

THE USE OF EXPERIMENTAL SCIENCES BY THEOLOGY

Giuseppe Tanzella-Nitti's Contributions in the Context of Fundamental Theology

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ABSTRACT: Revelation is explored by each human generation with the cognitive instruments of its time. The Church as a whole understands new aspects of the revealed Word, transmitted since the apostolic age. Theology plays a major role in this task. Using human reason, it attempts to deepen and clarify the meaning of Revelation. One of the novelties of the last century has been the incorporation of the natural sciences into theological work. This fact constitutes an extension of the use of reason in the reflection on creation, from the perspective of biblical Revelation. This paper will analyze the way in which Giuseppe Tanzella-Nitti considers the use of the natural sciences in the task of theology. For this purpose, two sources will be reviewed. First, the *Dizionario Interdisciplinare di Scienza e Fede*. The method is sought there as Tanzella-Nitti, in the great framework of the dialogue “science and religion”, introduces scientific contents and methods in theology. Secondly, the proposal of his *Theology of Revelation in Scientific Context*, is analyzed. It is a question of individualizing the way in which he includes scientific themes in the program of a theological reflection on Revelation.

KEYWORDS: Theology, Science, Revelation, Religion, Tanzella-Nitti.

RIASSUNTO: La Rivelazione viene esplorata da ogni generazione umana con gli strumenti cognitivi del suo tempo. La Chiesa nel suo insieme comprende nuovi aspetti della Parola rivelata, trasmessa fin dall'età apostolica. La teologia svolge un ruolo importante in questo compito. Utilizzando la ragione umana, cerca di approfondire e chiarire il significato della Rivelazione. Una delle novità dell'ultimo secolo è stata l'incorporazione delle scienze naturali nel lavoro teologico. Questo fatto rappresenta un'estensione dell'uso della ragione nella riflessione sulla creazione, dalla prospettiva della Rivelazione biblica. Questo articolo analizzerà il modo in cui Giuseppe Tanzella-Nitti considera l'uso delle scienze naturali nel lavoro teologico. A tal fine, verranno esaminate due fonti. In primo luogo, il *Dizionario Interdisciplinare di Scienza e Fede*. Vi si cerca il metodo con cui Tanzella-Nitti, nel grande quadro del dialogo “scienza e religione”, introduce contenuti e metodi scientifici nella teologia. In secondo luogo, viene analizzata la proposta della sua *Teologia della Rivelazione in contesto scientifico*. Si tratta di individuare il modo in cui egli inserisce i temi scientifici nel programma di una riflessione teologica sulla Rivelazione.

PAROLE CHIAVE: Teologia, Scienza, Rivelazione, Religione, Tanzella-Nitti.

SUMMARY: I. *Introduction*. II. *The Use of Science by Theology in the Context of the Dialogue between Science and Religion*. III. *The Theology of Science in the Understanding of Revelation*. 1. The Sciences in Theology in the Ecclesial Context. 2. The Scientific Vision of the World as a Factor of Dogmatic Progress. IV. *Conclusions*.

I. INTRODUCTION

One of the great tasks that Catholic theology must face in our times consists in the introduction of the rationality of the natural sciences in its elaboration and internal developments. Having overcome – at least partially – an era in which the conflict between science and religion demanded a sustained effort to validate the place of religion in the cultural scenario, we are in a period in which theology must make use of this already consolidated use of reason that we call natural sciences or, simply, sciences. It is of interest in the present article to describe some aspects of Giuseppe Tanzella-Nitti's proposal on the use of the sciences by theology. Since this is a central question in the research program of the author in question, a couple of sources will be selected in order to capture the central features of his proposal.

II. THE USE OF SCIENCE BY THEOLOGY IN THE CONTEXT OF THE DIALOGUE BETWEEN SCIENCE AND RELIGION

The question of the use of the sciences by theology is present in a great part of Tanzella-Nitti's work. In an explicit way, however, he develops it in the encyclopedia entry "Scienze naturali, utilizzo in teologia", within the *Dizionario Interdisciplinare di Scienza e Fede* (hereafter: *DISF*).¹ In the introduction to this article, the Italian theologian points out that theology is a *descending* knowledge that tries to illuminate reality from the Word of God and that, nevertheless, it needs an *ascending* moment in which, from scientific and philosophical knowledge, it goes towards divine Revelation. In this sense, the question of the use of science by theology constitutes an ulterior step to that of the dialogue between science and religion. It

