understood but also all that God *wills as natural* and thus makes natural. Finally, God also acts by causing physically impossible events: they are disproportionate effects in relation to their forthcoming natural causes and, above all, events that nature cannot cause by itself. Such events belong to the genre of miracles, actions that go beyond nature by virtue of the very substance of the fact,³⁴ that is, actions that reveal God as someone Other-than-nature.

Aquinas' idea of Providence does not rule out chance. He suggests the idea of *causae per accidens*, i.e., events we qualify as fortuitous and contingent. These occur not because of indeterminacy or absence of causation, but due to the diversity of causes that are composed and clash, or due to their relative failure. Not everything that happens by Divine Providence must happen "by necessity of

³³ Aquinas' doctrine on God's Providence within a philosophical framework is resumed in C.G. III, chs. 64–100.

³⁴ Cf. S.Th. I, q. 105, a. 8.

nature," for God also knows how to make use of contingent and fallible causes. A central point suggested by Thomas Aquinas is to consider how the order by which Providence leads everything to its proper end can be examined from the side of God or from that of creatures. For God's part, as the First and final cause of this order, everything comes under the provident action of God, who knows everything and operates in everything; there are no "special actions" of God, if we intend by this term to indicate an order of knowledge and action different from what God possesses once and for all, as the Creator who transcends nature and history. Aquinas' perspective is clear: God "can do nothing" outside of this order, proceeding in this order from his science and his will, and acting as God upon creation by will and not by necessity of nature.³⁵ It is impossible, therefore, for something to be produced in creation that he does not know or escapes that order which he has known and willed once and for all. Aquinas also asserts: "Since God is utterly immutable, it is impossible for Him to will something which He has previously rejected with His will; or for Him to begin to know something new; or to order it to His goodness in a new way."³⁶ On the side of the creature, however, this natural and providential order is neither known nor grasped in its entirety. God's action is not entirely understood—that is, embraced in its totality—but it is discovered little by little through history. In this way, the divine action—together with or through its creatures—is grasped as the result of an interaction that is intertwined with the history of man and nature. Divine Providence does not eliminate human free will but rather preserves it and makes it possible. This assertion is true not only because freedom is a perfection of human nature, so willed by God, but also since rational creatures are the only ones capable of knowing the purpose of the created world and the reasons by which the world is ordered to God. Rational creatures—human beings among them—have the task of directing and governing other

³⁵ Cf. C.G. III, ch. 98.

³⁶ C.G. III, ch. 98. "God does not change his will when he does anything contrary to natural causes, because from eternity he foresaw and decreed that he would do what he does in time. Wherefore he so ordered the course of nature, that by his eternal decree he preordained whatsoever he would at some time do independently of that course. When God does anything outside the course of nature he does not put aside the entire order of the universe wherein its good consists, but the order of some particular cause to its effect." Thomas Aquinas, *De potentia Dei*, q. 6, a. 1, ad 6 and 7.

creatures by unifying their will with God's will.

The transcendence and eternal plan of Divine Providence do not exclude the usefulness of prayer.³⁷ The righteous desires of humans as manifested in their prayers are oriented towards what God himself, in governing the cosmos, has desired to cause from all eternity. The relationship between man and God is not such that God grants or does not grant what man asks, as if God had a changing will in history, even if man normally perceives things in this way. In reality, God grants what He has always foreseen that man should obtain through prayer, when human desires are oriented to the good. On the other hand, prayer will not see its requests fulfilled if these petitions are not oriented towards the good that Providence has desired from all eternity, even if man regards these things to be a delusion, as he judges in time and with a limited knowledge of things. Consequently, "Divine providence does not exclude other causes; rather, it orders them so that the order which providence has determined within itself may be imposed on things. And thus, secondary causes are not incompatible with providence; instead, *they carry out the effect of providence.*"³⁸

For the purposes of a comparison with some contemporary currents of thought, it is noteworthy that Aquinas mentions some philosophical perspectives, judging them to be erroneous. Those who transfer God's immutability and foreknowledge to the side of creatures—he affirms—end by believing that God cannot do anything other than what necessarily takes place in the created order, denying his freedom to act even in a non-mediated way. Instead, those who transfer the mutability of creatures into God's providential action interpret such action as the result of rethinking or the consequence of some new knowledge, introducing anthropomorphisms that would contradict God's true image. Whoever removes contingency from Divine Providence, says Thomas Aquinas, ends by denying God's full knowledge of all that depends on Him, in their being and becoming.

God's action in a "non-mediated" way deserves closer investigation here. It is conceptually similar to what some circles of thought indicate today by the expression *Special Divine Action*. For Aquinas, God's freedom is such that He is able to operate outside the order He himself gave to all things—which we could call ordinary

³⁷ Cf. C.G. III, chs. 95–96.

³⁸ C.G. III, ch. 96, italics are mine; cf. also C.G. III, ch. 77.

Providence—and produce effects regardless of, and above, the ordinary causes usually associated with those same effects. He can do such things simply by being the Creator—that is, the Creator of these causes and of every intermediate cause—and since his intellect embraces all the details: any effect in the created order is known to him, and thus he can cause it. In so doing, God would not be acting as the First Cause through secondary causes, but rather as the principal agent upon instrumental causes, such that these latter produce effects that are by no means proportionate to them. When such a *special action* occurs, it does not operate against the nature of the instrumental agent: when the matter and form of the latter adapt to the new function willed by the principal agent, this is not an act of violence but only the expression of the truth that each created entity is ordained ontologically to its Creator. God remains the measure of the *essence* and of the *nature* of all beings created by him. “All creatures are related to God as art products are to an artist, as is clear from the foregoing. Consequently” — Aquinas observes — “the whole of nature is like an artifact of the divine artistic mind. But it is not contrary to the essential character of an artist if he should work in a different way on his product, even after he has given it its first form. Neither, then, is it against nature if God does something to natural things in a different way from that to which the course of nature is accustomed.” And quoting St Augustine, Aquinas continues: “God, the creator and founder of all natures, does nothing contrary to nature; for what the source of all measure, number and order in nature does, is natural to each thing.”³⁹ Unlike contemporary sensibility, Aquinas is not concerned with offering a “descriptive model” to explain in any deterministic way how such action by God is possible. His way of conceiving a divine action in nature is not aimed at seeking a composition between God and creatures at the level of efficient causality, as we would do today in building a mechanical model. Rather, he understands the idea of action as an *act*, as a form that confers new being, a form that the Creator knows and thus can cause. What concerns Aquinas is to show that such divine action is possible, not being contradictory and yet fully consistent with the philosophical implications of the image of God as Creator.

³⁹ C.G. III, ch. 100. Aquinas quotes here Augustine of Hippo, *Against Faustus Manichean*, XVI, 3.

The philosophical framework provided by Aquinas holds a number of advantages. It addresses various objections by proposing a coherent image of God as the Absolute (philosophy) and as Creator (theology). Everything is brought back to the transcendent causality of God who creates and preserves things in being, without lapsing into a deterministic view. In nature, there is room for contingency, fortuitous chance, and exception, but these notions are always understood as kinds of causal action (it could not be otherwise), a causality *per accidens*, perhaps unknown to humans but known to God. This framework also seems able to be maintained in light of a contemporary scientific vision where indeterminacy, unpredictability, and complexity are affirmed at an empirical but not a philosophical level. Such characteristics, in fact, do not imply the absence of physical causes, but rather our ignorance of them and our inability to formalize them due to the randomness of the phenomena involved or their mathematical intractability. The image of God corresponding to this doctrine of causality is that of a "hidden God," One Who works with discretion because his ordinary Providence always is manifested through secondary causes, the only ones we perceive. His extraordinary Providence, on the other hand, is limited to those (few) causal actions in which he acts as principal agent upon instrumental causes, moving the latter to produce disproportioned effects. Or he acts as the Creator of nature *ex nihilo*, giving rise to physically impossible events. All these types of causality, including the last two, are neither contrary to nature nor contradictory, and thus they do not conflict, in principle, with a scientific description of physical reality.

However, Aquinas' framework has the relative disadvantage of being unable to be transposed immediately onto a theological-salvific level, since there is apparently no room for properly theological categories such as mercy, hope or consolation—expressions of divine action that appeal to the heart of each person, whether a scientist or not. The question remains open concerning whether in speaking of God's action in the created world, we should not also (and above all) look at the mystery of the Incarnate Word, whose mediation—both transcendental and categorial— theology employs for explaining divine causality in the order of grace, but develops much less when illustrating divine causality in the order of nature.

The scientific interlocutor pays special attention to understanding divine actions that have repercussions on nature and

history, asking for epistemologically convincing explanations and coherent philosophical models. However, a satisfactory understanding of God's action never can prescind from what God brings about in the *order of grace*, upon which nature and history in some way depend. In this light, the Christological reference acquires a necessary hermeneutical centrality, since it is in Jesus Christ, the Incarnate Word, that the Eternal entered into time and God willed to take nature and history upon Himself. The encounter of God with human freedom and the way God listens to man's prayers; the way in which God manifests Himself sensitive to human suffering; God's acting through the sacraments of the Church, enabling the human creature to share in divine sonship and making the human heart a temple for the indwelling of His Spirit: All these are but aspects of a divine causality intimately and mysteriously linked to the missions of the Son and the Holy Spirit in the world and in history. Exploring the roles of these divine missions in our understanding of the relationship between God, the world and nature is no longer the task of Fundamental Theology, but rather of Dogmatics, if the latter courageously were to put the elaboration of a "Trinitarian ontology" on its agenda. In dialogue with the natural sciences, Fundamental Theology can only point out, from below, the need to access this Trinitarian logic. It would be the expression of a strictly theological top-down view of history, one more complete and thus truer, able to show that all of God's actions in nature are actions towards glory.

12.2.2 Contemporary attempts to consider "Scientific Perspectives on Divine Action"

Study of the "modalities" of divine action in nature is one of the areas that has hosted one of the most lively debates between theology and science in recent decades. The subject of many monographs, this issue has been addressed systematically by a project promoted by the Center for Theology and the Natural Sciences (Berkeley) and the Vatican Observatory, through a series of conferences held from 1993 to 2003 and collected in six extensive volumes.⁴⁰ The approach that has guided the reflections of most of

⁴⁰ The five volumes *Quantum Cosmology and the Laws of Nature* (1993), *Chaos and Complexity* (1995), *Evolutionary and Molecular Biology* (1998), *Neuroscience and the Person* (1999), and *Quantum Mechanics* (2001) were completed by a last sixth volume, which presented a synthesis of the work done: Robert J. Russell, Nancey Murphy, and William R. Stoeger, eds., *Scientific Perspectives on Divine Action. Twenty Years of Challenge and Progress* (Vatican City: Vatican Observatory Publications - The Center

the participants in these conferences could be summarized as follows. In the comparison of approaches between theology and science, the understanding of Providence (*General Divine Action, GDA*) usually is associated with the laws of nature, with order in nature and, in a certain way, with determinism. In order to provide a more complete account of theological statements concerning the relationship between God and creation, it is necessary as well to address the “special” action of God (*Special Divine Action, SDA*). This examination can be done through *interventionist* models (ISDA) when thinking of actions that suspend, ignore, or violate the natural order, or through *non-interventionist* models (NISDA) when thinking of divine actions that respect the natural order and are fulfilled together with it. The contributions of conference participants have tended to associate ISDA-type actions with miracles, and most authors believe that science has little or nothing to say in this regard. NISDA-type actions, on the other hand, identify an interesting point of intersection between theology and science and deserve to be explored. Such “non-interventionist” actions are described through scientific-philosophical models that are capable of representing a *non-invasive* action of God. To explain them, these thinkers take their inspiration specifically from operational models in quantum mechanics, theories of complexity and the description of chaotic behaviors, for these would correspond to a qualitatively richer phenomenology, different from what commonly is associated within the course of known and predictable events. As mentioned above, this approach is also shared by those authors who try to explain miracles according to an epistemology supposed to be more intelligible to the scientific environment. Instead of speaking of a violation of the laws of nature, one could think of a divine action that operates within the folds of the phenomena of nature, that is, providing natural phenomena with new ontological or informational conditions that would give rise to emerging novelties. I have already observed, however, that a divine action of this kind would be insufficient to represent the entire typology of miracles as they are presented for instance by biblical or evangelical accounts. Furthermore, understanding miracles only under a NISDA typology would not allow for an ontological recognition of the miracle itself, which in a sense remains something hidden, silent, and

for Theology and the Natural Sciences, 2008). On this matter, see also Denis Edwards, *How God Acts. Creation, Redemption and Special Divine Action* (Minneapolis: Fortress Press, 2010).

unappealing. Because of their relevance for the dialogue between science and theology, some of these models deserve to be revisited here.

In the Anglo-Saxon environment, the proposal of the “theology of process” exerts meaningful influence. Based upon a “process philosophy”⁴¹ where the notion of event substitutes for the notion of entity (Lat. *ens*), Process Theology considers the universe as a system in continuous evolution, even in its relations with God as Creator. According to Process Theology, the becoming of reality does not originate from deterministic laws or by chance; it is neither the result of an action predetermined by God nor in any case known to him. What happens in nature and becomes in history would be a form of divine “invitational,” not coercive causality. God “builds” his providence together with his creatures, and nothing that happens is merely the fruit of his work alone. He does not control the world, nor does he determine or predict its development, but rather he participates in the flow of its life at all levels. God himself is influenced by the events of the world and would use them to generate experience.

Despite the fascination that it can exert due to its apparent harmony with the idea of a world whose becoming is entrusted to an evolution caused by randomness and emergence, the proposal of Process Theology remains, in my opinion, problematic. The image of God that it conveys is fragile, and his relationship with nature is precarious—two characteristics that separate the “God of the process” from the image of God transmitted by the Judaeo-Christian Revelation. Partly inspired by Process Theology, Arthur Peacocke (1924–2006) interprets the indeterminacy and emergence observed in the biological world as being the result of a divine causality capable of composing and orchestrating chance, albeit without dominating it completely. Yet, divine causality should assume in their entirety all the consequences of a universe created indeterminate and open, an expression of kenotic behavior in favor of the life that God has given to his creatures. But the English

⁴¹ Process philosophy owes its origin to the thought of the mathematician and philosopher Alfred North Whitehead, as presented in his work *Process and Reality* (1929). Theological perspectives are available in John B. Cobb and David R. Griffin, *Process Theology. An Introductory Exposition* (London: Westminster Press, 1976); Ian Barbour, *Religion in an Age of Science* (San Francisco: Harper & Row, 1990). Among the authors who employ process philosophy or theology are A. Peacocke, C. Hartshorne, C. Birch, and M. Suchocki.

Anglican pastor and biologist also develops a more general and suggestive idea, arguing that divine causality operates *from the whole to the part*; that is *top-down*, acting on the universe as on a system possessing a holistic logic.⁴² Most of the phenomena that occur in nature with complexity, and those belonging to the biological world, admit this type of causation: the parts behave in the way we observe them, because *they are parts of the whole*. If the whole universe is seen as a system where the whole influences the parts, and if its Creator “contains the world in himself” in a panentheistic way, then the action of God reaches and conditions all the parts. There is no need then to qualify such an action as an “intervention” that violates nature, overlaps it, or enters into competition with it. The universe consists of a nest of levels and relationships that affect the behavior of all of its component parts: God is the highest possible system, the only one who really can act *from the whole*.

The logic of top-down causation and a positive understanding of the scientific notion of indeterminacy – understood as openness to receiving information rather than as ignorance or intractability – also inspire the thought of John Polkinghorne (1930–2021).⁴³ The indeterminacies we encounter in quantum mechanics or in the description of chaotic systems correspond to the system's capability of acquiring information from higher levels of causality. Models for understanding divine action in nature should be sought among those forms of causality that are able to represent the influence of the whole over the parts, top-down, rather than through the analytical and deterministic reconstruction of the dynamism of the parts from below. Openings corresponding to the intrinsic indeterminacy of reality are not gaps where one can insert a divine action. Rather, they indicate different ontological levels from which new configurations and unprecedented structures can originate, by supplying them with new information. This scenario is what we observe in

⁴² Cf. Arthur Peacocke, *Creation and the World of Science* (Oxford: Clarendon Press, 1979) and *Theology for a Scientific Age* (London: SCM Press, 1993). Cf. also Arthur Peacocke, “Some Reflections on Scientific Perspectives on Divine Action,” Russell, Murphy, Stoeger, eds., *Scientific Perspectives on Divine Action. Twenty Years of Challenge and Progress*, 201–223.

⁴³ Cf. John Polkinghorne, *Science and Providence. God's Interactions with the World* (London: SPCK, 1989) and *Belief in God in an Age of Science*. Cf. also John Polkinghorne, “The Metaphysics of Divine Action,” Robert J. Russell, Nancy Murphy, Arthur Peacocke, eds., *Chaos and Complexity. Scientific Perspectives on Divine Action* (Vatican City - Berkeley: Vatican Observatory - The Center for Theology and the Natural Sciences, 1995), 147–156.

dissipative phenomena, in thermodynamic systems far from equilibrium, or in the wave functions of quantum mechanics. The universe does not operate only through “energetic causality” but also through “informational causality.” It is plausible, Polkinghorne observes, that divine action operates along this second kind of causality, more in tune with his nature as a spiritual agent. It thus would be a discreet causality, almost hidden, but pervasive and necessary. Information is non-interventionist in character (NISDA), not being assimilable to any injection of energy provided by an external, extrinsic agent. I suppose that what is meant here is nothing but the action of a “transcendent” causality, even if this term is not used explicitly; information indeed *transcends* nature in which it is immersed, even though inseparable from it as form is inseparable from matter.

Thomas Tracy (born 1948) argues that divine action in the world and in history, besides manifesting itself through a Providence that creates and maintains all things in their being (GDA), also can give rise to special events (SDA). Special events can be such because it is their epistemic meaning to be special, i.e., their reception in a subject (*subjectively* SDA); because their subsequent implications in history are special (*materially or functionally* SDA); or finally, because the causal history from which they originate is determined by God through objectively special action (*objectively* SDA).⁴⁴ Speaking of these latter events, theology must guarantee a semantic area for God's action, since the natural sciences would claim a complete description, present or future, of every phenomenon that happens in nature. In this case, Tracy says, God would act within or beyond created causes according to a dynamism that finite causes alone would not be sufficient to produce. God could do this as He has created a world that includes many events for which nature provides only necessary but not sufficient conditions. In line with the reflections of previous thinkers, divine action would correspond to a causality that “determines” in a *top-down* or *whole-parts* manner how much remains undetermined or sub-determined at the lower levels. Therefore, we must ask what characteristics a scientific description of physical reality should have

⁴⁴ Thomas F. Tracy, *God, Action and Embodiment* (Grand Rapids, MI: Eerdmans 1984); Thomas F. Tracy, ed., *The God Who Acts* (Philadelphia: Pennsylvania State University Press, 1994); Thomas F. Tracy, “Special Divine Action and the Laws of Nature,” Russell, Murphy, Stoeger, eds., *Scientific Perspectives on Divine Action. Twenty Years of Challenge and Progress*, 249–283.

in order to make the natural world available to such an order of causation.

There seem to be three basic characteristics. The first one is to admit the existence of indeterminism in nature. There must be dynamical phenomena whose configuration (phase or state) contains the necessary but not sufficient conditions (and information) to give rise to the subsequent configuration. The kind of indeterminacy we refer to here must be “ontological” and not only “epistemic”: it must depend on the state of facts and not on our limited knowledge of them. Physical reality must be free to move towards one configuration or another, with the causal conditions existing in the previous state being insufficient to *determine* the choice. Second, a real difference between the previous and the next state has to correspond with this indeterminacy: the phenomenon must present a real novelty. The novelty of the new configuration is obtained and can be explained only through an ontological amplification of the randomnesses at stake; it can be neither obtained nor explained merely by exploring in a computational and probabilistic way all the possible configurations expected or achievable from the old configuration. Third, and finally, there must be continuity in terms of intelligibility between the indeterminate or sub-determined events or configurations and new emerging events; that is, although the physical explanation of the lower state remains incomplete, it is available for completion by the information that generated the higher state: the indeterminacy, therefore, must have the character of being an *opening*. The novelty produced must not present itself as a chance breaking of the old structure, with the latter no longer being comprehensible when read from the new upper level. The new configuration must contain and bring to light the full intelligibility of the old one.

The events described by chaos theories and those described by quantum mechanics would respect these three prescriptions, and so would one of the possible descriptions of cognitive phenomena that neuroscience provides today, in particular when advocating greater indeterminism in the causation of mental states. In the case of cognitive phenomena, God's action would operate on our mental states at a “physical” level, while the relationship between God, the creator of our act of being, and our personal being would operate at a “metaphysical” level. Following this scheme, it might be observed that divine action upon the mental states of rational creatures could offer conceptual room for understanding how God might reveal

himself to a personal subject.

Beyond the differences present in the authors mentioned here, all seem to converge towards a view of nature that the epistemology of the 20th century has revisited in different forms – that of a reality organized across different ontological levels to which different levels of intelligibility and thus also different levels of causation correspond. The ideas that the *information* necessary to cause, structure, and make intelligible what happens at a lower level must come from a higher level, and the lower level must contain openings or indeterminacies (or even incompleteness) capable of being *informed* by the higher level, have been detailed by authors belonging to various disciplinary areas using different languages and metaphors. This same manner of thinking is present in the logic of the theory of foundations, in some currents of the philosophy of language, in the epistemology of Michael Polanyi and Thomas Torrance, in the idea of metadisciplinarity elaborated by Basarab Nicolescu, and in Polkinghorne's thought concerning the unity of knowledge. In all these analyses, the importance of information seems to emerge ultimately as a *form* that can act on the lower level by informing it in different ways. This act of information may take place, for example, by making available primary notions indispensable for a specific language and its formalism, by providing the logical and ontological assumptions that allow for scientific analysis, by setting boundary conditions necessary for determining an open system, or by offering semantics for completion of a certain syntax. Such information opens up the possibility to access more comprehensive meta-languages, to create novelties, or to encourage emergencies or qualitative leaps, giving rise to events or representations whose phenomenology seems to appear from below (*bottom-up*), but whose conditions of causation come from above (*top-down*):

Reality is a multi-layered unity. I can perceive another person as an aggregation of atoms, an open biochemical system in interaction with the environment, a specimen of *Homo sapiens*, an object of beauty, someone whose needs deserve my respect and compassion, a brother for whom Christ died. All are true and all mysteriously coinhere in that one person. To deny one of these levels is to diminish both that person and myself, the perceiver; to do less than

justice to the richness of reality.⁴⁵

The conception of a reality organized into hierarchical levels of intelligibility and causation was suggested as well by Karl Rahner within a context similar to ours when, in searching for a theology of miracles that would avoid speaking of the violation or suspension of natural laws, the German theologian strove to show the plausibility of divine action on nature and with nature: "For our modern experience and interpretation of the world, every stratum, every dimension of reality is constructed from the lower to the higher, that is, from the more empty and indetermined to the more complex and full, and it is open for the higher dimension. The higher dimension implies in its own reality the lower dimension as an element of itself, and subsumes it [...]. The dimension of material and biological is subsumed into freedom without having to be altered in its own structures, because it is open to begin with to this higher sphere and is multivalent. [...] By its own intrinsic nature, and because of its indetermination and further determinability, the lower material and biological world can be integrated into the higher order without losing its own laws and structures."⁴⁶ In line with what Polkinghorne later would say, observing that divine causality would appear as discreet, silent, but pervasive, Rahner adds: "It requires a certain intuition and a certain trusting self-involvement in order to see the higher in the appearance of the lower, and in order to withstand the temptation to reduce the higher into the lower and to overlook the qualitative leap."⁴⁷

What considerations could theology offer in synthesis in this regard? As in many other areas, also for understanding God's "special" action and its emergence over God's providential action of creation and conservation, much depends on the meanings we attribute to these concepts. To what extent is it legitimate to separate GDA and SDA sharply when dealing with events that we would not qualify as miracles, theologically speaking? The idea of a special or occasional action of God does not seem entirely congruent if the purpose of *every* divine action, general or special, is to reveal his love or mercy. Both GDA and SDA are works that express God's care for his creation and his constant turning towards the world. Why, when

⁴⁵ John Polkinghorne, *Reductionism* (2002), INTERS, DOI: 10.17421/2037-2329-2002-JP-2.

⁴⁶ Rahner, *Foundations of Christian Faith*, 259.

⁴⁷ Rahner, *Foundations of Christian Faith*, 260.

we speak of Providence or conservation in being, are we more inclined reductively to think only of the action of stable and predictable laws of nature?

A perspective like that of Thomas Aquinas would seem to minimize such separation. Even his definition of a miracle as an event that nature cannot generate by itself—a disproportional effect when compared with nature's order of causation—when well understood, could be not far from the kind of events previously discussed by Tracy where nature is the place of necessary but not sufficient conditions of causation. It should be remembered, however, that Aquinas (and with him a theology that preserves the ontological dimension of miracles) explicitly leaves room for events, exquisitely theological in scope, that nature would judge to be “physically impossible.” These are events having a degree of impossibility that exceeds what could be produced by the simple insertion of new information, thanks to which a higher level causes and determines what is still open and underdetermined ontologically at a lower level. The issue of describing God's action in nature using philosophical-theological models compatible with our scientific knowledge of reality is certainly complex. I do not believe that theology can, or should, offer a comprehensive solution for such a topic. However, if theology in dialogue with the sciences desires to develop *credible* models, some essential points should be taken into account. Allow me to summarize them as follows.

In the first place, as we already pointed out speaking of miracles in general, every action of God is basically an *act of revelation*. It is a personal and free act, whose purpose is to make Him known known to humanity and invite humanity to take part in His Trinitarian life. Theology is asked to show that these divine actions do not contradict what He has created and revealed. Moreover, in carrying out these actions, God in some way fulfills what he has promised. The transcendence of the Subject, however, is such that we cannot understand the deeper truths of these actions solely by studying the effects of divine action on nature and history, as observed through the methods of science. Secondly, an absolutely central point is that the “qualities” and “identity” of divine action (including God's “special” actions) become more understandable if we remember that the first and foremost characteristic of God's action is that of being able to cause *ex nihilo*, out of nothing. Even if we do not have satisfactory philosophical models for representing the relationship between God and nature, the ontological radicality

of *ex nihilo* causation makes plausible any other type of divine action upon natural things. Who acts here, regardless the type of action He performs, is the One who knows the dynamisms of all things in the most profound possible way, having drawn all things into existence out of nothing, continually founding them and historically willing them into existence as they are. Thirdly, it is likewise central to note that, in God, knowing something and causing it are, *ex parte agentis*, different aspects of the one and same action. Knowing, purposeful willing, and calling into being imply neither different divine qualities nor different levels of God's action on nature. Therefore, whoever accepts that God the Creator has absolute and intimate knowledge of all reality can accept likewise that He has equally intimate and unconditional ways of being present to creatures and determining their corresponding dynamisms. This notion holds even if, from a philosophical viewpoint, we do not know how to harmonize such divine action with our present empirical descriptions of physical reality.

An understanding of the relationship between God and nature based on a metaphysics (and a philosophy of nature) of Aristotelian-Thomistic inspiration, if translated today into terms accessible to the scientific environment, would be able to satisfy some of the questions raised by scholars concerning divine action on nature. Within the framework of the *Scientific Perspectives on Divine Action* project, the effort made by William Stoeger (1943–2014) to show the potential of the classical Catholic position deserves attention. By presenting God's action as the ontological basis for ensuring the existence of the laws of nature, Stoeger insisted on a greater continuity between God's creative action and special action, reassessing the consequences of *ex nihilo* causality and of all that follows from it.⁴⁸

If we think, for example, of the desire expressed by the panenteistic position to consider the universe as being closer to God and more easily linked causally to Him, it should be noted that this perspective unconsciously restricts (and interprets) the relationship between God and the world substantially according to space-time categories. The metaphysics of the act of being and the transcendent causality corresponding to this act are equally effective ways to

⁴⁸ See William R. Stoeger, "Conceiving Divine Action in a Dynamic Universe," Russell, Murphy, Stoeger, eds., *Scientific Perspectives on Divine Action. Twenty Years of Challenge and Progress*, 225–247 and Stoeger's other contributions to the Project volumes.

represent the intimacy of the presence of the Creator in the creature and of the creature in the Creator, privileging instead relational-transcendental categories. God does not need to “touch” the world in order to guide it with his action: the world always “looks at” its Creator, following his will, and is always “looked at” by him. It is by virtue of this gaze that the world exists and no longer falls into nothing.

The causal articulation between the First Cause and secondary causality undoubtedly is available to interpret the causation upon lower levels exerted by information or by some determination coming from higher ontological, more intelligible levels. However, this causality does not operate in an extrinsic way, as if through this articulation information or a form of divine origin were being conveyed, and the creature were to receive something additional or extraneous to its nature. In reality, the secondary cause, *the form it has as its own*, is the form/information that places the lower level into action, causing it. Divine action works through secondary causes, not by “transmission” but by “presence,” because every form, every essence and every act of being has in God, *Dator formarum*, the deepest transcendent reason for being and becoming.

Finally, a philosophical perspective wishing to understand divine action as an action expressed through the causation of progressive hierarchically ordered levels, each level remaining open to being newly informed, is still compatible with a philosophy (but also with a theology) of Logos. The Word by means of whom, and in view of whom, all things have been made expresses God's presence and action in nature. The Logos is the transcendent Information that calls into being all entities endowed with rationality and intelligibility (the Logos as Alpha, mediator in the beginning; cf. John 1:1). He is also the cause of all that happens in history, directing everything towards its goal (the Logos as Omega, mediator at the end; cf. Rev 21:6).

12.2.3 *The concept of a “special action of God” and new questions on the problem of evil*

Besides the requirement that a special action of God (SDA) should not conflict with our scientific knowledge of nature—a question to which I have tried to provide some answers—we must address briefly a second problem, namely how this kind of divine action can satisfy a corresponding theodicy. In fact, if the idea of divine action is confined to a Providence understood as radical

fidelity to the laws of nature imprinted by the Creator, the problem of physical evil can be mitigated by drawing attention to the ultimate good end to which God, through these laws, directs creation. The idea that God also acts outside the order of his ordinary Providence (GDA) instead raises the question as to why God does not impede avoidable, contingent evil. This kind of evil, in fact, manifests itself within the same historical and contingent order where God is believed to act and intervene. In the previous chapter, we developed some considerations concerning the suffering caused by an evolutionary process of life based on natural selection, and suffering originating from the finiteness or weakness of the creature exposed to the actions of laws of nature that can damage or overwhelm it. The reference framework for these considerations was a classical theodicy, in which God is faithful to the natural laws he provided to the world and does not suspend them. The image of God to be justified was that of a Creator who preserves everything in its being and who, despite catastrophes, failures, and adversities, leads everything towards higher goodness—He being the only One who knows and maintains the ultimate ends of the cosmos. A neo-Darwinist philosophical reading that intends to deny the existence and goodness of an intelligent Creator questions above all the presence of a general finalism in creation. Philosophical Darwinism does not ask God to justify his silence or inactivity or to explain why he performs some special actions rather than others. Instead, at times, it is precisely this silence and inactivity of God that scandalize the believer and give rise to criticism. For those who believe that God can act in concrete and contingent ways, the problem of historical and contingent evil then requires further analysis.

Through a causation that establishes from a higher level the necessary and sufficient conditions for phenomena occurring at lower levels, God can determine the directions undertaken by human and natural history. It is then legitimate to ask: Why does God not stop the fortuitous and unexpected violence of nature, not hear the invocations of people in trouble, or not prevent the innocent from succumbing? And why, in other cases, does he answer the petitions of men through special actions that are recognized subjectively or objectively as miracles? What makes the difference? As we have seen, and Aquinas would argue in the wake of Augustine, God knows everything, and everything is led by Him towards the good. From a creature's viewpoint, is not possible to have a complete picture *intra historiam* of all the causal relationships

foreseen by Divine Providence. The answer is philosophically coherent and, within certain limits, it could even satisfy and be preached from the pulpit. However, such an argument might be unconvincing simply because human faith is challenged precisely *intra historiam*, well before reaching the *eschaton*, where everything will be clear to everyone. One needs, then, a more careful analysis of the relationship between God and nature.

Objections to the logic of divine action criticize God as Creator for not behaving in one of the following three ways: a) for not modifying (or not having modified) the general design of the universe so that the laws of nature and boundary conditions making them effective would generate (or would have generated) different causal chains so as to prevent evil from happening; b) for not exercising (or not having exercised) special non-invasive actions through which, by determining what natural causes leave open and indeterminate, he would have impeded their harmful effects; or c) for not causing (or not having caused) miraculous actions in the strict sense, including physically impossible events as believers sometimes confess he has done throughout history, so as to prevent evil and painful suffering by innocents.⁴⁹

Those who raise such objections, however, must acknowledge that our limited knowledge does not allow us to evaluate the entire causal network of all phenomena complicated by a new divine action, for determining the change of a single undesirable effect. What new balance between good and bad effects would result? This objective *ignorance* leads demand (a), and partly also demand (b), to be less grounded. Concerning the divine interventions corresponding to demand (c), and in part still to demand (b), it must be acknowledged that God as Creator limits the number of such interventions only to specific occurrences as the stability and ordinary unfolding of natural processes must continue to constitute the fabric of the history of the cosmos, which still continues to be a history of Providence. It is reasonable, then, for special divine actions to be dispensed with a logic that in the great majority of cases must respect the natural course of events, but also according to a wisdom that surpasses the limited intelligence of creatures. These are objectively incapable of embracing the global past and future history of the cosmos within their limited panoramic view, together

⁴⁹ Cf. Thomas Tracy, "Scientific Vetoes and the Hands-Off God: Can We Say that God Acts in History?" *Theology and Science* 10 (2012): 55–80.

with all its consequences and countereffects. From a philosophical standpoint, I guess, it seems difficult to say anything more. One must be content to affirm an epistemological and cognitive *humility*, which should be shared by both those who would like to prescribe to God what he should or should not do, and those who seek to justify his action (or his non-action) through some form of theodicy. Even by refining the analysis of the logic involved here, sooner or later we are led back to Job's attitude: "Behold, I am of little account; what can I answer you? I put my hand over my mouth" (Job 40:4). Although evil and suffering are something objective experienced in Job's flesh, he is invited to reason within a cosmic horizon, whose *ultimate* keys both the believer and the non-believer know they do not possess.

Is there any further reflection that theology can add to such a challenging subject? Without prejudice to the idea that the discernment of evil belongs to a creaturely logic of knowledge – and, therefore, is always limited – I believe that theology, and especially those who provide pastoral care to the faithful, must share in the suffering of people who are experiencing sorrow and adversity, especially when asking why innocents suffer without any apparent reason. Theologians should not insist too much on the fact that, on philosophical grounds, there are not enough elements to deny the providential role of a Creator God. Christianity is an existential message of salvation, not an intellectual gnosis: Christian faith is above all faith in a God who frees and redeems from pain by bestowing the grace to endure all adversity. It is not faith in a God who convincingly explains the origin of evil and philosophically describes why it happens. The answer that God offers concerning the problem of evil is not theoretical, but existential. The "solution" to the question is hidden in God's will to want the passible and suffering humanity of his Son alongside our own existence. God's silence when humans invoke a "special action" of his – a miracle that stops the hand of the killer, saves the lives of innocent victims, protects dignity that has been affronted – has its implicit answer in the Father's silence before the death of his Son and in the will of Jesus of Nazareth to remain nailed to the Cross:

Those passing by reviled him, shaking their heads and saying, 'You who would destroy the temple and rebuild it in three days, save yourself, if you are the Son of God, [and] come down from the cross!' Likewise the chief priests with the scribes and elders mocked him and said, 'He saved

others; he cannot save himself. So he is the king of Israel!
Let him come down from the cross now, and we will believe
in him' (Matt 27:39-42).

Accepting this silence of God as a response to human pain goes
beyond the scope of nature and philosophy. It becomes possible only
by faith.

CHAPTER 13. THE REVELATION OF ULTIMATE REALITIES: THE COSMIC DIMENSION OF CHRISTIAN ESCHATOLOGY

The theological understanding of “a new heaven and a new earth” (cf. Rev 21:1–5) is the subject matter of biblical-dogmatic treatises on eschatology. There are, however, motives for considering it also from the perspective of Fundamental Theology, especially if the reasons for believing in a new world are to be explained within the context of contemporary scientific knowledge. Jürgen Moltmann observed that “faith in eschatology, the last things, could acquire its historical self-awareness only in dialogue with the sciences.”¹ Based on biblical data—in particular on the mystery of the Incarnate Word and that of the resurrection of Jesus Christ's human body, proof of the resurrection of the body and of the world's final transfiguration—Christian theology has developed a hermeneutic for the relationship between the first and new creation. Between the two, theology recognizes elements of both “continuity” and “discontinuity.” What creation manifests to us today will not be replaced or eliminated (continuity) but will be transfigured and re-created to be suitable for the dimension of eternity (discontinuity). Insofar as the expounding of faith in a “new creation” refers to this canon of continuity/discontinuity, the *intellectus fidei* must turn its gaze—precisely because of the aspects of continuity—towards nature and life just as we experience them today thanks to the knowledge provided by the natural sciences.

However, the relevance of the idea of continuity for dialogue with the natural sciences deserves further clarification. We know that the very origin of time cannot belong to the created world.² Likewise, the end of time cannot be known starting from created things. The beginning and end of history are non-deducible from history. The inability of physical cosmology to argue concerning the radical origin of being is well known: Does cosmology remain

¹ Jürgen Moltmann, *Perspektiven der Theologie* (München - Mainz: C. Kaiser - Grünewald, 1968), 287.

² Cf. S.Th. I, q. 46, a. 3, ad 1.

inadequate also when it attempts to address the end, that is, the complete resolution of all things? Clarification is needed here. If by the “end” of history we mean the purpose towards which the Creator leads creation, the final goal already present in the beginning and towards which the divine project tends, then it is plausible that *this end* and the complete realization of this project cannot be deduced from the natural history. They transcend history as they belong only to the freedom of God, who has created all things out of nothing. If by the “end” of history we instead intend the final configuration of a renewed cosmos, then it is reasonable for science and theology to confront each other on certain subjects. In fact, our future situation is nothing but a transfiguration of the time and matter we experience today, with a certain continuity existing between the renewed cosmos and nature as we know it presently. Such an “exercise of rationality” seems justified. In actuality, if the properties and very nature of time ultimately depend on its Creator, then created space and time obey physical laws, following the autonomous dynamism that the Creator has granted to his creatures.

13.1 Physical implications suggested by the theological canon of continuity and discontinuity between the first and new creation

In its attempt to understand what a transfigured ontology could be like, theology only has two references: our experience of the world, and the resurrected body of Jesus of Nazareth, whose knowledge is mediated through the accounts of the witnesses of the Risen One. Faith in Jesus’ resurrection makes the *eschaton* credible and allows theological reasoning to infer something that transcends our empirical knowledge. At the same time, theology must take into account in its reasoning what we know today about the physical cosmos, avoiding contradictions and naïveties. Denying the possibility of theology and science to dialogue on ultimate realities would be equivalent to subscribing to the idea that two independent stories—the history of salvation and the physical history of the cosmos—have given and will give rise in the distant future to two completely different worlds.

Such a methodological position certainly avoids conflicts, but it must pay the price of seriously questioning whether the resurrection of Jesus Christ has anything to say to *this* world and whether its eschatological promises appeal to *this* humanity. Following the hermeneutic of “two stories, two worlds,” the aspects of continuity would be annihilated within a radical discontinuity: the first

creation would have nothing to say to the new creation as it would be wiped out. There would be no fulfillment to await, but only a catharsis that erases and regenerates. What charity and grace build up in this life would provide no special advantage for any future life since it would concern only a weak image bound to disappear. The question then to be asked concerns “What was God thinking?” when he created the world. Was he conceiving a mere theater whose scene was destined to end and its curtain be closed, awaiting a new, totally unexpected and unpredictable representation? Or rather, was he thinking of the final destination of a pilgrimage, necessarily crossing in the midst of history but going beyond history, like a hard itinerary that includes the necessary wading of a river beyond which a promised land lies? I am of the opinion that this second image is much more appropriate, with the dimension of continuity between the first and new creation becoming, therefore, really significant. The first creation is, as a whole, the expression of a promise. The *eschaton* is the fulfillment of a Word that has given rise to a creation *in statu viae*, a Word whose credibility is entrusted once again to the course of history.³

Reflecting on the meaning of what Christianity proclaims to the world when it speaks of eternal life is not a mere theological exercise aimed at showing only the internal consistency of the Christian creed to those who look at it with suspicion. Knowing how to present the revelation of ultimate realities, and the credibility of what they mean and imply, involves something deeper: the future world is the *true* and definitive one, willed, loved, and thought of by God the Creator—the Reign that the Gospel proclaims. As Jürgen Moltmann points out, “The horizon of meaning within which we can understand the divine character of the event of Christ is not of a

³ “It is theologically necessary to view created things as real promises of the kingdom; and it is equally necessary, conversely, to understand the kingdom of God as the fulfillment, not merely of the historical promises of the world, but of its natural promises as well. There is more than merely a parable here. A parable points to something different, and presents the other thing by way of ‘the pointer,’ the image. But a promise points towards its own fulfillment and anticipates a future still to come. The promise is caught up and absorbed in its fulfillment: when what has been promised is realized, the promise is discarded. If the world as creation is the real promise of the kingdom of God, it then *itself* belongs to the history of the kingdom and is not merely its ‘stage and backcloth’; for at the end of this history it is destined to be revealed in its eternal transfiguration.” Jürgen Moltmann, *God in Creation. An Ecological Doctrine of Creation* (London: SCM Press, 1997), 63.

metaphysical nature, but eschatological.”⁴ Here, believers show their cards: they must demonstrate that they have understood and know how to explain the unique, coherent, and definitive plan of God for history. This plan is the final destiny to be proclaimed to the world, where the truth of all things is revealed definitively. The elements available for such an understanding certainly are contained in the Paschal Mystery of Jesus Christ—the firstfruits, cause and reason for the new creation—but these elements are intertwined with nature and history as both of them were assumed by the Incarnate Word.⁵

13.1.1 *The future of the cosmos and the future of humanity*

For 21st century believers, the intelligibility of basic expressions such as “the end of the world” or “the end of time,” usually employed by Christian preaching, is to be assessed against the backdrop of the natural sciences, that is, in light of our knowledge of physical time and future cosmic scenarios, whether they concern our planet or the entire universe. Probably, a lack of dialogue with the sciences on such issues seems not to cause relevant uncertainties in the Church's preaching on the “last things;” these uncertainties, when present, concern questions different from confrontation with contemporary cosmology. However, a further attempt certainly is required, from a theological point of view and in light of catechetical and pastoral praxis. In the Anglo-Saxon cultural environment, especially among authors coming from the Churches of the Reformation, numerous reflections have arisen that have made the “ultimate scenarios” one of the most lively issues of debate between theology and science.⁶ Jürgen Moltmann has examined interdisciplinary aspects in depth, in dialogue with the sciences

⁴ Moltmann, *Perspektiven der Theologie*, 282.