¹ G. TANZELLA-NITTI, "Scienze naturali, utilizzo in teología", in G. TANZELLA-NITTI, A. STRUMIA (eds.), *Dizionario Interdisciplinare di Scienza e Fede*, vol. II, Città Nuova, Roma 2002, 1273-1289. The article is available in: www.DISF.org/Voci/107.asp. Cfr. también: G. TANZELLA-NITTI, *Las ciencias naturales en el trabajo teológico*, en C.E. VANNEY, I. SILVA, J.F. FRANCK (eds.), *Diccionario Interdisciplinar Austral*, 2016, URL=https://dia.austral.edu.ar/Las_ciencias_naturales_en_el_trabajo_teológico (consulta November 18, 2024).

is a moment subsequent to that of the comparison of scientific data with religious experience. It is therefore a challenge not only to increase the knowledge of the revealed data, but also to modify the angle of its understanding within the new horizons broadened by the sciences, which can confront theology with new problems that will lead it to finer and deeper analyses.²

Traditionally, theology has been compared with philosophy. The scientific revolution of the Modern Age positioned the sciences as another interlocutor. However, the confrontation with the sciences, although it offers some similar characteristics to the relationship between theology and philosophy, nevertheless presents some original notes. On the one hand, the interpretation of scientific data is often linked to particular theoretical-philosophical perspectives. These require from the theologian a discernment that continues the relational history of theological activity with philosophy. But, on the other hand, many results of the sciences have a proximity to reality and a possibility of objective and universal verification – in a certain way unique – that make them disciplines with a particular cognitive value in relation to philosophy.

Under the title: “From dialogue to intellectual integration: some epistemological premises”, Tanzella-Nitti develops some fundamental points to achieve the integration sought. There are several factors that have allowed the dialogue between science and religion to be less conflictive today than in previous times. On the one hand, the overcoming of deterministic mechanicism and the pretended self-referentiality of the logical-mathematical project. These are two philosophical paradigms in which scientific knowledge had been entangled for a long time, compromising its potential for dialogue with other sources of knowledge. On the other hand, the recognition that the scientific enterprise is an *activity of the individual* and, therefore, open to the canons of personal knowledge, reintroduced the subject in an epistemological framework that includes the cognizing subject. Thirdly, it has been important to increase awareness of the philosophical questions raised in the analysis of the sciences, even when these are not formalized or resolved within the scientific method.³

² TANZELLA-NITTI, *Scienze naturali*, 1273.

³ As an influential example decades ago, at least of the recognition of different fields, see: S. JAY GOULD, *Ciencia vs. Religión. Un falso conflicto*, Crítica, Barcelona 2007.

From the point of view of theology, on the other hand, there has been a progressive reception of the contemporary scientific vision of the physical cosmos, life and the human species, as an essential contextual horizon for a better understanding of the biblical doctrine on creation and of the history of salvation itself.⁴

Tanzella-Nitti formulates two clarifications regarding the approach to the sciences in view of a theology that wants to see in them a source of positive reflection. In the first place, he stresses the need to take a position on the issue of truth in the sciences. Secondly, the availability to clarify some terminological aspects and, eventually, to review some theological categories in the light of scientific knowledge about nature and the human being.

On the first aspect, the author argues that theology should not insist too much on the *fallible* character of the scientific enterprise. As an important part of the epistemology of the last century (Popper, Kuhn, Lakatos, Feyerabend, etc.) emphasizes, science does not have the degree of certainty and accuracy claimed by the different types of positivism or scientism. However, the absolute deconstruction of scientific knowledge is sterile. Thus, epistemological programs structured from the concepts of falsification, paradigms, research programs, inconsistencies, etc., confer a profound fragility to the truth content of the sciences. Against this tendency, Tanzella-Nitti aims at rescuing the positive scope of scientific knowledge, while admitting its partially revisable value. Indeed, although these epistemological approaches are in part justified, an irrelevant use of them ends up distorting scientific knowledge of its *veritative* instances, confining it to the horizon of a mere *phainomenon*. However, he stresses, scientific knowledge itself participates in the metaphysical order. Indeed, the world of experience does not represent for the sciences a closed and self-referential enclosure, but is the gateway to the *being* of things. Highlighting the instances of truth of scientific thought, as well as the real progress of its knowledge in a realist epistemological frame of reference, facilitates the resizing of commonplaces such as, for example, that science deals with the *how* and not with the *why*. This is not so, since scientific research responds to precise *why* and, within its specific

⁴ The bibliography and subject matter is vast. See the list of *DISF* voices, which gives an idea of the impact of science on theology.

formal object, has an *unlimited* material object.⁵ It would not be difficult to show that also those limits that science captures within its method (incompleteness, unpredictability, necessity of reference to formal or final causalities, etc.) constitute rather *openings* towards higher levels of understanding or towards more general formal objects. Consequently, they would refer rather to its foundations than to its limits.