⁵ Cf. Thomas F. Torrance, *Space, Time and Incarnation* (Edinburgh: T & T Clark, 1997).

⁶ Cf. John Polkinghorne, Michael Welker, eds., *The End of the World and the Ends of God. Science and Theology on Eschatology* (Harrisburg, PA: Trinity Press International, 2000); George F. Ellis, ed., *The Far Future Universe. Eschatology from a Cosmic Perspective* (Radnor, PA: Templeton Foundation Press, 2002); Ted Peters, *Anticipating Omega. Science, Faith and Our Ultimate Future* (Göttingen: Vandenhoeck and Ruprecht, 2006); John Polkinghorne, *The God of Hope and the End of the World* (London: SPCK, 2002); Robert J. Russell, *Cosmology. From Alpha to Omega. The Creative Mutual Interaction of Theology and Science* (Minneapolis, MN: Fortress Press, 2008); and Robert J. Russell, *Time in Eternity. Pannenberg, Physics and Eschatology in Creative Mutual Interaction* (Notre Dame, IN: University of Notre Dame Press, 2012).

throughout various chapters of his volumes *God in Creation* and *The Coming of God* as well as in other essays, while Wolfhart Pannenberg has dedicated important pages of his *Systematic Theology* to the topic.⁷ Among Catholic authors we find some writings by Karl Rahner,⁸ but dogmatic theology textbooks concerning eschatology almost never venture into this field. There is a clear division of formal objects, near to the logic of the “two stories” to which I previously referred, perhaps forgetting that the material object – the world created by God – is after all the same one. Classical eschatology prefers to place at the center of its reflection weighty biblical categories of moral and anthropological significance, such as “last judgment” (cf. Luke 11:31; 1 John 4:17; Rev 14:7; Heb 6:2; Heb 9:27), “the last day” (cf. John 6:39–40; John 12:48), “the day of the Lord” (cf. 2 Pet 3:10; Heb 10:25; Acts 2:20), “the coming of the Kingdom” (cf. Matt 5:19; 6:10; 7:21; 8:11; 13:43; Mark 14:25; Luke 13:28), the *Parousia*, that is, “the end of the age” (cf. Matt 24:3) – the second coming of Christ who returns in the midst of his own disciples.

Those who read the history of salvation having in mind the temporal evolution of the physical cosmos may ask how the proclamation of the new heavens and a new earth (cf. Isa 65:17 and 66:22; 2 Pet 3:13; Rev 21:11) might fit with current scientific knowledge of the physical universe. In particular, considering those themes in which the two perspectives – of Revelation and of science – present possible intersections, one may ask whether there are statements of the Christian faith that could be rendered moot by results achieved by contemporary cosmology. For instance, some people could think that contemporary cosmology definitively has defeated Christian hope in a future world, by now having clarified that the temporal development of the physical universe will lead everything towards a general cooling of matter and degradation of energy or, alternatively, towards a global gravitational collapse generating extremely high temperatures. The universe seems obliged to follow one of these final ways out: *freeze or fry*. If the

⁷ Cf. Jürgen Moltmann, *The Coming of God. Christian Eschatology* (London: SCM Press, 1996) and *God in Creation*, chs. 1, 5, 7; cf. also Jürgen Moltmann, “Cosmos and Theosis. Eschatological Perspectives on the Future of the Universe,” Ellis, ed., *The Far Future Universe*, 249–265. Cf. Wolfhart Pannenberg, *Systematic Theology*, 3 vols. (trans. G.W. Bromiley; London - New York: T&T Clark International, 2004), 2: 136–160 and 3: 527–646.

⁸ Cf. Rahner, *Natural Science and Reasonable Faith*, 52–55.

dimension of continuity between the first and new creation is overemphasized, both of these scenarios would prevent us from proposing any idea of eternal life. Moreover, we know that the historical extension of human life on Earth is quite small in relation to the future dynamics of the universe as a whole. For this reason, a religion that presents global cosmic history as dependent upon the history of humanity or upon the outcome of a final divine moral judgment in respect of the human race would not be regarded with any credibility, according to some. In order to answer these criticisms and to better address the whole issue, some clarifications are necessary here.

From the very beginning of Christianity, the renewal of the cosmos implicitly caused by the Paschal Mystery of Jesus Christ is announced to reach all of creation (cf. Rev 21:1; Col 1:19–20; 2 Pet 3:10–13; 2 Cor 5:1). Christian eschatology is not limited to a focus on the condition of the human soul after death or an announcement of the final resurrection of the human body, nor is it limited to presenting humanity's future situation in a reconciled terrestrial habitat. Although present in the Apostles' preaching, such subjects do not exhaust the eschatological view contained in the NT. This view clearly includes the transfiguration of the entire cosmos as it is all of creation that impatiently awaits the revelation of the children of God (cf. Rom 8:20–22). The scientific world can be confident, in this matter, that the Christian faith does not marry with any "geocentrism." The advent of a "new creation" having an entirely universal scope is announced, where creatures will be made suitable for participating in the Creator's life, in an eternal Sabbath of which the first creation was prophecy and anticipation.

With regard to a possible correspondence between the final scenarios of humanity, which include a universal moral judgment, and final scenarios of the cosmos known on a scientific basis, the theological clarifications to be given imply a greater effort of understanding. The idea of the Church's presence until the end of time is also of concern here—a theme I will address in the next section. The Symbol of faith professed at the Council of Nicaea affirms the Second Coming of the Lord at a time when human beings will still be alive: He will come again in glory to judge the living and the dead—*qui venturus est cum gloria iudicare vivos et mortuos*. However, the Nicene Creed does not specify what relationship there is between this Second Coming and the final transfiguration of the universe as a whole, certainly involved in this Creed's last article

where the believer affirms: I look forward to the resurrection of the dead, and the life of the world to come—*expecto resurrectionem mortuorum et vitam venturi saeculi*. The dogmatic constitution *Lumen Gentium* of the Second Vatican Council establishes a parallel between the fulfillment, in Christ, of the human race and of the entire universe, without specifying its timing or any space-time relationships: “The Church will attain its full perfection only in the glory of heaven, when there will come the time of the restoration of all things. At that time the human race as well as the entire world, which is intimately related to man and attains to its end through him, will be perfectly reestablished in Christ” (LG, 48). This teaching is echoed by the Pastoral Constitution *Gaudium et spes*, which soberly declares: “We do not know the time for the consummation of the Earth and of humanity, nor do we know how all things will be transformed” (GS, 39).

If we turn to the NT, it is certainly true that both the eschatological discourses of Jesus and the final judgment scenarios depicted by the Johannine Apocalypse seem to link the end of human history (and of human moral life) with a series of upheavals of cosmic import. However, the literary genre used there, the apocalyptic language, and the *quoad nos* perspective of the narratives (i.e., they are related to us and for us) suggest a certain prudence before drawing relevant conclusions, as elsewhere in the sacred Scriptures.

The undoubtedly universal significance of the “eighth day,” extended as much as the dependence of creation on its Creator, is a renewal that will not leave out any ambit of reality from the final transfiguration when it comes. However, this renewal does not oblige us to deduce that the historical-salvific economy of humanity and the temporal history of the entire universe are marked by the same clock in terms of physical cosmology. Nor are we obliged to believe that the end of humanity’s history on our planet should coincide with the general transfiguration of the whole cosmos, in the sense that the former is the *cause* of the latter. In actuality, the full causality of these events belongs only to the power of the One who can say: “Behold, I make all things new” (Rev 21:5). If a link exists between the history of humanity and the history of the entire cosmos, it is expressed rather by the biblical and theological category of “fulfillment.” There is a fulfillment able to unite both of them, one that the cosmos mysteriously reaches also through the work of the human being enlightened by Christ’s redemption, a fulfillment

whose key is still that provided by the Paschal Mystery of Jesus Christ. Yet, it may be a fulfillment requiring objectively different physical times, one for the limited time-window of humanity's life on Earth, and the other for the cosmic events that introduce the *eschaton*. It is reasonable to think of a time gap between the beginning of each human soul's participation in the life of God—or unfortunately of its separation from God—*before* the Parousia (final resurrection of the body) and the final situation of each human being, soul and body, *beginning from* the moment of the Parousia onward and for all eternity. Therefore, a similar time lag may transpire between the historical experience of the human race as a whole, once the conditions for inhabiting Earth have ceased, and the eternal life in God that is proper to the new creation.

Affirming that the conditions making human life possible on Earth (or in environments close to our planet) are destined to disappear long before the physical universe will experience significant change in its thermodynamic structure would not imply, therefore, a falsification of the biblical message. Nor would it introduce contradictions into Christian teachings on eschatology. It is quite reasonable that between the end of the human race and the end of the current equilibrium of the physical cosmos, there will be a significant time lag. This circumstance would suggest only that theology should adopt an exegetical perspective taking this fact into account, as already occurs for other interdisciplinary questions where the Bible confronts history or the natural sciences. In any case, what scientific knowledge can foresee and endorse refers above all to the dynamism of matter, and less to the dynamism of intelligence. Even science—not only theology—should be cautious when imagining situations in which human beings can survive on a long, or even a very long time scale in the physical cosmos. As a rule, if there are physical constraints to the temporal development of the cosmos and of life within it, it is necessary for theology to take them into account at the levels of both biblical exegesis and speculative elaboration. Let us then briefly recall some of these constraints.

Today we know that there is total independence between the times that will govern the survival of humanity and those that mark the structural stability of the global universe. As we already have observed, life is restricted to a certain “window” within cosmic evolution: life could not originate before a certain moment and could no longer exist after a certain time. Human life, in particular, can exist only within a limited fraction of such a window. If we exclude

factors linked to human freedom—which unfortunately is capable of giving rise to regressive processes that can extinguish our life on the planet, due to humanly destructive interventions upon the biosphere or upon our biological species—*natural* limits also exist that will impede the presence of humans on Earth from a certain time onward. The furthest constraint is given by changes in the thermodynamic equilibrium of the Sun, the star on which we all depend. Major changes are expected in four to five billion years that will determine the expansion of the solar radius up to embracing the nearest planetary orbits, including Earth's orbit. The closest constraint is given by the rate of totally destructive asteroid impacts, able to extinguish the majority of animal species including higher mammals (although bacteria would survive easily): expected approximately every 100 million years, with the last impact of this kind having occurred around 70 million years ago. However, according to some reasonable estimates, in a few thousands years, humanity will be able to develop sufficiently advanced technology to prevent such destructive impacts (or to reduce their lethal consequences). Another natural constraint is imposed by the finite amount of resources available on our planet or in environments close to it. Such a constraint would not result necessarily in a declaration of death for humanity, but this scenario certainly appeals to our planetary consciousness to manage these resources responsibly. Again, along a scale of several thousand years, technological developments including the optimization of terrestrial space and resources, as well as migration to planetary environments close to Earth, could make such limitations less severe.

It is worth remembering that the aforementioned considerations concern above all the material, physical, and partly biological dynamisms of future cosmic history. Human intelligence has enormous resources, but it is reasonable to assume that it will react in limited measure to such inevitable scenarios, especially if the latter involve forces far greater than those which human beings can produce or control, even when taking into account our scientific and technological progress. At the same time, we are dealing with such distant times that even science, if it wishes to remain a rational activity without transforming into science fiction, must declare its inability to predict future relationships between humanity and the natural world in any kind of thorough way.

Taking this view into account, the biblical Omega—being the “end of time” that will introduce the new heavens and the new

earth—can be linked conceptually only to one of two possibilities. The transfiguration of the entire cosmos: a) will come after the general exhaustion of energy in the physical cosmos, most probably due to its irreversible thermodynamic degradation; or b) will be caused before then by God's special action upon the entire universe according to his choices and times, which cannot be determined by whatever our knowledge might foresee on a scientific or cosmological basis. Regarding the "end of the history of humanity," it obviously would happen on the occasion of scenario (b), if the times of God's special divine action were to anticipate the time scale of the survival of human life in the universe. Human beings could no longer survive either for one the following reasons: c) because of natural phenomena, in part foreseeable, that will determine the irreversible loss of conditions making life possible on Earth or in the interplanetary space close to our planet; d) due to global catastrophic effects caused by humanity's free choices, for instance nuclear war, or an ecological disaster on a planetary scale; or e) because of God's special action of sanctioning the conclusion of time as assigned to humans and to their moral life. Since the whole universe depends entirely on its Creator, even natural effects such as (a), (c) and in part (d) can play the role of secondary causes in the achievement of God's plans; these plans would be realized instead through "special" divine actions in cases (b) and (e). When affirming the possibility of these latter two special actions of God as corresponding to cases (b) and (e), biblical Revelation shows its internal coherence. In fact, the biblical image of the Creator, with his radical omnipotence *over all being* as exhibited by his capacity to create *ex nihilo*, is such that any divine action upon the entire human genus or the whole cosmos is always possible.

Once the logic and dynamics of these five alternatives are presented in such a manner, theology can speak of "the end of the world" or "the end of human history" in a way that is both respectful of science and intelligible to those who are familiar with the context of contemporary cosmology. Subsequently, theology should reflect on which of these cases remain open to the idea of a consumption that is also a *fulfillment*—including its possible Christological meaning—since the category of fulfillment is much more qualifying from a biblical and dogmatic point of view. The fulfillment of God's plan within the logic of salvation is much more than the exhaustion of all the cosmic energy resources or the disappearance of planetary environments suitable for human life. Finally it should be

remembered, also from a theological point of view, that the physical scenarios which our mathematical formulations and scientific predictions present as being the foreseeable final states of the universe are nothing but *predicted* future scenarios. Their actual realization will depend, of course, on the time that the Creator has assigned to the history of the cosmos. Such coming scenarios correspond to a future that science can predict according to the necessity of scientific laws. However, such a future does not escape from the hands of Him who created all things out of nothing, having established the origin and the end of time by his free will and power, for he is Lord of all of history.⁹

13.1.2 *The future of the cosmos and the future of the Church*

In what way, and through which of the different alternatives detailed here, will the *eschaton* break into history? The assertion made by *Gaudium et spes*, one undoubtedly shared by all of us, still remains valid: *ignoramus*, we ignore it. It is important to note that the physical and biological scenarios previously examined would continue to be valid even if human beings were not the only rational creatures living in our universe as subjects of a moral life and of a history of salvation. In such a case, if humanity were not the only intelligent form of life in existence, the hermeneutic requirement of keeping separate amongst themselves the final cosmic scenario and the end of humanity's moral history, according to two different time scales, would be even stronger. When read by means of appropriate exegesis, Christian Revelation must be able to remain open to this distinction.

With regard to the lifetime of the human race, one might ask whether the biblical Revelation suffers any backlash with regard to the extent of future cosmic evolution, certainly being longer than one could have imagined only a few centuries ago. What about God's decision to entrust the Earth to the human beings? Will our terrestrial *habitat* continue to be a place suitable for humanity, proportionate to its vital needs, as the expression of a promise and covenant that God has offered to his creatures? The idea that creation is *in statu viae*, unfinished in a certain way, opens to the possibility that biblical stewardship and custody of the Earth also may involve a human search for solutions to problems along planetary or meta-planetary scales. Such solutions include, for

⁹ Cf. Russell, *Cosmology. From Alpha to Omega*, 306-307.

instance, managing the limited resources to be administered, finding new resources out of the Earth, or even cope with natural emergencies that could have potentially catastrophic consequences. Christian thought is certainly the bearer of an optimism that perhaps is lacking in other philosophical or religious perspectives. According to the relationship between God and humanity outlined in the Bible, it is reasonable to believe that the Earth's resources, including other resources possibly got from the created cosmos, are adequate for building a significant future for humanity. Human freedom and intelligence, which are the conditions that make the covenant between God and humanity possible, are capable of giving rise to genuine technological, social, and moral progress. There are no scientific predictions or results that would compel us to deny this perspective. The meaning and future of our relationships with the environment and among ourselves, although conditioned by natural and cosmic constraints, will be unfolded at the level of moral responsibility¹⁰ more than at a level of material resources, a sign that a breaking of that covenant may depend on man and not on God.

Finally, what are the implications, if any, between the very long times at stake in the cosmic future and the credibility of Christian Revelation, whose eschatological view is essential to its salvific announcement?¹¹ If the historical future available to humanity could be estimated over many millions of years, would the morally industrious expectation of the "end of the age" (Matt 24:3) not lose its strength and credibility?¹² Again, can the memory of Jesus be preserved along a scale of times of this order of magnitude, and could the effectiveness of the means of salvation entrusted to the Church *intra historiam* remain unchanged over the ages? Such a circumstance would seem perhaps analogous to that experienced by the early Christian community, whose belief in the imminent Second

¹⁰ Cf. Jared Diamond, *Collapse. How Societies Choose to Fail or Succeed* (New York: Penguin Books, 2005).

¹¹ Several years ago, John Paul II already had posed the same question: "What, if any, are the eschatological implications of contemporary cosmology, especially in light of the vast future of our universe?" See John Paul II, "Letter to the Rev. George V. Coyne, Director of the Vatican Observatory," *Papal Addresses*, Pontificiae Academiae Scientiarum Scripta Varia, n. 100 (Vatican City: Pontifical Academy of Sciences, 2003), 298.

¹² Pannenberg included this question among a group of key questions for the debate between science and theology: cf. Wolfhart Pannenberg, *Theological Questions to Scientists*, in *Toward a Theology of Nature. Essays on Science and Faith* (Louisville: J. Knox Press, 1993), 15–28, here 26.

Coming of Jesus Christ had to give way gradually to a new hermeneutic for announcing the Gospel (cf. 2 Thess 2:1-2). It is worth noting that the Christian call to conversion—certainly an integral part of the Church's preaching—does not find its principal horizon of meaning in any *future* eschatological judgment, but in a personal encounter with the Risen One, Jesus Christ, in the *today* of history through grace.

The center of the Church's preaching is not the last day, but Jesus Christ, the fullness of time and fulfillment of promises. The logic with which the Church proposes its means of salvation to the world is a *sacramental* logic. Within this logic, chronological time is no longer the measure of Church's preaching, because the quantitative *chrónos* (cf. Gal 4:4) has been fulfilled in the eternal present of the Risen One, just as the qualitative *kairós* (cf. Eph 1:10). For this reason, Christ is contemporary to every person and lives forever in the Church through His Spirit. As expressed well by the Eucharistic mystery, but in a certain way also by the other sacraments, Christian salvation is re-proposed in history according to the logic of an eternal present: one sacrifice, one priest and one victim, no longer requiring the multiplication of sacrifices but calling all historical men and women to become part of an event—the Paschal Mystery of Jesus Christ—which now transcends history (cf. Heb 9:25-26 and 10:11-12).

The strength of the Gospel's message, therefore, is neither entrusted to the physical preservation of particular places, nor to the formal safeguarding of particular modes of preaching. It is entrusted first of all to the faith with which Christians will continue to celebrate the Lord's Supper in space and time, showing to the world the real presence of the Lord in their midst. On an orbiting space station or on the surface of a planet other than Earth, in a near future or in the far-off events of future times to come that we cannot even imagine, the signs of bread and wine will continue to indicate the fruits of human labor that sows and harvests, administers creation and makes use of its laws, producing a nourishment that signifies and builds the communion of life, in Jesus Christ, between human beings and their Creator. Christianity is not afraid of time's passing if the memory of its Lord remains entrusted to the law of charity and love, which also makes Christ present in the midst of his disciples through mercy and forgiveness, the promotion of the human being, and the defense of his dignity. Wherever humanity is present and the human being is safeguarded, the charity of Jesus Christ always

will serve as the protagonist of the Gospel's proclamation and of its credibility, and Christ will always be recognized as present in Christians. What could lead to the loss of such living memory and to the weakening of the Gospel's announcement is not any challenge of history, however long the cosmic times may be, but rather the loss of what is *human*. It is only by voluntarily demeaning the *forma hominis* – an ever-responsible and culpable loss – that the *forma Christi* would fade into history, and the Gospel's announcement would lose its meaning, just as information loses its support.

13.2 Time, Matter, and Eternity

By carefully observing the physical structure of the material universe and the logic of biological processes that transpire within it, one should deduce that the cosmos *is made to exist in time*. It is thanks to time that the universe contains life and life is possible. The equilibrium present in the world is not static, but dynamic; the universe is not a space, but a space-time. The energy balance that ensures the stability of the stars is due to thermodynamic transformations that occur over time. The biochemical processes essential to every living being imply cycles and energy exchanges that are conceptually unthinkable outside of time. Transformations and changes in the physical, chemical, or biological environment, especially when observed on a large scale, do not repeat the closed circuits of an eternal return, but are the cause of meaningful evolution and temporal progress. Yet, we must equally recognize that the universe and life, as we know them, *are not suitable to exist forever*. The law of thermodynamic irreversibility applies at both the physical and biological levels. However rich the dynamisms of the physical cosmos may be, matter will tend anyway to exhaust its transformations. Regardless of the final outcome the universe will experience in the far distant future (freeze or fry), increasingly collapsed objects in a "terminal state" (white dwarves, neutron stars, and black holes) gradually will take the place of stars which produce thermonuclear energy, making it increasingly difficult to extract stable thermal energy. However pervasive and creative life may be, it too will cease to develop because all living beings, even non-aging forms such as bacteria, ultimately depend on the thermal energy produced by stars, while the forms of life displaying sexual reproduction are marked by an irreversible fate of decay and death. In the world as we know it, both the capacity of life and the ineluctability of death are ever present; we see the flourishing of

unpredictable resources but also the inevitable end of all that has a beginning. Time is both a condition for living and a predestination to die. Apparently, creation seems to promise more than it can accomplish.

13.2.1 *The physical universe points beyond itself*

Taking seriously the Christian message concerning the existence of a rule of continuity and discontinuity between the first and the new creation means believing that God created a world suitable for being transformed by an action of transfiguration and not annihilation, by an action of elevation and not merely substitution. The physical universe seems to contain seeds that only the rain of grace can bring to fruition. The overall image, as we shall see, is one of a universe capable of pointing beyond itself; a universe that guards promises that only God can fulfill.

Faith in the Risen One helps us to recognize elements that indicate a physical cosmos that is ready for transformation and elevation, a place of incompleteness and openness towards new forms of being, able to transcend nature. However, the universe also reveals the existence of elements of resistance and degradation, disharmonies and conflicts that must be abandoned. The former are destined to show their true potential in the *eschaton*, while the latter are destined to give way because they are no longer suited to the new economy; the former are in some way permanent, and the latter transitory. Among the “seeds” of the first creation, whose fruits are destined to ripen in the new creation, is the human spirit, whose openness to all things (*anima est quodammodo omnia*, according to Aristotle) manifests itself as a created reality open to the infinite and eternal. Scientific analysis does not preclude the recognition of such a logic of transformation and transfiguration, because there are ways of understanding an action of God in nature that transforms without violating or distorting. Moreover, nature itself manifests openings available for completion, posing questions that cannot be answered through the scientific method. The image of seeds that will ripen later in the *eschaton* may find an analogy with what happens during the gestation of new life. Some organs like the lungs, although they already are present in the fetus, will be used only later, being aimed at a future stage of development—yet a stage so new and different from the present unborn situation that the resident in a mother's womb cannot even imagine. If the entire physical universe is also in a state of gestation (cf. Rom 8:22), one could say that the cosmos is

available to accomplish more than can be glimpsed today. Many of its potentialities will realize their full expression in the new creation; they are being guarded for the future, even if they are already recognizable in part at the present time. The eschatological hermeneutics I previously suggested for understanding the miracles of Jesus are basically one aspect of this potential excess of nature; miracles can be interpreted as deep windows that show and anticipate what nature will be able to do in the future, once it is completely conformed and ordained to Christ.

The fact that the material universe reveals its caducity and moves towards irreversible degradation confers interest and significance—even within a scientific context—to the idea that Christ's Paschal Mystery of Death and Resurrection has something to say also to the physical cosmos. There is an arcane analogy between human existence and the existence of the universe as a whole. As the Italian poet Giacomo Leopardi masterfully illustrated in the verses of *Night Song of a Wandering Asian Shepherd* (1829), the time span of birth and death, and of progress and decay, questions both the human being and the natural world on the meaning of their contingency. Now having excluded, on scientific grounds as well, cosmological models where the future of the cosmos is represented by a series of infinite closed cycles in a kind of eternal return,¹³ the physical cosmos seems almost to postulate from within a yearning for a transfiguration capable of overcoming its finiteness and degradation. Such transformation would be accomplished through an action whose resources the physical universe knows it does not possess, an action that thus would assume the character of a new creation.

If it is true, to quote Blaise Pascal, that when looking at human phenomenology we realize that “man infinitely surpasses man,” one could say that, in a sense, also “the universe infinitely surpasses the universe.” Both are enigmas for us, but also mysteries. Observing what the cosmos is, and towards what it moves, humanity silently hopes that even the natural world can undergo a mystery of death and resurrection. In light of the existence, in the first creation, of such solidarity between the physical cosmos and human biology, highlighted for instance by the scientific results associated with the

¹³ For a comparison between cosmology and theology on this matter, cf. William L. Craig, James D. Sinclair, “The Kalam Cosmological Argument,” *The Blackwell Companion to Natural Theology* (eds. W.L. Craig and J.P. Moreland; Chichester - Malden: Wiley - Blackwell, 2009), 101–201, here 144–157.

Weak Anthropic Principle, the believer considers it reasonable that the resurrection of the body should also imply a “resurrection” of the Earth and the cosmos. In fact, a truly resurrected body – with its physiology and morphology – makes sense only in relation to the cosmic context in which the body has been formed and from which it is sustained. The extension of such solidarity between the present world and the new world is in accordance with the Christian faith. This view is not excluded by any scientific data and, in the eyes of the world, makes meaningful the Christian message that the entire created universe will also be elevated by the Paschal Mystery of Jesus Christ, just like human activity in history. It is not without interest that *Gaudium et spes* presents the Council's doctrine on the new heavens and the new earth right at the end of the paragraphs that detail the meaning of human earthly activity in light of the Mystery of the Incarnate Word, and then extends this light to future realities, even in their cosmic dimension (cf. GS, 38–39).

Let us return to the relationship between time and eternity. Christian faith knows ways of referring to “time” without opposing scientific thought, even when speaking of eternal life. The correspondence between time and eternity participates at some level in the logic that links harmoniously and non-conflictually the continuity and discontinuity that exists between the first and the new creation. Historically, theological tradition has sought to thematize in various ways the idea of a time present also in eternity, for example by introducing concepts such as “aeon,” *aeovum*, and “eviternity,” aware of the fact that, when speaking of life, continuity implies that transformations and movement remain consequential notions.¹⁴ Time and eternity cannot be totally incommensurable. God, who is eternal, acts within the world's time; believers, who live in history, are persuaded that prayer is a dialogue with God, who transcends history. Over the centuries, the faith of the Church felt the need to place the risen Christ, his Mother assumed into heaven, the souls of the saints and blessed, and angels (but also demons and the souls of reprobates) in a world from which the temporal dimension had never disappeared completely. It is certainly worth remembering that eternal life is mainly a world of *relationships*, and not a world of physical places. It is a *state* characterized by relationships with God, and not by space-time circumstances. However, there is no reason to think that Christian believers'

¹⁴ Cf. S.Th. I, q. 10, a. 5; Thomas Aquinas, *I Sententiarum*, d. 9, q. 2, a. 1, ad 1.

position concerning the permanence of a temporal dimension in the *eschaton* should be “demythologized” today, because of our scientific knowledge. Time—the physical time that we know—is in fact available to a logic of completion and transfiguration. General relativity teaches that in this one world Christians believe God has created, there is close correspondence between space and time as strictly interlaced dimensions ruled by gravity. If the Creator's project willed a world governed by the inseparable co-presence of time and space, then it is reasonable to foresee that the continuity of transfigured matter must correspond also to the continuity of transfigured time.

This perspective allows for new theological understandings of eschatological time that are tied no longer to degradation or corruption. To indicate the preservation (continuity) and transfiguration (discontinuity) of time, the idea of a continuous return on the possession of eternal goods has been suggested. Some authors have expressed this idea through images of the pleasant returns of music and of the holistic movements of a cosmic dance.¹⁵ A concept of temporality associated only with growth, having no more decay, is also conceivable. Such growth may be understood as a tension towards an attained but unconsumed fulfillment, towards a love possessed but which never satisfies, towards a good comprehended but never completely embraced. The time of the *eschaton* becomes intelligible as a time of eternal enjoyment of God, in a continuous discovery of Him and of all things in Him: a never-ending discovery, an endless but untiring search.

13.2.2 Unity and articulation of the divine project on creation

Accustomed to facing the physical cosmos as a unity, and recognizing the specific dynamisms that make it one single object of intelligibility, the scientific interlocutor asks for a better understanding of God's original plan for creation. If the original plan was to call the world to take part in God's sabbath—that is, in His eternal glory—why was the physical universe shaped for history? If we speak of a “first” and a “new” creation, then towards what was God's creation directed when the Holy Trinity “thought out” the

¹⁵ Cf. Moltmann, *The Coming of God*; John Polkinghorne, *The God of Hope and the End of the World* (New York: Yale University Press, 2002). On the metaphor of the eternal dance, cf. Giuseppe Del Re, *The Cosmic Dance* (Radnor, PA: Templeton Foundation Press, 2000). Criticisms regarding the presence of a temporal dimension in the *eschaton* in Pannenberg, *Systematic Theology*, vol. 3.

world? Was the divine project to have a material and temporal universe as we know it today? Or, did it aim from the very beginning at a *qualitatively different world*, one that we do not yet know? Is this diversity that of a world only *freed* from sin and corruption or that of a truly *re-created* world? In anthropological terms, and adopting a Pauline terminology, all these questions can be summarized by simply asking: Was the human creature a terrestrial or a celestial one in God's original plan (cf. 1 Cor 15:45-50)? Also, again in biblical terms, does the messianic era in which the wolf dwells with the lamb reveal the deepest truth of what wolves and lambs really are, or does it signify a renewed state in which wolves, who are not lambs, have to behave like lambs? The question is nothing more than a different way of proposing and re-examining the relationship between nature and grace, with all the difficulties that it entails but also all the richness that it implies. Aware of the complex articulation brought about by this relationship, Christian theology has always felt the need to move beyond the idea that the new creation involves only a restoration, willingly affirming its association with a new and higher dignity. Grace not only heals, but also elevates nature. It is not necessary to focus now on the relationship between nature and grace in general; I intend only to offer here a few considerations concerning the articulation between the first and the new creation, taking into account what scientific knowledge seems to suggest regarding the natural world.

The intelligibility of the new creation and the credibility of Christian teachings are better understood if the project of creation is presented as a unitary project centered on sound Christology. Unlike Greek thought, where divine truth resides in the origin and everything moving away from the origin brings with it degradation and corruption, Christian thought states that the truth resides not only in the exemplariness of the origins, but also in the fulfillment achieved through history. Such is expressed by the twofold mediation of Jesus Christ, the Incarnate Word and Increate Truth, a mediation which operates both in the Alpha and Omega. The "original" divine project should be understood, therefore, as a history, as something to be made. Thanks to history, this project is demonstrated to be a love capable of promising and keeping its promises; for we humans, the possibility of answering to this love is conceivable only through a history of merit and forgiveness. The Catholic faith in a creation willed by God *in statu viae* implies a burden of accepting that creation "must be made," as it is still

unfinished (cf. CCC, 302 and 310), and it will be completed only in the *eschaton*, at the end of the ages.

Creation requires a history, a transfiguration. This is not because the original world has escaped God's plans and needs time to be brought back to him from a wrong itinerary. Neither is it because the universe would need God's intervention or His supplementary action over the course of time to complement what He once had assigned to it, making it suitable now for doing something else. Creation, rather, is unfinished because it is on its way to the Kingdom, and Christians pray every day in the Lord's Prayer for the coming of this Kingdom. To "allow" God to be All in all things (cf. 1 Cor 15:28) requires the labor of space and time, the struggle of freedom and sacrifice, for it is a project that can be built only through love and by love. The original vocation of the human being "invited to dialogue with God" and "called to participate in His life" (cf. DV, 2) implies that the place for this invitation and call is the earth, not heaven. Creation is unfinished because human beings are called, in Christ, to lead this creation towards its fulfillment, a creation entrusted to them and in which they are to play the role of co-creators together with God. To reach an *eschaton* where freedom and love reign, there is need for a material and temporal universe. The book that enables access to eternal life with the Lamb is not a digital code just containing passwords, but the *book of history* (cf. Rev 5:1-10). Even if the new Jerusalem descends from heaven (discontinuity), the bricks used to build it are made by the charity we live during the time of our moral merit (continuity); the foundations of the city already are established, once and for all, on the cornerstone that is Jesus Christ.

The original goodness of creation is the history of mercy and salvation that the Creator has made it capable of experiencing. It is the goodness of the Sabbath on which God finally can rest because he has completed his greatest work, the dawn of his Son's Easter. By freeing the world from sin, corruption and death, God leads the cosmos towards its one and unique goal: participation in his life. Liberation from sin and its consequences does not imply only the restoration of a lost good, but also a new creation, a true transformation that prevents evil from being able to multiply and spread. This new creation—in some way anticipated by the gift of grace—heals creatures from those intrinsic limits and weaknesses that were conditions for the possibility of evil. Its finiteness is then elevated to transcending the limits proper to creaturely beings. In

this way, freedom is healed and able finally to move towards its true good, leaving behind the evil caused by its erroneous choices. Redemption and the messianic light that it radiates reveal the state of precariousness and weakness of nature and of the living—the historical human being included—but also help to recognize the hope for liberation and fulfillment that every creature holds inscribed in its nature. Once the creature's finiteness and incompleteness—which in some way are linked to both physical and moral evil—are transcended so that the creature can share in the infinite glory of God, the conditions that had allowed the evil to happen and compound disappear.

A view in which creation is seen *from the perspective and in light of eschatology* is not foreign to the thought of the Church Fathers, as Irenaeus, Athanasius, and Maximus the Confessor speak of it. An eschatological reinterpretation of creation, developed especially in the theology of the Eastern tradition, has been proposed again in contemporary times, both in the East and in the West, by authors such as Pannenberg, Moltmann, Bulgakov, Staniloae, von Balthasar and de Lubac. This vision has the merit of better addressing the questions posed thus far in this analysis: the only purpose of the one and unique divine project is to call creation and its rational creatures in a special way to participate in the life of God, in the Sabbath of his glory. This is accomplished through the history of a material and temporal universe, which must contain within itself the seed of a new spiritual and eternal birth. Time and matter are necessary elements for this project, elements that will be transfigured but not removed. The unity of the divine design, Jürgen Moltmann writes, “is preserved only through the concept of creation as a meaningfully coherent process. This process acquires its significance from its eschatological goal. [...] It is not the historical covenant which is already ‘the inner ground of creation,’ as Karl Barth maintained: this is true only of the kingdom of glory; for this eternal kingdom is the inner ground of the historical covenant as well.”¹⁶

To return to the image of the messianic age as foretold by Isaiah (cf. Isa 11:6 and 65:25), the wolf who respects these conditions—to put it in a certain manner—is not a wolf transformed into a lamb. Rather, it is a wolf that continues to be a wolf but has fully oriented its character and qualities towards good and no longer towards evil. To be able to do so is certainly because of God's gift, but a gift that

¹⁶ Moltmann, *God in Creation*, 55.

fulfills the original Creator's plan at the same time. Employing Pauline terms, God creates the human being as "spiritual," looking at the Risen Christ. But to become spiritual, the human being necessarily had first to be "material" (cf. 1 Cor 15:42-43). "The supernatural" – Teilhard de Chardin wrote years ago – "is a ferment, a soul, and not a complete and finished organism. Its role is to transform 'nature'; but it cannot do so apart from the matter which nature provides it."¹⁷ For a finite rational creature belonging to the physical world, the material dimension is an integral part of the spiritual as the latter works on the former by transfiguring without rejecting it. Once transfigured, the limits and finitude of creaturehood become the expression of a *religious* creaturehood, that is, a creaturehood totally oriented towards and ordered to its Creator, a creaturehood that is no longer an occasion for failure and a condition of damage as in the first creation. In the *eschaton*, when creation is fulfilled and the Kingdom has come, temporality and matter will be informed fully by the spirit and will no longer be able to oppose it because they will have given rise, again in Pauline terms, to a "spiritual body" (cf. 1 Cor 15:44 and 15:46). The ideal towards which the *eschaton* looks, and towards which creation has looked from the beginning, is not a world without matter or time, but a world where matter and time are fully ordered to the spirit. Faith in this continuity, and the value that this faith preserves, represent a pivotal specificity of the Christian world view, whatever stance or approach scientific thought, philosophy, evolutionism, or naturalism might have concerning the natural world:

In a world of evolution of this kind matter cannot be conceived as a mere launching pad which is left behind, or the first stage of a movement which is simply cast off. The dogma of the resurrection of the body prevents the Christian thinker from subscribing to this idea. Even though it is not possible to have much of any positive notion as to what function the material element itself will have and what part it will still have to play in this kind of a final phase of spirit in its immediate unity with absolute spirit, still this dogma which says that matter will be taken up into the finality of the unsurpassable perfection of created spirit, is an apotheosis of matter the likes of which a wretched materialism does not even dare to conceive.¹⁸

¹⁷ Teilhard de Chardin, *The Divine Milieu*, 152.

¹⁸ Rahner, *Natural Science and Reasonable Faith*, 54.

We perfectly understand, therefore, why the Christological reference must continue to be the essential junction for correctly interpreting the articulation between the first and the new creation, as well as for understanding what the “continuity and discontinuity” rule could mean. It is thanks to the Incarnation of the Word that we have the certainty that matter, humanity, and time are truly suitable for participation in the life of God. It is thanks to the resurrection of Jesus Christ that we are certain that time can be transfigured without annulling itself, thus revealing its sacramental character, one already overshadowed in the narration of the Genesis Hexameron. Looking at the Risen One who is the fulfillment and the fullness of time, we know that time no longer flows towards catastrophe or the simple degradation of the physical cosmos, but instead flows towards the eternal present of a renewed cosmos. Original faith in the innate goodness of matter, the non-apparent reality of the Incarnation, and the belief in the true humanity of Jesus’ Risen Body confessed as being present at the right hand of God the Father—all teachings strongly defended by the Church Fathers of the first centuries—are not at all minor elements or peripheral features of the Christian Creed. Rather, these teachings are crucial for the reassuring reason that the material world, and thus its cosmic-temporal dimension, truly can take part in the eternal life of God, in a transfigured world that Christian faith indicates not only as new heavens, but also as a new *earth*.¹⁹

13.3 Survival of the personal identity of the human being: ancient questions and contemporary insights

Since the beginning of the Apostles’ preaching, Christian belief concerning the immortal destiny of the human being—created in the image and likeness of God—has aroused a number of perplexities. In the Greco-Roman world, these perplexities concerned above all the resurrection of the body, while in the Jewish environment they referred to the modalities that such a resurrection would assume. In

¹⁹ “It is especially worthy of note that the point at which God in a final self-communication irrevocably and definitively lays hold on the totality of the reality created by him is characterized not as spirit but as flesh. It is this which authorizes the Christian to integrate the history of salvation into the history of the cosmos, even when myriad questions remain unanswered, as can happen.” Rahner, *Natural Science and Reasonable Faith*, 55.

contemporary culture, the major difficulty arises from criticism of the spiritual dimension of the human being and his vocation to eternity. These characteristics of the human person have specific consequences at the levels of ethical responsibility, ones that contemporary society is not always ready to acknowledge. In actuality, they are denied by naturalistic and ultimately materialistic forms of thought favored by the lack of a metaphysical perspective no longer shared. The opinions expressed by the Sadducees in Israel at the time of Jesus of Nazareth, those of the Greeks before St Paul's preaching at the Areopagus of Athens, and the objections that the educated philosopher Celsus addressed in response to the presentation of Christian doctrine made by Origen, are all today largely present in our secularized society. The necessary task of providing the reasons for one's own hope (cf. 1 Pet 3:14–15) has compelled theology over the centuries to develop an ever more careful formulation of Christian belief in the "last things" (Lat. *eschata*), including what is called "individual eschatology." Consequently, a progressive clarification of the nature of the human being has ensued, especially concerning the simultaneous presence of the two components – material and spiritual – that qualify human uniqueness within the biological and historical context of other living beings (cf. DH 800, GS, 14).

Commenting on this doctrine is the task of theological anthropology and eschatology, not of Fundamental Theology. However, it is good to mention here some of the demands coming from scientific culture regarding the significance and credibility of Christian preaching on the survival of *personal* being after death. I am referring here to the continued existence of the personal being, to the survival of his or her identity after the loss of biological life, a condition of possibility for believing in the existence of the human's eternal destiny. I have clarified elsewhere that scientific thought is not necessarily responsible—in this as in other matters—for the climate of skepticism and materialism that dominates Western society today.²⁰ It is worthwhile here to examine two questions that the sciences seem to address towards Christian belief in eternal life concerning the eternal destiny of every human being before a God Creator. The first involves how to sustain the transhistorical value of

²⁰ Cf. Giuseppe Tanzella-Nitti, "Some Reflections on the Influence and Role of Scientific Thought in the Context of the New Evangelization," Gabriele Gionti, Jean-Baptiste Kikwaya-Eluo, eds., *The Vatican Observatory, Castel Gandolfo: 80th Anniversary Celebration* (Springer International, 2018), 235–244.

personal identity generally associated with the subsistence of the human soul after death; believers have to do so in the face of a physicalist vision according to which all the activities traditionally stemming from the spiritual dimension of the human being are interpreted today as phenomena having their *total cause* in neurophysiology and biochemical processes that occur in our human, material bodies. The second question is how to understand the dogma of the resurrection of the body – in particular the tenet of the identity between the individual body and the future resurrected body – in the face of the experience, shared by believers and non-believers alike, of the irreversible corruption of the human corpse after death.