A second question has to do with theology's use of terms that have a strong cosmological connotation, such as *earth, heaven, life, death, time, space, light*, etc.⁶ In medieval times, theological language and scientific language used the same terminology. Today this is not the case, and when this happens, an equivocal content is produced, as happens, for example, with the term *nothing*, or with the very notion of *creation*. The fact that theological language (analogical, symbolic, poetic, doxological, etc.) is necessarily richer than that of the sciences does not exempt the theologian from a certain terminological rigor, a rigor to which the world of the sciences is particularly sensitive. The use of two notions deserves particular attention: that of *transcendence* and that of *experience*. In the use of the first, essential for all theological discourse, we should know how to show its connection with the analysis of the sciences and with their relative epistemological and anthropological openings. In the use of the second notion, crucial for all scientific discourse, one should

⁵ The author means that, although methodologically restricted and limited by their concrete object of investigation, scientific questions point towards an object that transcends the pure observation of the phenomenon. In this sense, their dynamism would lead them towards a metaphysical plane, a plane forbidden to scientific research, precisely because of a methodological self-restriction. Tanzella-Nitti crosses a distinction that goes back to a traditional view that the sciences deal with the *how* and philosophy with the *why*. The former include questions about why, not limiting themselves only to perceptible phenomena, while philosophical questions are not totally unconcerned with the phenomenal character of reality.

⁶ With this statement, Tanzella-Nitti seems to indicate that the biblical authors' view of cosmic realities is naive and direct. They understand them as they see them. There is no critical distancing from the realities designated by the words used. Such understanding immediacy continues during the Middle Ages, and only breaks down after the scientific revolution, where the distance between the intuitive vision of the universe and the explanatory theories given by the sciences widens. Cfr. L. FLORIO, *A second naivety in the contemplation of nature. Circularity between natural and revealed experience of God*, «Third Millennium» XIII (2010) 6-19.

know how to explain in what way the experience of the things of God and the experience of the sciences traverse the sphere of the sensible world and of history.

In general terms, an approach capable of constructively taking up the *provocation* of the sciences on theology presents itself as a very demanding task. In order to declare the simple compatibility between the scientific reading of the world and the reading offered by Revelation, the theologian can give in to the easy escape of not taking the results of science too seriously. But, if instead he wants to use them as a source of speculative reflection or dogmatic development, he must do exactly the opposite, that is, take them seriously.⁷

Tanzella-Nitti offers a brief *status quaestionis* of the issue. In this sense, he affirms that the magisterium of the Catholic Church has paid more attention to the human sciences than to the natural sciences. The reason has been that the former have a role as auxiliary sciences in the study of Sacred Scripture (history, philology, etc.), and that, in addition, they are useful for knowing the historical and existential situation of the addressee of the Gospel message (psychology, sociology, anthropology, etc.). However, the Second Vatican Council offers some valuable reflections on the natural sciences. The magisterium of John Paul II has also contributed notable texts in which scientific data and visions

⁷ TANZELLA-NITTI, *Scienze naturali*, 1277. The author underlines the aspect of epistemological seriousness. Theology, in general, has difficulties in incorporating the central themes of the sciences, largely because this implies incorporating areas of knowledge that are foreign to them, not only in content but also in methods, which are very different from those proper to theological disciplines. Fortunately, much literature has appeared on this issue in recent decades that allows us to overcome this situation. For reference only, cfr. A. PEACOCKE, *Theology for a Scientific Age. Being and Becoming-Natural, Divine, and Human*, Fortress Press, Minneapolis 1993; J. POLKINGHORNE, *Belief in God in an Age of Science*, Yale University Press, New Haven 1998; K. SCHMITZ-MOORMANN, *Teología de la creación de un mundo en evolución*, Verbo Divino, Navarra 2005, 207-253; L. GALLEN, *Ciencia y teología. Propuestas para una síntesis fecunda*, Epifanía, Buenos Aires 2007; J. HAUGHT, *Ciencia y fe. Una nueva introducción*, Maliaño, Cantabria, Sal Terrae 2019. Likewise, there are research projects expressed in the digital medium (such as <https://disf.org/dizionario/>), in societies (<https://www.issr.org.uk/>; <http://www.zygoncenter.org/>; <https://investigacion.upaep.mx/index.php/centro-de-estudios>; <https://www.esssat.net/>; <https://fundaciondecyr.org>; etc.) and periodicals (<https://www.zygonjournal.org/>; <https://www.ctns.org/publications/theology-science>; <https://quaerentibus.upaep.mx>; <https://revistas.comillas.edu/index.php/razonyfe/about>); etc.