The deeper knowledge brought about by the neurosciences and a better cosmic collocation of human biology have not prevented contemporary culture – strongly marked by technological progress – from wondering about our ultimate destiny. On the contrary, questions about our final destiny seem to take the cue precisely from scientific or quasi-scientific scenarios, often the object of movies and novels. I am not referring here to what is being advocated today by the transhumanism movement, whose ideological and utopian (and sometimes even pseudoreligious) statements easily show how alien it is to science.²¹ I refer, rather, to those forms of “eschatology” as narrated by literature and cinema, in which the soul, the human spirit, or even the body find new spaces of existence for satisfying the insuppressible human longing for endless time, but also the human desire for an eternal love stronger than death. A movie like Duncan Jones' *Source Code* (2011), just to provide one example, presents the careful reconstruction of a plot and screenplay highly indebted to recent studies of neuroscience, to their main explanatory paradigms, and even to

²¹ The bibliography on transhumanism is very broad. In dialogue with a religious perspective, I suggest: Gregory R. Hansell and Willam Grassie, eds., *Transhumanism and Its Critics* (Philadelphia: Metanexus, 2011); Ronald Cole-Turner, ed., *Transhumanism and Transcendence. Christian Hope in an Age of Technological Enhancement* (Washington DC: Georgetown University Press, 2011); Steve Fuller, *Humanity 2.0. What It Means to Be Human Past, Present, and Future* (New York: Palgrave Macmillan, 2011); Calvin Mercer and Tracy J. Trothen, eds. *Religion and Transhumanism. The Unknown Future of Human Enhancement* (Westport, CT: Praeger Publishers, 2014); Nick Bostrom, *Superintelligence. Paths, Dangers, Strategies* (Oxford: Oxford University Press, 2014); and John C. Haughey and Ilia Delio, *Humanity on the Threshold. Religious Perspectives on Transhumanism* (Washington, DC: Council for Research in Values & Philosophy, 2014).

metaphors used by scientists. Nevertheless, the movie proposes as its backdrop the affirmation of life beyond death, a life strongly desired and attained through the redemptive experience of love. The idea that love is what makes space-time eternal and allows to travel from a reference system into another is also conveyed by the movie *Interstellar* (2014), largely indebted to the framework and results of relativistic physics.

13.3.1 *Personal identity and survival of the human spiritual dimension beyond biological death*

The progress of our knowledge of the human brain and its functions is due especially to studies on neural networks and applications of neuroimaging, namely functional Magnetic Resonance Imaging (fMRI) and Positron Emission Tomography (PET). Decades ago, neuroscientists began to seek correspondence between the psychic states of the human being and the locations of active brain areas. More recently, they have tried to explain the phenomenology of psychic states (cognitive, emotional, and sentimental, among others) in terms of biophysical activity occurring in the brain areas involved, assuming direct correspondence between psychical human behavior and neurophysiological processes. Studies in psychology and neurosurgery have demonstrated significant dependence of the psychological *self* on the condition of brain matter and on its efficiency and functionality, to the point of considering that if the self exists, then it would not have a permanence different from that of the human body. It is common to hear the thesis that today's knowledge of brain activities would render superfluous any postulation of a spiritual principle as the element of specificity of human nature, a principle that makes the human a *personal* being. The acts and functions associated with what we once called the "soul" would be explained here in terms of natural (i.e., physical) processes. According to Gerald Edelman, the human spirit is a biochemical process that depends on particular forms of organization of matter,²² while Michael Gazzaniga maintains that "we are our brain," and "our mind does just what the brain does."²³

²² Cf. Gerald Edelman, *The Remembered Present. A Biological Theory of Consciousness* (New York: Basic Books 1989).

²³ Cf. Michael Gazzaniga, *The Ethical Brain. The Science of our Moral Dilemmas* (New York - London: Hapres, 2006).

Not only would acts once considered to be “spiritual,” such as the will or self-reflection, be explained in purely “material” terms, but also those behavioral aspects usually associated with the human soul—such as freedom, conscience and moral choices—are considered by many as the mere result of neurophysiological processes largely subject to deterministic prediction, or at least capable of being treated by the empirical sciences. Ethics would no longer belong to philosophy but instead would fall within the field of experimental sciences, a position that has given rise to a new discipline: neuroethics.²⁴ A more general way of addressing this issue is to speak of the relationship between mind and body or between mind and brain (*mind-body problem*), and of the different solutions that have been proposed.²⁵ Such proposals include: forms of dualism, which despite overcoming a physicalistic materialism do not offer a convincing way of explaining the interaction between the two components; forms of naturalism and reductionist materialism, which support the full identity between the mental and the physical, and postulate eliminating what we verbally associate with the psychic sphere, qualified as pre-scientific ideas; and finally, the application of Aristotelian hylemorphism (or other models derived from it), in which the *mind* or *soul* has the character of philosophical substance, understood as the metaphysical “form” of the body, distinguishable from the body and able to transcend it.

In general, the majority of scientists today acknowledge the existence of a certain irreducibility between the mind and body (if we wish to use these terms) and thus recognize a meaningful difference between them. Attempts to bring this distinction back to an original monism are less and less common; however, there are researchers who admit this difference at an epistemological level, but not at an ontological one.²⁶ It should be remembered that more

²⁴ Cf. Neil Levy, *Neuroethics. Challenges for the 21st Century* (Cambridge: Cambridge University Press, 2007).

²⁵ For a concise review, Gianfranco Basti, *Mind-Body Relationship* (2002), INTERS, DOI: 10.17421/2037-2329-2002-GB-2.

²⁶ The position of Roger Penrose is peculiar in this regard. While distancing from a reductionist monism, he intends to overcome it by resorting to new possibilities of understanding as suggested by quantum physics, or even to formulating a new physics so as to include the mental phenomena that the classical, reductionist physics would not be able to interpret – instead of admitting, rather, that the mind could transcend the body. Cf. Roger Penrose, *Shadows of the Mind. A Search for the Missing Science of Consciousness* (Reading, MA: Vintage, 1995).

that one century ago, Franz Brentano (1838–1917) in his work *Psychology from an Empirical Standpoint* (1874) argued convincingly for the irreducible “intentional” nature of each psychical act, opposed to Kantian formalism in treating the states of conscience. Willard Quine (1908–2000) demonstrated the logical-linguistic inconsistency of any epistemologically and linguistically reductionist approach to the mind-body relationship.²⁷ According to Quine, the “observational statements” of neuroscience and the “subjective statements” of the individual describing his own psychic states are necessarily expressed by different languages that follow two different and incommensurable forms of logic. Important authors as Hilary Putnam and John Searle reject a reductionist monism, but it is not part of their program to acknowledge the transcendence of the human spirit or to recognize the existential resonances that such irreducibility would imply.²⁸ Nobel Laureate John Eccles (1903–1997) supported strongly the incommensurability between the subjective psychic and the objective material ambits.²⁹ For all these authors, the problem remains of convincingly expressing the relationship between these two components. The impracticability of a monist reductionism and the affirmation of their necessary irreducibility often lead them to an implicit, Cartesian dualism (*res extensa* and *res cogitans*) that is unsatisfactory in the end. Also John Eccles was not exempt from such dualism, probably triggered by his philosophical dialogue with Karl Popper.³⁰ While maintaining a physicalist perspective, Gerald Edelman recognizes in one of his later works that consciousness is a

²⁷ Cf. Willard O. Quine, “Mind versus body,” *Quiddities. An Intermittently Philosophical Dictionary* (Cambridge: Harvard University Press, 1987).

²⁸ Cf. Hilary Putnam, *Representation and Reality* (Cambridge: The MIT Press, 2001); John Searle, *The Mystery of Consciousness* (London: Granta, 1998) and *The Rediscovery of Mind* (Cambridge - London: The MIT Press, 1992).

²⁹ According to Eccles, psychical experiences cannot be explained fully in neuronal terms. Referring to Karl Popper’s “3 Worlds,” he observes that when compared to World 1 (energy and matter), World 2 represents something more, a qualitatively different phenomenology that cannot depend entirely on mere physicality. Between the universe of conscious experiences and that of the brain, there would be a radical otherness that does not allow the former to be traced back to the latter. The original insights of the Anglo-Australian neurophysiologist may be found in John Eccles, *The Human Psyche. The Gifford Lectures 1978–1979* (London: Routledge, 1992); John Eccles and Daniel Robinson, *The Wonder of Being Human. Our Brain and Our Mind* (New York - London: Free Press - Macmillan, 1984).

³⁰ Cf. Karl Popper and J. Eccles, *The Self and Its Brain* (Berlin: Springer International, 1977).

process arising from the brain itself through an evolutionary paradigm; but a process, he adds, that at a certain stage of its development escapes strictly deterministic descriptions and is no longer representable with scientific-experimental categories.³¹ In the field of philosophy but in close dialogue with the neurosciences, Jonathan Lowe (1950–2014) recently successfully criticized physicalist positions, trying to overcome dualistic naturalism towards the rediscovery of a *formal* relationship between person (mind) and body.³²

In a nutshell, science continues to address the main characteristics traditionally linked to the role of the human soul or spirit, but attributes to them an abstract subject that carries out the task of the “traditional” soul or takes on its functions. Words such as *mind* or *Self* (with capital S) thus are used to indicate such aspects as individual identity, the emergence of the psyche, and the center of unification of the subject's functions. The relationship between *software* and *hardware*, despite all its limitations and shortcomings, is still used widely in the scientific and popular literature as an image of the pair *mind* and *brain*. In my opinion, the persistence of this metaphor basically demonstrates the predisposition towards recognizing that information (software) – something immaterial and associated with the personalist world – exceeds and surpasses the bodily component (hardware) – something material and associated with the world of physical-chemical transformations and of biological processes. Even the well-known reductionist school philosopher Jerry Fodor – the main advocate of a “computational theory of the mind” – while believing that the logical-mathematical treatment of information offers the best interpretation of neural networks, concludes that such a theory is unable to furnish reasons for the superior intellectual processes of the human brain.³³ Beyond the different explanations concerning the origin and nature of such a “formally unifying center,” the neurosciences do not seem capable of ignoring or avoiding it when carrying out their research or interpreting scientific results.

³¹ Cf. Gerald Edelman, *Second Nature. Brain, Science and Human Knowledge* (New Haven, CT - London: Yale University Press, 2006).

³² Cf. Jonathan Lowe, *The Possibility of Metaphysics, Substance, Identity and Time* (Oxford: Oxford University Press, 1998) and *Personal Agency. The Metaphysics of Mind and Action* (Oxford: Oxford University Press, 2008).

³³ Cf. Jerry A. Fodor, *The Mind Doesn't Work That Way: The Scope and Limits of Computational Psychology* (Cambridge: The MIT Press, 2001).

In order to explain human phenomenology, most neuroscientists would have no difficulty admitting the need for a center of unification, a subject who calls upon himself for the coordinated action of different functions that operate in the individual parts of his body: *It is not my brain that wants, nor my hands that want, "it is I who wants."* Neuroscientists would also acknowledge that we have no scientific evidence obliging us to consider such a "center" to be totally understandable in terms of solely empirical causes or processes fully understandable in a formal-experimental way. Certainly for philosophical anthropology, and even moreso for theological anthropology, to admit the existence of a personal subject irreducible to the body is insufficient for expressing the profound truth of human nature, whose proper understanding depends on the *ontological positioning* of such a center/subject within a cosmic framework and before his Creator. Moreover, anthropology is interested in expressing convincingly how the psychical and physical may relate to each other, without stopping at their irreducibility.

However, the fact that the aforementioned researchers acknowledge this view represents a sort of "hermeneutic opening" of the scientific method towards higher and more general levels of intelligibility. This opening toward the Self disproves those reductionist views quite frequently encountered in certain popular presentations of neuroscience and protects science from ideological closures that result in denying the personal identity of each human being, capable of transcending his or her bodily dimension. Neuroscientists, like any other researchers, do not ignore the great difference that *Homo sapiens* manifests with respect to all other animals. Its cultural evolution, its scientific and social progress, its relational life and intentionality, are all phenomena which emerge over matter and are consistent with the existence of a *non-material* form as the principle of unification of all the subject's functions. If we do not wish to qualify the Self of the human being as "spiritual," we at least must recognize the uniqueness of his or her nature and phenomenology, when compared to the other living beings on our planet.

The philosophical (yet also theological) reality of the "I" cannot be falsified experimentally by the neurosciences, nor can the *Self* be photographed by our neuroimaging techniques to ascertain its existence. Our most advanced scientific knowledge of the

interactions between the subject (such as his or her emotions, feelings, or behaviors) and the physiological and functional aspects of his or her body/brain does not declare the disappearance of the Self as the unifying center of rational human life, nor does this knowledge falsify this central subject as a basis of grafting for the philosophical concept of human person.³⁴ Maintaining the possibility that some superior functions, such as self-reflection and self-awareness, may emerge at a certain level of neuronal organization according to a paradigm of complexity is not equivalent to denying the reality of an irreducible ego. A philosophical view that interprets those functions as the effects and not the cause of the human personal conscience, remains utterly compatible with scientific analysis. This perspective is certainly true from the epistemological point of view and, depending on the perspective we have of emerging phenomena, it is reasonable also at an ontological level. The presence of a substratum and of neuronal organization *is a necessary, but not sufficient condition* for the ego to express itself. Concerning the relationship between this (founded) self and its (founding) Creator, the articulation between the First and secondary causality—useful also in other philosophical contexts to clarify the difference between a scientific description of reality and God's creative causality—ensures us that the transcendental ontological dependence of the creature on its Creator is not (and cannot be) abrogated by what is observed at the level of empirical causes and quantitative descriptions.

Always with regard to the scientific description of reality and from the methodological point of view, it also should be noted that a supposed reductionist identification between what is physical and what is psychical—quite frequently encountered in some popular literature (e.g., neurons responsible for altruism, specific brain areas indicating religiosity and prayer)—does not result from any scientific neuroimaging. Such identification is rather the *premise* that later determines a certain interpretation of those images, making us exchange the unseen causes with visible effects. Moreover, from a

³⁴ For an overview of the interactions between theology and science on this matter, above all from an evangelical perspective, see Robert J. Russell, Theo Meyering, Nancy Murphy, Michael Arbib, eds. *Neuroscience and the Person. Scientific Perspectives on Divine Action* (Vatican City - Berkeley: Vatican Observatory Publications - The Center for Theology and the Natural Sciences, 1999). See also Jean-Michel Maldamé, "Sciences cognitives, neurosciences et âme humaine," *Revue Thomiste* 98 (1998): 282-322.

quantitative point of view, it should be remembered that neuroimaging is based on metabolic activity (as traced generally via hemoglobin present in the cerebral blood vessels) and not on cerebral electrical activity. Now it is the latter, primarily linked to the nervous system, that exhibits a closer relationship to psychical activity, preceding metabolism by approximately three orders of magnitude (1,000 times) in the speed of signal transmission. The decoupling of nervous activity (electrical) and metabolism (fluid transport of hemoglobin), having two different time scales, suggests applying with great caution the idea that the latter serves as disclosure of the former. In short, neuroimages are not machines for “reading thoughts.”³⁵

Which implications, then, could we derive from the results of the neurosciences, to confirm or deny the significance of theological teaching that affirms the spiritual dimension of the human being and the permanence of his or her personal identity beyond biological death? It is certainly not the task of the sciences to establish whether the *self* or the mind enjoys that prerogative which Christian theology (but also a good number of philosophers through all ages) indicates as the “immortal soul.” Yet, as far as we have seen, the existence of a center of unification of the subject and its transcendence over matter are not refuted by any apodictic scientific argument. Indeed, philosophical reflection (when carried out assuming epistemological realism and without ideological prejudices) can provide arguments to support the transcendence of personal being over the world of biological and neurophysiological phenomena, particularly the transcendence of his or her intentionality and freedom, in accordance with what common sense teaches quite convincingly.

Starting from a metaphysical recognition of the spirituality (non-materiality and incorruptibility) of the human soul, philosophers of the Classical Age and Christian philosophy have developed a series of “proofs” of the soul's immortality. In more recent times, these proofs have been based on arguments derived from moral life and the existential sphere. These considerations are still meaningful for the world of science, since they rely upon a philosophy of nature and philosophical anthropology that do not overlap with the descriptive analysis of the natural sciences. The

³⁵ Neuronal patterns generated by fMRI always are mediated by the response that brain tissues provide to the different chemical preparations used for highlighting hemoglobin, whose different reactive capacities can give rise to very different images.

Christian proclamation that all personal beings have an immortal nature and destiny—with the foundation of such immortality dwelling in a privileged relationship with their Creator—does not concern an object that the neurosciences can by their method deny or confirm. “The soul” —the Italian theologian Giacomo Canobbio observes —

is the mark of man's irreducibility to biological, psychological and sociological data. It says that man stands before God as the interlocutor whom He places in a definitive form. How this dialogue could take place after death is difficult to establish, and it must be accepted that we lack the appropriate language to describe it. Obviously the dialogue supposes that there is a ‘subject’ that remains. To limit oneself to saying that the human being lives in the memory of God, without this memory being shown on the anthropological side, would be to say that it is an ineffective memory, incapable of producing anything. On the other hand, to maintain that such a memory would create from the nothing of death an entirely new human being, would be to deny the continuity—even in the discontinuity—between the dying man and the new fruit of creation.³⁶

The greater the depth of perception of one's own “personal self” — whose gratuitousness cannot be deduced from any biological, cosmic, or evolutionary context—the more evident the conclusion will be that efficient causes belonging to the scientific domain remain insufficient for explaining it. This understanding demonstrates as admissible that the deeper sense of this perception is based on an ontological bond between the creature and its Creator—*myself and my Creator*—as John Henry Newman often would say.³⁷ The Christian confession of the resurrection of the flesh and the announcement of eternal life in Christ are nothing but declarations that the *self* of each one of us is not lost. It is and remains precious before God. It is the confession that each of us is willed and embraced eternally by Someone who holds our lives dear, for each

³⁶ Giacomo Canobbio, *Il destino dell'anima. Elementi per una teologia* (Brescia: Morcelliana, 2009), 131-132.

³⁷ “[...] making me rest on two and two only absolute and luminously self-evident beings, myself and my Creator.” John H. Newman, *Apologia pro vita sua* (London: Longmans, 1890), 4. One condition for the possibility of this perception is to have a sufficient metaphysical sense, nourished by interiority and recollection, but also by humility and astonishment before the gift of conscious life.

of us is a personal being created in the image and likeness of God.

However, dialoguing with the sciences, Christian theology cannot ignore that it has undergone some uncertainties when proposing the doctrine of the human soul and its relationship with the body, especially as regards the conditions of the so-called “separate soul” after the death of an individual. In his *Lectures on Eschatology*, published in 1977, Josef Ratzinger already offered a balanced vision of this situation.³⁸ The frequent interventions of the Church's Magisterium, including the CDF declaration *Letter on Certain Questions concerning Eschatology* (1979), demonstrate the delicacy of this theme, which is affected by both the limits of human language and the different anthropological perspectives that constitute the changing backdrop for any theological elaboration.³⁹ Suffice it to say that an expression such as “immortality of the soul” is not immediately intelligible because it combines a biological term “death-mortal” and a philosophical formal cause “soul,” where the term “subsistence” being more appropriate to the latter. Or also, consider the fact that the first linguistic meaning of the expression “resurrection of the dead” literally indicates the return to life of corpses; the “rising” of a dead would not serve as an image fully adequate for representing who enters, and how one enters, the life of God to participate in His eternity. At the same time, linguistic or even theological uncertainties do not lessen the strength with which the Church preaches what it has received from Jesus Christ and the Apostles. The promise that God the Creator restores life to those who have died is a promise made credible by Apostolic witness that the Risen One has offered them the experience of His body resurrected after death. Although it certainly can benefit from this promise, the Christian hope of a destiny beyond death does not depend on the philosophical consistency of models we use when explaining the idea of the “immortality” of the human soul once the body is left to corruption. The guarantee and deepest foundation of the immortality of the human being do not lie in the fact that an anthropological component—the spiritual soul—possesses characteristics that make it subsist after biological death. This guarantee and foundation lie rather in God’s call to every human being, and with his or her entire being, to exist and dialogue with

³⁸ Cf. Joseph Ratzinger, *Eschatology* (Washington D.C.: The Catholic University of America Press, 1988), 261–274.

³⁹ Cf. CDF, *Letter on Certain Questions concerning Eschatology*, May 17, 1979.

Him, a call that is the same as the very creation of one's personal being, a call that places every human face forever before God. Our philosophical models are nothing but limited attempts at explaining this divine calling and what it implies for each of us, from the beginning and for all of eternity. To be consistent with Christian dogma, it is enough to affirm that after death, the individuality of every human person continues to be present in God and before God. It is enough to affirm that God, in his faithful love, guards our "I" before Him, an "I" who rests within the mystery before being able again to inform the body transfigured by the new creation. Any advisable renewal of the so-called "intermediate eschatology" should maintain these teachings, searching for a language that makes them more intelligible to contemporary people.

13.3.2 The personal identity of the future risen body and Christian faith in the resurrection of the flesh

With regard to the second of two questions posed at the beginning— namely, how to propose Christian faith in the human body resurrection before the objection that all bodies experience corruption—it is useful to remember that such an objection has significant historical precedent. It was first addressed to Christians by the Greco-Roman world, which was perplexed by their preaching of the resurrection of the dead and the identity of the resurrected body. One testimony worth citing is reported by Origen in his work *Contra Celsum*. The pagan philosopher Celsus had qualified as nonsense the tenet that believers in Jesus Christ would be clothed with immortality at the end of the world: "Those who are long since dead, which latter will arise from the earth clothed with the self-same flesh." Celsus sarcastically objected: "For what sort of human soul is that which would still long for a body that had been subject to corruption? What kind of body is that which, after being completely corrupted, can return to its original nature, and to that self-same first condition out of which it fell into dissolution?"⁴⁰ Celsus does not accept the Christian answer that everything is possible for God. His Platonic view leads him to consider the resurrection of the flesh to be an action against reason: "For the soul, indeed, God might be able to provide an everlasting life; while dead

⁴⁰ As known, Celsus' objections are reported by the same Origen. I quote from Origen of Alexandria, *Against Celsus* (trans. by Frederick Crombie, *Ante-Nicene Fathers*, vol. 4; digital text at www.newadvent.org). Here, *Against Celsus*, V, 14.

bodies, on the contrary, are, as Heraclitus observes, more worthless than dung. God, however, neither can nor will declare, contrary to all reason, that the flesh, which is full of those things which it is not even honourable to mention, is to exist forever."⁴¹

Quoting the Scriptures and using a Platonism that he shares with the pagan philosopher, Origen replies that the final deflagration will have a purifying function, burning wickedness and preserving the goodness of those who are in the image of God. However, Origen points out that "neither we, nor the holy Scriptures, assert that with the same bodies, without a change to a higher condition, shall those who were long dead arise from the earth and live again."⁴² Following St Paul's doctrine as detailed in 1 Cor 15:35-38, Origen clarifies that, according to the Apostle, "there is sown, not that body that shall be." It will happen that God gives to every seed his own body, "as it were a resurrection: from the seed that was cast into the ground there arising a stalk, e.g., among such plants as the following, viz., the mustard plant, or of a larger tree, as in the olive, or one of the fruit-trees. God, then, gives to each thing its own body as He pleases: as in the case of plants that are sown, so also in the case of those beings who are, as it were, sown in dying, and who in due time receive, out of what has been sown, the body assigned by God to each one according to his deserts."⁴³

Origen seeks here to reiterate two ideas: the true *novelty* of the risen body (it is not the corpse that is sown, even though it is buried in the earth); and the presence of a *rational continuity* between the buried body and the risen one: "We do not maintain that the body which has undergone corruption resumes its original nature, any more than the grain of wheat which has decayed returns to its former condition. But we do maintain, that as above the grain of wheat there arises a stalk, so a certain power is implanted in the body, which is not destroyed, and from which the body is raised up in incorruption."⁴⁴ Contrary to what Celsus believed, the reason why the transformation of the resurrected body—clothed in incorruptibility by God—should not be considered a work "against reason" lies not in the simple fact that God can do everything he wants and how he wants. Origen does not follow this line of

⁴¹ Origen of Alexandria, *Against Celsus*, V, 14.

⁴² Origen of Alexandria, *Against Celsus*, V, 18; cf. also V, 15-16.

⁴³ Origen of Alexandria, *Against Celsus*, V, 18-19.

⁴⁴ Origen of Alexandria, *Against Celsus*, V, 23.

argumentation, which is less philosophical and based only on authority. Instead, he affirms that it is an action carried out by the Logos and in the Logos, that is, entrusted to the One who is the source for all rationality by which the world was made, One who cannot act against reason.⁴⁵ How are we then to understand Origen's words? Translated into contemporary terms, they mean that the language of life and of the resurrection, and the rationality of both, belong to the same Logos. Continuity is not to be sought in the identity of the flesh, if by identity we mean the same physical particles (Lat. *materia signata quantitate*), but in the faithful intentionality of the Word-Logos who calls to life through matter and corporality, and does so by giving a personal, unrepeatable name (cf. Rev 2:17).

Tertullian's *Apologeticum* strives to respond to the same objection about the experienced corruption and believed continuity of the body. The Latin author argues above all from the radical virtuality of *creatio ex nihilo*, but he does so not as a stratagem that resorts to an arbitrary divine action, always possible. Rather, he introduces creation out of nothing as a rational basis for explaining the *creative* character of this resurrection:

How could a substance which has been dissolved be made to reappear again? Consider yourself, O man, and you will believe in it! Reflect on what you were before you came into existence. Nothing. For if you had been anything, you would have remembered it. You, then, who were nothing before you existed, reduced to nothing also when you cease to be, why may you not come into being again out of nothing, at the will of the same Creator whose will created you out of nothing at the first? Will it be anything new in your case? You who were not, *were* made; when you cease to be again, you *shall* be made. Explain, if you can, your original creation, and then demand to know how you shall be re-created. Indeed, it will be still easier surely to make you what you were once, when the very same creative power made you without difficulty what you never were before.⁴⁶

⁴⁵ Cf. Origen of Alexandria, *Against Celsus*, V, 24.

⁴⁶ Tertullian of Carthage, *Apologeticum*, XLVIII, 5–6 (trans. by S. Thelwall, *Ante-Nicene Fathers*, vol. 3; digital text at www.newadvent.org). Similar arguments also had been provided already in the II century by Athenagoras, *On the Resurrection of the Dead*, III, 1.

However dramatic the destiny of the matter that composes our bodies may seem, God's creative wisdom knows its ways of restoring life to what He once had drawn from nothing and then forged using the elements of the cosmos. Also for Tertullian, the rationality with which God governs creation is the same rationality that sustains the hope of Christians.⁴⁷ Tertullian's argument implicitly underscores the correspondence between the first and the new creation, recognizing them as expressions of a unique divine plan. The testimony (and then the promise) of final renewal already has been inscribed into all things by the One who has called them all out of nothing. Shall one doubt the power of God—Tertullian observes—who precisely out of nothing and not only from the desolate emptiness of death, drew matter from the whole universe, animating all things with his vital breath and thus impressing upon them the symbol and very witness of the human resurrection? Tertullian articulates: "You, man of nature so exalted, if you understand yourself [...] lord of all these things that die and rise, shall you die to perish evermore? Wherever your dissolution shall have taken place, whatever material agent has destroyed you, or swallowed you up, or swept you away, or reduced you to nothingness, it shall again restore you. Even nothingness is His who is Lord of *all*."⁴⁸

Aware of the dynamics of the physical world, theology can sustain the reasonableness of the Christian faith by moving, centuries later now, along lines similar to those already drawn by the Church Fathers. Even if the resurrection of bodies—more precisely, the transfiguration of the whole of creation—is the fulfillment of a promise and the revelation of what creation awaits groaning, it is still a *new* powerful work; just as it is, in the history of salvation, all fulfillment of promises made by God. Faith in the resurrection of the flesh, as solemnly professed by the Church, expresses faith in the true ontological work proper to God through Jesus Christ, whose intelligibility is not based on the simple continuity of an immortal soul. Overcoming death requires a *new creative act of God*. It is the act by which the Creator calls to life not only one part of the human being, such as his or her corruptible body, but rather the integral human— all that God has created and

⁴⁷ Cf. Tertullian of Carthage, *Apology*, XLVIII, 8.

⁴⁸ Tertullian of Carthage, *Apology*, XLVIII, 9.

death has destroyed, leaving the body to corruption. It is to God's creative power, in particular to the "cosmic" lordship of Jesus Christ, that Paul ties the logic of our future resurrection: "Our citizenship is in heaven, and from it we also await a savior, the Lord Jesus Christ. He will change our lowly body to conform with his glorified body by the power that enables him also to bring all things into subjection to himself" (Phil 3:20-21). It is, therefore, power in the *Logos* and through the *Logos*.

Following the language of Paul and Origen, it is the "rationality" contained by the seed – and not the matter of which it is made – that allows it once sown to generate an incorruptible body. The continuity/identity of the transfigured body is entrusted more to the logic of *form* than to *matter*, thus overcoming an understandable obstacle derived from the experience of corpse corruption after death, with the consequent dispersion and then dissolution, sooner or later, of all the molecules and chemical elements that once constituted it. In this sense, however paradoxical it may seem, the continuity of the *material* body results from the continuity of the *immaterial* form. The continuity and identity that Christian doctrine associates with the body before and after the Resurrection concerns above all the body as *human*, much more than as simply material. Yet the "human" form is preserved and guaranteed by the identity of the personal self, which according to classical language is nothing but the singularity and subsistence of the human soul – precisely the individual *form* that makes a body human. From a metaphysical point of view, this form is the act of being of each individual human creature, received once and for all by God – the act that brings the creature into existence and makes the human self always present before his Creator.

If we refer to human life as we know it in our daily life, it is reasonable to admit that there must be a "form" capable of providing continuity in time to our personal experience and subjectivity. Such a form cannot depend completely on matter, since almost all of the corporeal matter of our physical organism is exchanged continually with the environment and is replaced almost entirely on an annual basis. Such a form, then, must transcend matter somehow. Therefore, it is not a problem to acknowledge the operative presence of an "information" hosted in material support of the body, one that is capable of conferring continuity to the individual's identity in spite of the contingency and impermanence of physico-chemical elements constituting the human biological organism. Does such

information pertain to the spiritual identity of the human being as the premise and condition for the possibility of the future resurrection and recreation of the human body? Scientific analysis cannot provide us with the answer to this question, but it remains open to the possibility that this information, which would serve as semantics of our body, is not identified completely with the biochemical processes that express the syntax of its functioning. We may then consider such semantics as close to a kind of immaterial identity, available to be recognized as something singular, preserved, and reproduced. Although the analogy is suggestive and often used, I do not think we must refer here to the genetic code of the individual (DNA) as a “program” capable of reproducing the personal body in an eschatological future, starting from transfigured matter available at that moment. The human person, in fact, is not identical to his or her DNA. In reality, as we know, even the material body is not described fully by its DNA as the phenotype enriches an individual’s morphology throughout his or her existence. Genomic codification is insufficient for representing what our living experience has expressed, and continues to express along our entire existence as human beings through both our individual soul and one’s own corporality.

To claim that the identity of the individual is entrusted above all to the form (spiritual soul) rather than to matter does not weaken the belief that the new creation will have a transfigured physicality, including a certain transfiguration of time. Against a misunderstood “spiritualism” of the *eschaton*, in fact, stands the specificity of Christianity with the dogma of the Incarnation of the Word, as vigorously outlined in our times by authors such as Joseph Ratzinger and Jürgen Moltmann, among others.⁴⁹ In accordance with this reappraisal of matter, one might wonder whether *personal* identity before and after the resurrection also should be a *somatic* identity. The answer must be affirmative, even though the soma (i.e., the body) cannot be “materially” the same. The fact that “somatic identity” means much more than mere “physical-material identity” is something we understand well in the course of our historical existence. Our human body as a subject, condition, and instrument of significant and spiritually characteristic relationships, is much

⁴⁹ Cf. Ratzinger, *Eschatology. Appendix II*, 273. In light of Christ’s Resurrection, see Jürgen Moltmann, *The Way of Jesus Christ. Christology in Messianic Dimensions* (London : SCM Press, 1990), 274–312 and 338–341.

more than the specific matter of which it consists. Faced with eternal life and awaiting its future transfiguration, the body is in some way “guarded” by the soul. During the course of his or her life, the human being “interiorizes matter.” The soul adopts the experiences of the individual's historical relationships as its own, and matter does likewise as “matter-becoming-body in the soul.”⁵⁰ The individual identity of which the soul serves as guardian and repository is not a simple formal identity (in the classical metaphysical sense of the soul as the form of the body), nor can it be a material identity understood in any physicalistic sense. Rather, it is the identity resulting from all that matter historically has integrated into the unrepeatable personality of the soul and its world of vital relations, an identity that we reasonably may call “somatic.” It is this unique and irreplaceable world that the soul bears, ferrying it beyond death. According to the same perspective, Gerald O'Collins also understands personal identity as being constituted by all of one's personal history, a bodily history as well as an embodied history, as it was our body that served as the historical medium allowing and expressing our relational life. The different moments of my embodied history (somatic personality) have made me who I am, much more than the millions of molecules that have constituted my physical existence (*soma*) at particular moments. With the Resurrection, the entire embodied history of every human being is believed to enter into eternal life.⁵¹

What will the condition of life, even of physical life, be like in the transfigured world? According to Ratzinger, “We can't imagine it, because we don't know either the possibilities of matter or the power of the Creator.”⁵² We have seen, however, arguments to support the view that the corruption of the mortal body does not contradict either Christian hope or the announcement of true continuity, in its material dimension, of the future resurrected body both before and after biological death. It is quite reasonable to believe that our somatic identity can be subject to a true relational life in the *eschaton*, still being able to represent the instrument of our communication and relationship with both nature and other people, although in the economy of a renewed cosmos. This way of

⁵⁰ Cf. Ratzinger, *Eschatology*, Appendix I, 258.

⁵¹ Cf. Gerald O'Collins, *Jesus Risen. An Historical, Fundamental and Systematic Examination of Christ's Resurrection* (New York - Mahwah, NJ: Paulist Press, 1987).

⁵² Joseph Ratzinger, *Gott ist uns nah. Eucharistie: Mitte des Lebens* (Augsburg: Sankt UlrichVerlag, 2001), 144.

understanding the specificity of our personal history of relationships—a history that we have achieved *thanks* to the body and *through* the body, but which certainly does not reside in the body—can help our contemporaries, living in an age of scientific reason, to understand the “corporeal dimension” of the continuity that will exist before and after biological death. Believers know that all this is part—a very relevant part—of giving reason for their hope.

EPILOGUE

Believers and non-believers participate in the gift of life and share the same starting point: We all first opened our eyes in this world. When needs related to the management of our everyday lives too often centered on what life demands more immediately, give us pause; when we are immersed in silence; once we return to appreciating the colors and aromas that surround us – then the truth of our existence suddenly manifests itself in a surprising way. Our eyes seek the face of a loved one, and our attention is focused on the voices that are familiar to us. Our gaze lingers on the colors of a fire, the flight of a bird, the design of a tool, the structure of a building, the forms that nature has given us, and those we humans have produced. Amazed at having opened our eyes in this world, we feel the need to squint and bring our minds back to the places we love, ideally listening to the voices of those who inhabit them. We listen to our *I*, where no others beyond ourselves could reach us. We regret the time wasted and opportunities lost, and we formulate desires and plans for the time that will be. We ask our experience to suggest directions for us to take the actions to perform, having as a backdrop the awareness of an existence that always accompanies us, our own existence.

Whatever direction is given to our life, the principles that regulate it, the examples we intend to follow, or the witnesses we have chosen to believe, we have our eyes open to the world with no others taking our place. We have *embarked*, as Pascal would tell us, a fact that we cannot deny. The worker who tills the land and the manager who moves from one city to another realizes it, as does the mother who thinks about the return of her child and the employee who waits for the end of the day. The rich and poor, the healthy and sick all know this experience. We ignore who or what has given origin to our life, and who or what will await us after our death. What we all know is only that the flow of existence transports us. We have embarked. Those who have the capacity and competence will offer us deeper information concerning the kind of ship on which, perhaps unbeknownst to us, we find now ourselves. We are

aboard a planet, formed almost five billion years ago, that continues to rotate around every 24 hours with an accumulated delay, starting from its origin, of only a little over an hour. We are on it with its upheavals and its serene breezes, with its periodic glaciations and its explosions of life. And we are in the company of many millions of biological species that have existed with us and long before us, evolving. *Homo sapiens* could not have known the great majority of them because they went extinct before our appearance, but they were necessary for preparing the place that we now occupy on our journey. We are in a galaxy of two hundred billion stars that rotate around, completing a revolution every 250 million years while moving with its closest companions within the great Virgo cluster of galaxies. This cosmic matter surrounds us, these spaces host us, and these times measure us. Whether we want it or not, we travel in the *ocean of being*.

The reality of this ocean, that of our condition as sailors, is imposed upon us. It is not an illusion. Whether we are believers or non-believers, we cannot fail to acknowledge it. In one case or another, we can approach being only like we approach a *mystery*, and we can think about life only like we think about a *gift*. Therefore, we have embarked on a mystery and are the recipients of a gift: It is something comprising us that we have not determined ourselves. None of us has come to life by choice: We have opened our eyes upon this world. We have embarked. Our voyage is not always one through the storm; our crossing also knows moments of serenity and absolute calm. We are not compelled to see ourselves as “thrown” into the world, as Heidegger would say; nor are we condemned to suffer the “nausea” of this voyage, as Sartre would argue. We know some essential rules that make us remain onboard and not fall into the water, first of all our capacity of instituting true relationships with those around us. We can observe the starry sky and see fish darting in the waves. We can exchange ideas and impressions with our fellow adventurers. Our condition as sailors enables us to do this. Indeed, it commands us to do so. Being amazed before the mystery of being – marveling at the gift of life and at the freedom of one’s own *I* – is the measure of our being human. Where this marvel is distracted and this consciousness is lost, the human being is penalized. Where this marvel is denied, the human being struggles to emerge and even may be lost, despite the fact that we continue to build cities and go to the market to buy or sell. It can happen, as Kierkegaard recalled, that command of the ship is taken over by the

ship's cook, and what is announced via the megaphones on deck only concerns what we are eating for lunch today and no longer the direction of our journey. When such an experience transpires, it cannot last so forever. The questions about our destiny, or at least debate over the direction to be taken, sooner or later will re-emerge.

Christianity will have something to say to these questions and in this debate. Its announcement will continue to echo among those who are *en route*. The Revelation that Christianity guards can be proposed to those who travel as the guiding star able to lead the voyage. The key question that has accompanied our reflection, especially in Part III of this volume—that is, whether the critical knowledge of science, its deeper knowledge of our role in the cosmos, the nature of the ship on which we have embarked, or the dynamics that govern our trip, can invalidate the contents of the Christian message—finds a point of engagement here. The weight of these contents will always depend on humanity's capacity to reflect on its own historical situation of being *in itinere*, on the journey of life. Well-founded motives ensure that scientific knowledge does not desacralize the wonder of this voyage, trivialize it, or remove its enchantment. On the contrary, science increases all that, revealing the *mystery of being* as being even more impenetrable and the *gift of life* even more gratuitous. The human being is not diminished but instead exalted, and likewise also the dignity of his or her questions. In light of contemporary scientific gains, the "ultimate questions" do not lose any relevance. Rather, they become more keenly inspired. Within this context, Christianity does not lose its grip but instead holds it firmly. Christian belief is addressed to all of humanity and benefits from all that nourishes what is human and gives value to it. More accurate knowledge of our history be it physical or biological, better contextualization of the cosmos and life scenarios, and deeper understanding of the processes that govern our bodily life do not remove the question of God. More insightful analysis of matter, energy, and information does not render the role of a Creator superfluous. Questions concerning the ontological foundation of the cosmos and the ultimate purpose of our coming to be are not removed by science: Such questions still remain alive.

In revisiting the questions that scientific culture poses to theology and to the content of Revelation, I have followed for the most part the process delineated by Thomas Aquinas at the beginning of *Summa Contra Gentiles*, especially the task—the second one among four—with which human reason is entrusted when

working in favor of faith.¹ From what I examined in the previous chapters, there seems to be no conclusion of reason, including scientific reason, capable of taking meaning away from what Christianity teaches. This conclusion is not because the contents of faith are unfalsifiable (though they might be in certain conditions or contexts); rather, it is the statement claiming to contradict the assertions of faith that can be falsified by reason. We have enough grounds for endorsing a statement of compatibility between faith and reason, but also for affirming the meaningfulness of faith within the context of scientific reason. Theology is able to express these statements more convincingly when dialoguing competently with the scientific method, distinguishing what the latter can rightfully assert from what it cannot declare, understanding what the scientific method entails and what, instead, is beyond its scope. Theologians are required to substantiate their statements within the broader context of “scientific culture,” understood as the entirety of experiences, new horizons, categories, and contextual relationships brought about by contemporary science. Today’s *scientific culture* poses demanding questions about our past and our future, concerning what characterizes our being and our becoming, and involving our existence in space and time. It is in facing this culture that Christian believers “must give reason for their hope,” in some way having to know how to *inculturate* their faith in the world of science, accepting ever more challenging questions. When posed to Christian Revelation, some of these daring questions can evoke perplexity and perhaps even bewilderment. The judgment of compatibility between faith and reason could be satisfied, while the general landscape—including historical reconstruction and conceptual implications—might remain nonetheless sketchy. Some of the issues that I have sought to address have shown that theology does not have a quick answer for any question. No scientific arguments stand against the idea that our immeasurable universe is the result of a divine act of creation, nor against the notion that the history of salvation can flow into the history of the cosmos as we know it. Yet we cannot deny, as Blaise Pascal would say, that the infinitude of these spaces terrifies us. There are no scientific reasons to rule out that the slow rise in life forms on our planet, geological upheavals and struggles for survival, including the gradual and painful affirmation of our human species, can express the way with

¹ Cf. C.G. I, chaps. 7 and 9.

which God willed to create, and indeed created us. Nonetheless, we cannot stop asking why these scenarios have transpired and not others, and why they have been so dramatic.

Illuminated by faith, *theological* reason seeks a response to these questions, developing its work with patience and humility. From epistemological judgments of compatibility, theology should move toward anthropological, more inspiring assessments. This path is not always an easy one to traverse, for the syntheses that theology seeks are not always available and are often yet to be accomplished. At times, instead of providing answers, theology must resign to be silent. When such moments happen, these circumstances are not setbacks but rather serve as invitations to remain open to a higher Wisdom that theology may be able to indicate but not formalize, venerate but not dispense. These are the answers provided by the Cross of Jesus Christ, which confronts the problem of physical evil even in the face of the final scenarios of the material cosmos. These are the answers of the mysterious headship of the Incarnate Word over the physical and biological universe, of whose extent and fruitfulness we still remain greatly ignorant. These are the responses of the Risen Lord to the corruption and dispersion of the matter composing our body, a body that Christians believe to be destined for glory.

Scientific culture will continue to urge theological studies, asking them to “expose *ad extra*” the contents of faith, a task that will protect theologians from superficiality and carelessness. The *counterpoint* of scientific reason will solicit theology’s response with the *parrhesia* of faith, based on the Word of its Master. However, to show that there are no scientific reasons capable of contradicting what Revelation affirms or of emptying its teachings, is not the same as affirming that Christian theology always can provide a *complete* and ever satisfying answer. To acknowledge this state of affairs is not to admit that faith occupies a position of inferiority with respect to science. It is rather to recognize the need for prayerful silence, in which theological reason believes and meditates, amazed. In the course of this meditation, theology realizes that encountering scientific knowledge bears new unfathomable implications and opens up awe-inspiring horizons, discerning that science is not merely a source of intellectual provocations or problems to solve, but also a source of positive and fruitful insight.

Once formulated within the context of scientific knowledge, Christian teachings certainly take on the characteristics of an

unbelievable scandal, but a scandal that fascinates and captures: I was born because I was thought of and loved by the Creator of hundreds of billions of galaxies ... His love and mercy precede space and time; the Creator of this entire universe came to encounter me ... He became man for me and his open wounds on a cross safeguard and reveal the ultimate meaning of my life and of the whole cosmos ... The dignity of the human being is higher than the stars and greater than that of the angels. It is the vocation to participate in the Trinitarian life of God as children in the Son. I hope that Christian theology never stops this prayerful meditation and never loses awareness of all that the Word of God entails. May the Spirit grant Christian believers the words and intelligence to proclaim this Good News to men and women of all times, even more in the present age of scientific reason.

INCIPIIT OF DOCUMENTS FROM THE CATHOLIC CHURCH

(The documents of the Second Vatican Council cited in this book are captioned in the Table of Abbreviations.)

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| <i>Caritas in veritate</i> | Benedict XVI, Litt. enc. <i>Caritas in veritate</i> , June 29, 2009 |
| <i>Ecclesia de Eucharistia</i> | John Paul II, Litt. enc. <i>Ecclesia de Eucharistia</i> , April 17, 2003 |
| <i>Evangelii gaudium</i> | Francis, Ex. ap. <i>Evangelii gaudium</i> , November 24, 2013 |
| <i>Ex corde Ecclesiae</i> | John Paul II, Const. ap. <i>Ex corde Ecclesiae</i> , August 15, 1990 |
| <i>Fides et ratio</i> | John Paul II, Litt. enc. <i>Fides et ratio</i> , September 14, 1998 |
| <i>Humani generis</i> | Pius XII, Litt. enc. <i>Humani generis</i> , August 12, 1950 |
| <i>Laudato si'</i> | Francis, Litt. enc. <i>Laudato si'</i> , May 24, 2015 |
| <i>Salvifici doloris</i> | John Paul II, Litt. ap. <i>Salvifici doloris</i> , February 11, 1984 |
| <i>Spe salvi</i> | Benedict XVI, Litt. enc. <i>Spe salvi</i> , November 30, 2007 |
| <i>Verbum Domini</i> | Benedict XVI, Ex. ap. <i>Verbum Domini</i> , September 30, 2010 |

BIBLIOGRAPHY

- Alfaro, Juan. *Rivelazione cristiana, fede e teologia*. Brescia: Queriniana, 1986.
- Apczynski, John, ed. *Theology and the University*. Lanham, MD - New York - London: University Press of America, 1990.
- Arber, Werner, Nicola Cabibbo, and Marcelo Sánchez Sorondo, eds. *Scientific Insights into the Evolution of the Universe and of Life*. Acta 20. Vatican City: Pontificia Academia Scientiarum, 2009.
- Artigas, Mariano. *The Mind of the Universe*. Radnor: Templeton Foundation Press, 2000.
- Artigas, Mariano, Thomas Glick, and Rafael Martinez. *Negotiating Darwin. The Vatican Confronts Evolution, 1877-1902*. Baltimore: Johns Hopkins University Press, 2006.
- Atlan, Henri. *L'organisation biologique et la théorie de l'information*. Paris: Hermann, 1972.
- Auer, Johann and Joseph Ratzinger. *Kleine katholische Dogmatik*. vol. 2: *Gott, der Eine und Dreieine*. Regensburg: Pustet, 1978.
- Auletta, Gennaro. *Cognitive Biology. Dealing with Information from Bacteria to Minds*. Oxford: Oxford University Press, 2011.
- Baccari, Luciano. *Episteme e Rivelazione*. Roma: Borla, 2000.
- Barbour, Ian G. *Religion in an Age of Science*. San Francisco: Harper & Row, 1990.
- . *Religion and Science: Historical and Contemporary Issues*. San Francisco: Harper & Row, 1997.
- Barrow, John, ed. *Fitness of the Cosmos for Life. Biochemistry and Fine-Tuning*. Cambridge - New York: Cambridge University Press, 2008.
- Barrow, John and Frank Tipler. *The Anthropic Cosmological Principle*. Oxford: Clarendon Press, 1986.
- Barth, Karl. *The Word of God and the Word of Man*. London: Hodder and Stoughton, 1957.
- Beilby, James, ed. *Naturalism Defeated?* Ithaca - London: Cornell University Press, 2002.
- Bellah, Robert. *Religion in Human Evolution. From the Paleolithic to the Axial Age*. Cambridge: Harvard University Press, 2011.

- Bersanelli, Marco and Mario Gargantini. *From Galileo to Gell-Mann. The Wonder that Inspired the Greatest Scientists of All Time*. West Conshohocken, PA: Templeton Foundation Press, 2009
- Blumenberg, Hans. *Die Lesbarkeit der Welt*. Frankfurt: Suhrkamp, 1981.
- Bostrom, Nick. *Superintelligence. Paths, Dangers, Strategies*. Oxford: Oxford University Press, 2014.
- Bouyer, Louis. *Sophia ou le Monde en Dieu*. Paris: Cerf, 1994.
- _____. *The Eternal Son. A Theology of the Word of God and Christology*. Huntington, IN: Our Sunday Visitor, 1978.
- Boyle, Robert. *The Works of Robert Boyle*. Edited by Michael Hunter and Edward B. Davis, 14 vols. London: Pickering & Chatto, 1999–2000.
- Brague, Rémi. *La sagesse du monde. Histoire de l'expérience humaine de l'univers*. Paris: Fayard, 1999.
- Buckley, Michael J. *At the Origins of Modern Atheism*. New Haven: Yale University Press, 1987.
- Bulgakov, Sergej. *Sophia. The Wisdom of God. An Outline of Sophiology*. Hudson, NY: Lindisfarne Press, 1993.
- _____. *The Unfading Light*. Grand Rapids, MI: Eerdmans, 2012.
- Bultmann, Rudolf. *New Testament and Mythology and Other Basic Writings*. Translated by S.M. Ogden. Philadelphia: Fortress Press, 1984.
- Butterfield, Herbert. *The Origins of Modern Science. 1300 - 1800*. New York: MacMillan, 1959.
- Canobbio, Giacomo. *Il destino dell'anima. Elementi per una teologia*. Brescia: Morcelliana, 2009.
- Cantore, Enrico. *Scientific Man. The Humanistic Significance of Science*. New York: Institute for Scientific Humanism, 1977.
- Capra, Fritjof. *The Tao of Physics. An Exploration of the Parallels between Modern Physics and Eastern Mysticism*. Boston: Shambhala, 2000.
- Chapp, Larry S. *The God of Covenant and Creation. Scientific Naturalism and its Challenge to the Christian Faith*. London: T&T Clark, 2011.
- Clayton, Philip and Arthur Peacocke, eds. *In Whom We Live and Move and Have Our Being: Panentheistic Reflections on God's Presence in a Scientific World*. Grand Rapids, MI: Eerdmans, 2004.
- Cobb, John B. and David R. Griffin. *Process Theology. An Introductory Exposition*. London: Westminster Press, 1976.
- Cole-Turner, Ronald, ed. *Transhumanism and Transcendence. Christian Hope in an Age of Technological Enhancement*. Washington DC: Georgetown University Press, 2011.

- Collins, Francis. *The Language of God. A Scientist Presents Evidence for Belief*. New York: Free Press, 2007.
- Consolmagno, Guy. *Intelligent Life in the Universe? Catholic Belief and the Search for Extraterrestrial Intelligence*. London: Catholic Truth Society, 2005.
- Conti, Lino. *L'infalsificabile libro della natura alle radici della scienza*. Assisi: Porziuncola, 2004.
- Conway Morris, Simon. *Life's Solution. Inevitable Humans in a Lonely Universe*. Cambridge: Cambridge University Press, 2003.
- _____. *The Deep Structure of Biology*. West Conshohocken, PA: The John Templeton Foundation Press, 2008.
- Corner, Mark. *Signs of God. Miracles and their Interpretation*. Aldershot: Ashgate, 2005.
- Craig, William L. and J. P. Moreland, eds. *Naturalism. A Critical Analysis*. London - New York: Routledge, 2001.
- _____. and Moreland, J.P., eds. *The Blackwell Companion to Natural Theology*. Chichester - Malden: Wiley - Blackwell, 2009.
- Crean, Thomas. *A Catholic Replies to Professor Dawkins*. Oxford: Family Publications, 2007.
- Crisp, Oliver D., Gavin D'Costa, Mervyn Davies, and Peter Hampson. *Christianity and the Disciplines. The Transformation of a University*. London - New York Bloomsbury - T&T Clark, 2012.
- Crowe, Michael J. *The Extraterrestrial Life Debate 1750–1900: The Idea of a Plurality of Worlds from Kant to Lowell*. Cambridge: Cambridge University Press, 1988.
- Crowe, Michael J., ed. *The Extraterrestrial Life Debate. Antiquity to 1915. A Source Book*. Notre Dame, IN: Notre Dame University Press, 2008.
- Curtius, Ernst R. *European Literature and the Latin Middle Ages*. Princeton: Princeton University Press, 1990.
- Davies, Paul C. *The Mind of God. Science and the Search for Ultimate Meaning*. New York: Simon & Schuster, 1992
- _____. *The Cosmic Jackpot. Why Our Universe Is Just Right for Life*. New York: Orion, 2007.
- Davies, Paul C. and Niels Gregersen, eds. *Information and the Nature of Reality. From Physics to Metaphysics*. Cambridge: Cambridge University Press, 2010.
- Davis, Stephen T., Daniel Kendall, Daniel, and Gerald O'Collins, eds. *The Resurrection. An Interdisciplinary Symposium on the Resurrection of Jesus*. Oxford: Oxford University Press, 1997.

- Dawkins, Richard. *The Blind Watchmaker. Why the Evidence of Evolution Reveals a Universe without Design*. New York - London: Norton, 1987.
- _____. *The God Delusion*. London: Black Swan, 2007
- De Caro, Mario and David MacArthur. *Naturalism in Question*. Cambridge: Harvard University Press, 2004.
- de Duve, Christian. *Vital Dust. Life as a Cosmic Imperative*. New York: Basic Books, 1995.
- de Lubac, Henri. *The Drama of Atheist Humanism*. Cleveland, OH: World Publishing, 1963.
- Del Re, Giuseppe. *The Cosmic Dance*. Radnor, PA: Templeton Foundation Press, 2000.
- Delano, Kenneth J. *Many Worlds, One God*. New York: Exposition Press, 1977.
- Delooy, Pierre. *Les miracles. Un défi pour la science?* Bruxelles: Duculot, 1997.
- Dennett, Daniel C. *Darwin's Dangerous Idea. Evolution and the Meanings of Life*. London: Penguin Books, 1996.
- _____. *Breaking the Spell. Religion as a Natural Phenomenon*. London: Allen Lane, 2006.
- Diamond, Jared. *Collapse. How Societies Choose to Fail or Succeed*. New York: Penguin Books, 2005.
- Dick, Steven J. *Plurality of Worlds. The Origin of the Extraterrestrial Life Debate from Democritus to Kant*. Cambridge: Cambridge University Press, 1982.
- _____. *The Biological Universe. The Twentieth-Century Extraterrestrial Life Debate and the Limits of Science*. Cambridge: Cambridge University Press, 1996.
- _____. *Life on Other Worlds. The Twentieth Century Extraterrestrial Life Debate*. Cambridge: Cambridge University Press, 1998.
- _____. and James E. Strick. *The Living Universe. NASA and the Development of Astrobiology*. New Brunswick, NJ: Rutgers University Press, 2004.
- Dobzhansky, Theodosius. *The Biology of Ultimate Concern*. New York: The New American Library, 1967.
- _____. *Mankind Evolving. The Evolution of the Human Species*. New York - London: Bantam, 1970.
- Dodds, Michael J. *Unlocking Divine Action. Contemporary Sciences and Thomas Aquinas*. Washington D.C.: The Catholic University of America Press, 2012.

- Dorschner, Johann, ed. *Der Kosmos als Schöpfung. Zum Stand des Gesprächs zwischen Naturwissenschaft und Theologie*. Regensburg: F. Pustet, 1998.
- Drake, Stillman. *Discoveries and Opinions of Galileo*. New York: Doubleday, 1957.
- Dubarle, André-Marie. *La manifestation naturelle de Dieu d'après l'Écriture*. Paris: Cerf, 1976.
- Duffin, Jacalyn. *Medical Miracles. Doctors, Saints, and Healings in the Modern World*. New York - Oxford: Oxford University Press, 2009.
- Dulles, Avery. *Models of Revelation*. Maryknoll, NY: Orbis Books, 1999.
- Dyson, Freeman. *Disturbing the Universe*. New York - London: Harper & Row, 1979.
- Ebeling, Gerhard. *God and Word*. Philadelphia: Fortress Press, 1967.
- Eccles, John. *The Human Psyche. The Gifford Lectures 1978-1979*. London: Routledge, 1992.
- Eccles, John and Daniel Robinson. *The Wonder of Being Human. Our Brain and Our Mind*. New York - London: Free Press - Macmillan, 1984.
- Ecklund, Elaine H. *Science vs. Religion. What Scientists Really Think?* Oxford: Oxford University Press, 2010.
- Ecklund, Elaine H. and David R. Johnson. *Varieties of Atheism*. Oxford - New York: Oxford University Press, 2021.
- Edelman, Gerald. *The Remembered Present. A Biological Theory of Consciousness*. New York: Basic Books 1989.
- _____. *Second Nature. Brain, Science and Human Knowledge*. New Haven, CT - London: Yale University Press, 2006
- Edwards, Denis. *Jesus and the Cosmos*. New York: Paulist Press, 1991.
- _____. *The God of Evolution. A Trinitarian Theology*. New York: Paulist Press, 1999.
- _____. *How God Acts. Creation, Redemption and Special Divine Action*. Minneapolis: Fortress Press, 2010.
- Einstein, Albert. *The World as I See It*. London: J. Lane, 1955.
- Eliade, Mircea. *The Quest. History and Meaning in Religion*. Chicago: The University of Chicago Press, 1969.
- Ellis, George F., ed. *The Far Future Universe. Eschatology from a Cosmic Perspective*. Radnor, PA: Templeton Foundation Press, 2002.
- Fabro, Cornelio. *God in Exile. Modern Atheism. A Study of the Internal Dynamic of Modern Atheism, from Its Roots in the Cartesian Cogito to the Present Day*. Westminster, MD: Newman Press, 1968.

- Facchini, Fiorenzo. *Le origini dell'uomo e l'evoluzione culturale*. Roma - Milano: Città Nuova - Jaca Book, 2006.
- Fletcher Harding, Sara and Nancy Morvillo, eds. *Religion and Science. Critical Concepts in Religious Studies*. 4 vols. London - New York: Routledge 2011.
- Flew, Anthony and Roy Varghese. *There Is a God. How the World's Most Notorious Atheist Changed His Mind*. New York: Harper & Collins, 2009.
- Fodor, Jerry A. *The Mind Doesn't Work That Way. The Scope and Limits of Computational Psychology*. Cambridge: The MIT Press, 2001.
- Fries, Heinrich. *Revelation*. London: Burns & Oates - Herder, 1970.
- _____. *Fundamental Theology*. Washington: The Catholic University of America Press, 1996.
- Fuller, Steve. *Humanity 2.0. What It Means to Be Human Past, Present, and Future*. New York: Palgrave Macmillan, 2011.
- Galilei, Galileo. *Opere*. Edited by Antonio Favaro, 21 vols., Firenze: Giunti-Barbera, 1966.
- Gazzaniga, Michael. *The Ethical Brain. The Science of our Moral Dilemmas*. New York - London: Hapres, 2006.
- Gellrich, Jesse M. *The Idea of the Book in the Middle Age. Language Theory, Mythology, and Fiction*. Ithaca - London: Cornell University Press, 1985.
- George, Mary. *Christianity and Extraterrestrials. A Catholic Perspective*. New York: iUniverse, 2005.
- Gilbert, Maurice, ed. *La Sagesse dans l'Ancien Testament*. Leuven: Leuven University Press, 1990.
- Gilson, Étienne. *L'athéisme difficile*. Paris: J. Vrin, 1979
- Gionti, Gabriele and Jean-Baptiste Kikwaya-Eluo, eds. *The Vatican Observatory, Castel Gandolfo: 80th Anniversary Celebration*. Springer International, 2018.
- Gould, Steven J. *Wonderful Life*. London - New York: Norton, 1990
- _____. *Rocks of Ages. Science and Religion in the Fullness of Life*. London: Vintage, 2002.
- _____. *The Structure of Evolutionary Theory*. London - Cambridge: Harvard University Press, 2002.
- Grady, Monica. *Astrobiology*. Washington D.C.: Smithsonian Institution Press, 2001.
- Grant, Edward. *The Foundation of Modern Sciences in the Middle Ages: Their Religious, Institutional and Intellectual Contexts*. Cambridge, UK: Cambridge University Press, 1996.

- Griffin, David R. *Panentheism and Scientific Naturalism. Rethinking Evil, Morality, Religious Experience, Religious Pluralism, and the Academic Study of Religion*. Claremont, CA: Process Century Press, 2014.
- Guardini, Romano. *Wunder und Zeichen*. Würzburg: Werkbund, 1959
- Hahn, Scott and Benjamin Wiker. *Answering the New Atheism. Dismantling Dawkins' Case against God*. Steubenville: Emmaus Road, 2008.
- Haken, Hermann. *Information and Self-Organization. A Macroscopic Approach to Complex Systems*. Berlin - London: Springer, 2000.
- Hansell, Gregory R. and William Grassie, eds. *Transhumanism and Its Critics*. Philadelphia: Metanexus, 2011.
- Harris, Errol E. *Cosmos and Theos. Ethical and Theological Implications of the Anthropic Cosmological Principle*. London: Humanity Press, 1992.
- Harris, Samuel. *The End of Faith: Religion, Terror, and the Future of Reason*. New York - London: Norton, 2004.
- Harrison, Peter. *The Bible, Protestantism, and the Rise of Natural Science*. Cambridge: Cambridge University Press, 1998.
- _____. *The Fall of Man and the Foundations of Science*. Cambridge: Cambridge University Press, 2007.
- Haight, John. *Science and Religion. From Conflict to Conversation*. New York: Paulist Press, 1995
- _____. *God after Darwin. A Theology of Evolution*. Boulder, CO - Oxford: Westview Press, 2000
- _____. *Is Nature Enough? Meaning and Truth in an Age of Science*. Cambridge - New York: Cambridge University Press, 2006
- _____. *God and the New Atheism. A Critical Response to Dawkins, Harris and Hitchens*. Westminster: J. Knox Press, 2008.
- Haughey, John C. and Ilia Delio. *Humanity on the Threshold. Religious Perspectives on Transhumanism*. Washington, DC: Council for Research in Values & Philosophy, 2014.
- Heller, Michael. *The World and the Word*. Tucson, AZ: Pachart, 1986.
- _____. *The New Physics and a New Theology*. Vatican City: Vatican Observatory Publications, 1996.
- Hitchens, Christopher. *God Is Not Great. How Religion Poisons Everything*. New York: Twelve, 2007.
- Hooykaas, Reijer. *Religion and the Rise of Modern Science*. Edinburgh: Scottish Academic Press, 1972.
- Hume, David. *An Enquiry Concerning Human Understanding, and A Treatise of Human Nature*. Chicago: Open Court, 1966.

- Hunter, Cornelius. *Darwin's God. Evolution and the Problem of Evil*. Grand Rapids, MI: Brazos Press, 2001.
- Impey, Chris, Lunine Jonathan and José Funes, eds. *Frontiers of Astrobiology*. Cambridge: Cambridge University Press, 2012.
- Jaki, Stanley. *The Relevance of Physics*. Chicago: University of Chicago Press, 1970.
- _____. *The Road of Science and the Ways to God*. Chicago: University of Chicago Press, 1978.
- Jaki, Stanley L. *Miracles and Physics*. Front Royal: VA Christendom Press, 1989.
- Journet, Charles. *The Meaning of Evil*. London: C. Chapman, 1963.
- Kant, Immanuel. *Religion Within the Bounds of Bare Reason*. Indianapolis - Cambridge: Hackett Publishing Company, 2009.
- Kasper, Walter. *An Introduction to Christian Faith*. New York: Paulist Press, 1980.
- Kolakowski, Lech. *Religion: If There Is No God. On God, the Devil, Sin and Other Worries of the So-Called Philosophy of Religion*. New York - Oxford: Oxford University Press, 1982.
- Ladrière, Jean. *Les enjeux de la rationalité. Le défi de la science et de la technologie aux cultures*. Paris: Aubier - Éditions Mouton, 1977
- Lamb, David. *The Search for Extraterrestrial Intelligence. A Philosophical Inquiry*. London - New York: Routledge, 2001.
- Latourelle, René and Rino Fisichella, eds. *Dictionary of Fundamental Theology*. New York: Crossroad, 1995.
- Latourelle, René and Gerard O'Collins, eds. *Problems and Perspectives of Fundamental Theology*. New York: Paulist Press, 1982.
- Latourelle, René. *Theology of Revelation*. New York: Alba House, 1987
- _____. *The Miracles of Jesus and the Theology of Miracles*. New York: Paulist Press, 1988.
- le Pichon, Xavier. *La raíces del hombre*. Santander: Sal Terrae, 2000
- Levy, Neil. *Neuroethics. Challenges for the 21st Century*. Cambridge: Cambridge University Press, 2007.
- Lindberg, David. *The Beginnings of Western Science. The European Scientific Tradition in Philosophical, Religious, and Institutional Context, Prehistory to A.D. 1450*. Chicago: University of Chicago Press, 2007.
- Lorizio, Giuseppe, ed. *Teologia Fondamentale, 4 vols.*, Roma: Città Nuova, 2005.
- Lowe, Jonathan. *The Possibility of Metaphysics, Substance, Identity and Time*. Oxford: Oxford University Press, 1998.

- _____. *Personal Agency. The Metaphysics of Mind and Action*. Oxford: Oxford University Press, 2008.
- Machamer, Peter, ed. *The Cambridge Companion to Galileo*. Cambridge: Cambridge University Press, 1998.
- Maldamé, Jean-Michel. *Science et foi en quête d'unité. Discours scientifiques et discours théologiques*. Paris: Cerf, 2003.
- Maritain, Jacques. *Approaches to God*. Westport: Greenwood Press, 1978.
- _____. *Untrammelled Approaches*. Notre Dame, IN: University of Notre Dame Press, 1997.
- Martin, Michael, ed. *The Cambridge Companion to Atheism*. Cambridge: Cambridge University Press, 2007.
- Mascall, Eric. *Christian Theology and the Natural Science*. London: Longmans, 1956.
- McDonough, Sean. *Christ as Creator. Origins of a New Testament Doctrine*. Oxford - New York: Oxford University Press, 2009.
- McGrath, Alister. *The Foundations of Dialogue in Science and Religion*. Oxford: Blackwell, 1998.
- _____. *A Scientific Theology*. 3 vols. Edinburgh - Grand Rapids, MI - Cambridge UK: T & T Clark - Eerdmans, 2001–2006.
- _____. *The Reenchantment of Nature. Science, Religion and the Human Sense of Wonder*. London: Hodder and Stoughton, 2002.
- _____. *The Twilight of Atheism. The Rise and Fall of Disbelief in the Modern World*. New York: Doubleday, 2006.
- _____. *The Dawkins Delusion. Atheist Fundamentalism and the Denial of the Divine*. London: Society for Promoting Christian Knowledge 2007.
- _____. *Darwinism and the Divine. Evolutionary Thought and Natural Theology*. Oxford: Wiley - Blackwell, 2011.
- _____. *Dawkins' God. From The Selfish Gene to The God Delusion*, Hoboken: Wiley, 2014.
- Meech, Karen et al. *Commission 51 - Bioastronomy. Search for Extraterrestrial Life*. IAU Transactions. Cambridge: Cambridge University Press, 2007.
- Mercer, Calvin and Tracy J. Trothen, eds. *Religion and Transhumanism. The Unknown Future of Human Enhancement*. Westport, CT: Praeger Publishers, 2014.
- Minois, Georges. *Histoire de l'athéisme. Les incroyants dans le monde occidental des origines à nos jours*. Paris: Fayard, 1998
- Moltmann, Jürgen. *Perspektiven der Theologie*. München - Mainz: C. Kaiser - Grünewald, 1968.

- _____. *The Future of Creation*. London: SCM Press, 1979.
- _____. *Creating a Just Future. The Politics of Peace and the Ethics of Creation in a Threatened World*. London - Philadelphia: SCM Press - Trinity Press International, 1989.
- _____. *The Way of Jesus Christ. Christology in Messianic Dimensions*. London: SCM Press, 1990.
- _____. *Jesus Christ for Today's World*. Minneapolis, MN: Fortress Press, 1994.
- _____. *The Coming of God. Christian Eschatology*. London: SCM Press, 1996.
- _____. *God in Creation. An Ecological Doctrine of Creation*. London: SCM Press, 1997.
- _____. *Wissenschaft und Weisheit. Zum Gespräch zwischen Naturwissenschaft und Theologie*. Gütersloh: Kaiser, 2002.
- Mouroux, Jean. *The Meaning of Man*. Garden City NY: Doubleday, 1961.
- Murphy, Nancey, Robert J. Russell, and William R. Stoeger, eds. *Physics and Cosmology. Scientific Perspectives on Natural Evil*. Vatican City: Vatican Observatory - The Center for Theology and the Natural Sciences, 2007.
- Nasr, Seyyed H. *Religion and the Order of Nature*. New York: Oxford University Press, 1996.
- Newman, John H. *The Idea of a University. Defined and Illustrated*. Chicago: Loyola University Press, 1987.
- _____. *An Essay in Aid of a Grammar of Assent*. Edited by Ian Ker. Oxford: Clarendon Press, 2001.
- _____. *The Letters and Diaries of J.H. Newman*. 31 vols. Edited by Charles S. Dessain and Thomas Gornall. Oxford: Clarendon Press, 1963–2006.
- Numbers, Ronald. *Galileo Goes to Jail and Other Myths about Science and Religion*. Cambridge - London: Harvard University Press, 2009.
- O'Collins, Gerald. *Jesus Risen. An Historical, Fundamental and Systematic Examination of Christ's Resurrection*. New York - Mahwah, NJ: Paulist Press, 1987.
- O'Meara, Thomas F. *Vast Universe. Extraterrestrials and Christian Revelation*. Collegeville, MN: Liturgical Press, 2012.
- Paley, William. *Natural Theology. Or, Evidences of the Existence and Attributes of the Deity Collected from the Appearances of Nature*. London: R. Faulder, 1802.

- Pannenberg, Wolfhart. *Toward a Theology of Nature. Essays on Science and Faith*. Edited by Ted Peters. Louisville: J. Knox Press, 1993.
- _____. *Systematic Theology*. 3 vols. Translated by Geoffrey W. Bromiley. London - New York: T&T Clark International, 2004.
- Peacocke, Arthur R. *Theology for a Scientific Age. Being and Becoming*. Minneapolis, MN: Fortress Press, 1993.
- Penrose, Roger. *Shadows of the Mind. A Search for the Missing Science of Consciousness*. Reading, MA: Vintage, 1995.
- Peters, Ted. *Anticipating Omega. Science, Faith and Our Ultimate Future*. Göttingen: Vandenhoeck and Ruprecht, 2006.
- _____. *UFOs: God's Chariots? Spirituality, Ancient Aliens, and Religious Yearnings in the Age of Extraterrestrials*. Pompton Plains, NJ: New Pages Books, 2014.
- Peters, Ted, ed. *Astrotheology: Science and Theology Meet Extraterrestrial Life*. Eugene, OR: Wipf and Stock, 2018.
- Peters, Ted, Robert J. Russell, and Michael Welker, eds. *Resurrection. Theological and Scientific Assessment*. Grand Rapids, MI: Eerdmans, 2002.
- Peuckert, Will-Erich. *Paracelsus. Die Geheimnisse. Ein Lesenbuch aus seinen Schriften*. Leipzig: Dieterich, 1941.
- Peukert, Helmut. *Science, Action and Fundamental Theology. Towards a Theology of Communicative Action*. Cambridge: MIT Press, 1984.
- Polkinghorne, John. *One World. The Interaction of Science and Theology*. Princeton, NJ: Princeton University Press, 1986.
- _____. *Science and Providence. God's Interactions with the World*. London: SPCK, 1989.
- _____. *The God of Hope and the End of the World*. London: SPCK, 2002.
- _____. *Belief in God in an Age of Science*. New Haven, CT - London: Yale University Press, 2003.
- Polkinghorne, John, ed. *The Work of Love. Creation as Kenosis*. Grand Rapids - Cambridge: Eerdmans, 2001.
- Polkinghorne, John and Michael Welker eds. *The End of the World and the Ends of God. Science and Theology on Eschatology*. Harrisburg, PA: Trinity Press International, 2000.
- Popper, Karl and John Eccles. *The Self and Its Brain*. Berlin: Springer International, 1977.
- Pouliot, François. *La doctrine du miracle chez Thomas d'Aquin. Deus in omnibus intime operatur*. Paris: J. Vrin, 2005.
- Putnam, Hilary. *Representation and Reality*. Cambridge: The MIT Press, 2001.

- Rahner, Karl. *Theology as Engaged in an Interdisciplinary Dialogue with the Sciences*. Theological Investigations, 13. Darton: Longman & Todd, 1975, 80–93
- _____. *On the Relationship between Theology and the Contemporary Sciences*. Theological Investigations, 13. Darton: Longman & Todd, 1975, 94–102.
- _____. *Natural Science and Reasonable Faith*. Theological Investigations, 21. Darton: Longman & Todd, 1988, 16–55.
- _____. *Theology Today*. Theological Investigations, 21. Darton: Longman & Todd, 1988, 56–69.
- _____. *Foundations of Christian Faith. An Introduction to the Idea of Christianity*. Translated by W. Dych. New York: Crossroad, 1993.
- Ratzinger, Joseph. *Eschatology*. Washington D.C.: The Catholic University of America Press, 1988.
- _____. *Der Gott des Glaubens und der Gott der Philosophen. Ein Beitrag zum Problem der theologia naturalis*. Edited by Heino Sonnemans. Trier: Paulinus, 2006.
- _____. *Credo for Today. What Christians Believe*. San Francisco: Ignatius Press, 2009.
- Ries, Julien. *The Origins of Religion*. Grand Rapids, MI: Eerdmans, 1994.
- Rousselot, Pierre. *The Eyes of Faith*. Translated by J. Doncel. New York: Fordham University Press, 1990.
- Runehov, Anne and Lluís Oviedo, eds. *Encyclopedia of Sciences and Religions*. Dordrecht: Springer, 2013.
- Ruse, Michael. *Atheism. What Everyone Needs to Know*. New York - Oxford: Oxford University Press, 2015.
- Russell, Robert J. *Cosmology. From Alpha to Omega. The Creative Mutual Interaction of Theology and Science*. Minneapolis, MN: Fortress Press, 2008.
- _____. *Time in Eternity. Pannenberg, Physics and Eschatology in Creative Mutual Interaction*. Notre Dame, IN: University of Notre Dame Press, 2012.
- Russell, Robert J., Theo Meyering, Nancy Murphy, and Michael Arbib, eds. *Neuroscience and the Person. Scientific Perspectives on Divine Action*. Vatican City - Berkeley: Vatican Observatory Publications - The Center for Theology and the Natural Sciences, 1999.

- Russell, Robert J., Nancy Murphy, and Chris Isham, eds. *Quantum Cosmology and the Laws of Nature*. Vatican City - Berkeley: Vatican Observatory and The Center for Theology and the Natural Sciences, 1993.
- Russell, Robert J., Nancy Murphy, and Arthur Peacocke, eds. *Chaos and Complexity. Scientific Perspectives on Divine Action*. Vatican City - Berkeley: Vatican Observatory - The Center for Theology and the Natural Sciences, 1995.
- Russell, Robert J., Nancy Murphy, and William R. Stoeger, eds., *Scientific Perspectives on Divine Action. Twenty Years of Challenge and Progress*. Vatican City: Vatican Observatory Publications - The Center for Theology and the Natural Sciences, 2008.
- Russell, Robert J., William R. Stoeger, and George V. Coyne, eds. *Physics, Philosophy and Theology. A Common Quest for Understanding*. Vatican City: LEV - University of Notre Dame Press, 1988.
- Schloss, Jeffrey and Michael Murray, eds. *The Believing Primate. Scientific, Philosophical, and Theological Reflections on the Origin of Religion*. Oxford: Oxford University Press, 2009.
- Schmaus, Michael. *Katholische Dogmatik*. Munich: Max Hüber, 1957
 _____. *God in Revelation*. London: Sheed & Ward, 1977.
- Schröder, Richard. *Liquidazione della religione? Il fanatismo scientifico e le sue conseguenze*. Brescia: Queriniana, 2011.
- Searle, John. *The Rediscovery of Mind*. Cambridge - London: The MIT Press, 1992.
 _____. *The Mystery of Consciousness*. London: Granta, 1998.
- Sebond, Raymond of. *Theologia naturalis seu Liber creaturarum*. Facsimile of 1852 publication at Sulzbach. Stuttgart-Bad Cannstatt: Frommann-Holzboog Verlag, 1966.
- Simpson, George. *The Meaning of Evolution. A Study of the History of Life and of its Significance for Man*. New Haven: Yale University Press, 1978.
- Southgate, Christopher. *The Groaning of Creation: God, Evolution, and the Problem of Evil*. Louisville, KY: John Knox Press, 2008.
- Spaemann, Robert and Reinhard Löw. *Natürliche Ziele*. Stuttgart: Klett-Cotta, 2005.
- Spinoza, Baruch. *Theological-Political Treatise*. Edited by Jonathan Israel. Cambridge: Cambridge University Press, 2007.
- Strumia, Alberto. *The Problem of Foundations. An Adventurous Navigation from Sets to Entities, from Gödel to Thomas Aquinas*. London: Book Depository International, 2012.

- Stump, J.B. and Alan G. Padgett, eds. *The Blackwell Companion to Science and Christianity*. Oxford: Wiley - Blackwell, 2012.
- Sullivan III, Woodruff T. and John Baross. *Planets and Life. The Emerging Science of Astrobiology*. Cambridge: Cambridge University Press, 2007.
- Swinburne, Richard, ed. *Miracles*. London - New York: Macmillan, 1989.
- Tanzella-Nitti, Giuseppe. *Faith, Reason and the Natural Sciences. The Challenge of the Natural Sciences in the Work of Theologians*. Aurora, CO: Davies 2009.
- Tanzella-Nitti, Giuseppe and Alberto Strumia, eds. *Dizionario Interdisciplinare di Scienza e Fede*, 2 vols. Roma: Urbaniana University Press - Città Nuova, 2002.
- Tanzella-Nitti, Giuseppe, Ivan Colagè and Alberto Strumia, eds. *Interdisciplinary Encyclopedia of Religion and Science*: www.inters.org January 2020.
- Tattersall, Ian. *The Human Odyssey. Four Million Years of Human Evolution*. New York - London: Prentice Hall, 1993.
- Taylor, Charles. *A Secular Age*. Cambridge: Harvard University Press, 2007.
- Teilhard de Chardin, Pierre. *The Divine Milieu*. London - New York: Harper & Row, 1960.
- _____. *How I believe*. Translated by René Hague. New York: Harper & Row, 1969.
- _____. *Hymn of the Universe*. Translated by Gerald Vann. New York: Harper and Row, 1969.
- _____. *The Phenomenon of Man*. Translated by Bernard Wall. New York - London: Harper Perennial, 2008.
- Theobald, Christophe. *La Révélation ... tout simplement*. Paris: Les Éditions de l'Atelier, 2001.
- Tillich, Paul. *Systematic Theology*. 3 vols. Chicago: University of Chicago Press, 1957-1963.
- Timossi, Roberto. *L'illusione dell'ateismo. Perché la scienza non nega Dio*. Cinisello Balsamo: San Paolo, 2009.
- _____. *Nel segno del nulla. Critica dell'ateismo moderno*. Torino: Lindau, 2015.
- Torrance, Thomas F. *Space, Time and Incarnation*. Edinburgh: T & T Clark, 1997.
- _____. *The Ground and Grammar of Theology. Consonance between Theology and Science*. Edinburgh: T & T Clark, 2001.

- Tracy, Thomas F. *God, Action and Embodiment*. Grand Rapids, MI: Eerdmans 1984.
- Tracy, Thomas F., ed. *The God Who Acts*. Philadelphia: Pennsylvania State University Press, 1994.
- Vakoch, Douglas A. *Astrobiology, History, and Society. Life beyond Earth and the Impact of a Discovery*. Berlin - Heidelberg: Springer, 2013.
- van der Meer, Jitse M. and Scott Mandelbrote, eds. *Nature and Scripture in the Abrahamic Religions: Up to 1700*. 2 vols. Leiden: Brill, 2008.
- _____. *Nature and Scripture in the Abrahamic Religions: 1700-Present*. 2 vols. Leiden: Brill, 2008.
- van Huyssteen, Wentzel Vrede, ed. *Encyclopedia of Science and Religion*. New York: Macmillan, 2003.
- Vanderjagt, Arie J. and Klaas van Berkel eds. *The Book of Nature in Antiquity and the Middle Ages*. Leuven: Peeters, 2005.
- Vanderjagt, Arie J. and Klass van Berkel, eds. *The Book of Nature in Early Modern and Modern History*. Leuven: Peeters, 2006.
- Vedral, Vlatko. *Decoding Reality. The Universe as Quantum Information*. New York: Oxford University Press, 2010.
- Verweyen, Hansjürgen. *Gottes letztes Wort. Grundriss der Fundamentaltheologie*. Regensburg: Pustet, 2000.
- von Balthasar, Hans Urs. *Mysterium Paschale. The Mystery of Easter*. Translated by Aidan Nichols. Edinburgh: T&T Clark, 1990.
- von Laue, Max. *History of Physics*. New York: Academic Press, 1950.
- von Rad, Gerhard. *Old Testament Theology*. New York: Harper & Row, 1965.
- _____. *Wisdom in Israel*. London: SCM Press, 1981.
- Waldenfels, Hans. *Contextual Fundamental Theology*. Boston - Leiden: F. Schöningh - Brill, 2018.
- Ward, Keith. *Why There Almost Certainly Is a God. Doubting Dawkins*. Oxford: Lion, 2008.
- Wicken, Jeffrey. *Evolution, Thermodynamics, and Information*. New York: Oxford University Press, 1987.
- Wilkinson, David. *Science, Religion and the Search for Extraterrestrial Intelligence*. Oxford: Oxford University Press, 2017.
- Zellini, Paolo. *Numero e Logos*. Milano: Adelphi, 2010.

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INTRODUCTION: cf. vol. 1, *La Teologia fondamentale e la sua dimensione di apologia*, 41–44; cf. vol. 2, *La credibilità del cristianesimo*, 599–602.

PART I: Fundamental Theology within the Scientific Context. Chapter 1. Speaking of God in the contemporary scientific world: cf. vol. 1, *La Teologia fondamentale e la sua dimensione di apologia*, 45–68. Chapter 2. The credibility of Revelation and scientific rationality: cf. vol. 2, *La credibilità del cristianesimo*, 50–75. Chapter 3. Contemporary criticisms of the question of God within the context of the natural sciences: cf. vol. 3, *Religione e Rivelazione*, 121–143. Chapter 4. The question of God within the context of science: the *logos* of scientific rationality and its openness to the Absolute: cf. vol. 3, *Religione e Rivelazione*, 143–162.

PART II: God's Self-Revelation through the Created World. Chapter 1. Revelation as the personal self-giving of the Blessed Trinity to the world: cf. vol. 3, *Religione e Rivelazione*, 321–343. Chapter 2. God's manifestation in nature between religious experience scientific world-views: cf. vol. 3, *Religione e Rivelazione*, 343–360. Chapter 3. The metaphor of the Two Books: an intriguing historical path: cf. vol. 3, *Religione e Rivelazione*, 360–394 and G. Tanzella-Nitti, *The Book of Nature, Origin and Development of the Metaphor*, in inters.org (DOI 10.17421/2037-2329-2019-GT-1). Chapter 4. God's revelation through creation, between Covenant and Promise: cf. vol. 3, *Religione e Rivelazione*, 395–426.

PART III: Scientific Perspectives on Christian Revelation. Chapters 1-5 correspond to chapters 10–14 of vol. 2, *La credibilità del cristianesimo*, 599–790.

Epilogue: cf. vol. 2, *La credibilità del cristianesimo*, 791–795.

Offering a compelling understanding of Christian faith in the age of scientific reason, this book is part of the commitment of the Vatican Observatory to the interdisciplinary research on faith and science and to the evangelization of scientific culture. It is addressed to professors of university courses in science and theology, to students interested in these topics, and to everyone who wants to reflect on a Christian theology developed within our contemporary scientific context. The author writes to advance scientific perspectives in fundamental theology, taking into account the relevant questions that the sciences pose to Christian faith.

“In this wide-ranging, insightful work, Fr. Tanzella-Nitti situates himself firmly with those who seek to renew and expand orthodox faith, not to water it down, in dialogue with the facts, theories, and attitudes of science.”

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