are incorporated.⁸ As for systematic theology, with few exceptions,⁹ the incorporation of data and conclusions from the sciences into theological discourse has been very limited. In the last decades there have been added those who cultivate the dialogue between science and religion, although their concerns are fundamentally epistemological and not properly dogmatic.¹⁰

A topic of particular interest is that of the physical image of the universe and its possible implications for the theological reading of biblical Revelation. Indeed, one of the greatest openings of human knowledge generated by science comes from *physical cosmology*. Today we have sufficient data to conclude that the physical universe has a marked historical-evolutionary dimension. The cosmos has been subject to a slow and enormous development over time, starting from an initial phase capable of containing, under physical conditions of very high density and temperature and incredibly small dimensions, all the matter and energy existing today. It is not excluded that our universe coexists with other spatio-temporal regions, totally independent, and with different evolutionary histories, thus forcing to formulate statements and distinctions between a physical and a philosophical explanation of the universe. The spatio-temporal horizon that underlies the understanding of the universe in which we live has undergone an extraordinary enlargement. This has forced us to rethink the location of the human race and its cosmic habitat. Today we cannot do without these new horizons of understanding of the universe, just as European man could not ignore the worlds that appeared both through geographical discoveries and the Copernican revolution. The time from the formation of the first chemical elements to the appearance of life on earth, and from its emergence to hominization, has been incredibly long.¹¹ The natural sciences have

⁸ Cfr., for example, *Letter of His Holiness John Paul II to the Rev. George V. Coyne, S.J., Director of the Vatican Observatory*, AAS 81 (1989) 274-283. The use of the sciences in diagnosing the environmental situation can also be seen in FRANCIS, *Laudato si'*, May 15, 2024.

⁹ In Spanish, it is still a notable precedent: J. LUIS RUIZ DE LA PEÑA, *Teología de la Creación*, Santander, Sal Terrae 1992.

¹⁰ TANZELLA-NITTI, *Scienze naturali*, 1277-1282.

¹¹ To illustrate the author's assertion, the image of the history of the universe (estimated at 13.8 billion years) compared to a library of 30 volumes of 450 pages each is

the capacity to reconstruct the salient steps of this history, and are able to predict some of the main future scenarios. The latter are also characterized by very long, though not infinite, timescales. These long time periods indicate that the conditions for hosting biological life correspond to opportune windows that have occurred since a certain epoch and that, after a certain time interval, will no longer occur.

But the long spaces and long times of the universe were strictly necessary for the conditions, places and times for the slow synthesis of the chemical elements to have taken place, and thus for the formation of physical, chemical and biological niches suitable for hosting life to be possible. We know today, moreover, that there is a *fine tuning* between the structure of the universe and the physical, chemical and biological conditions on which life, which was to appear much later, was based. From this point of view, we are now in a position to affirm that for the presence of human life to occur, the initial conditions of the cosmos were as important as the innumerable contingent events that occurred throughout the evolution of the universe.

As far as the *laws* that govern it are concerned, it is known that the physical universe is not governed by laws that can always be formalized in a mathematical way, nor is it entirely predictable. The universe is not deterministic, but neither is it indeterministic. Its elementary components possess specific and stable properties, which manifest the characters of identity and universality on a wide cosmic scale. But, along with the *essences*, there are the relations. Indeed, there are no totally isolated properties, because the part depends on the whole. In the universe there is a positive quantity of information, irreducible to the support of matter or of the energy that transports it. On the stage of the laws of nature emerges the

eloquent. Each of the pages symbolizes 1.000.000 years. During the first 21 volumes there is no trace of life – at least as far as we know. The history of planet Earth appears in volume 21, that is, 4.5 billion years ago. Life, however, appears in volume 22, some 3.8 billion years ago. Near the end of volume 29 is the Cambrian explosion, which generates a multiplicity of new species with surprising patterns of complexity and diversity. Dinosaurs appear in the middle of the thirtieth volume, but disappear on page 385. Only during the last 65 pages of this volume does the life of mammals develop. Hominids appear in the last pages, and *Homo sapiens* only in the last lines of the last page (J. HAUGHT, *Cristianismo y ciencia. Hacia una teología de la naturaleza*, Sal Terrae, Santander 2009, 15).

question of the origin of their intelligibility and rationality, as well as their harmony with the canons of human knowledge. Moreover, with respect to the cosmic structure, it is known that the distinctions between matter and energy, between space and time, between matter and vacuum, must be reread with totally new categories. For, the author reminds us, there are other phenomena that must be incorporated into the analysis, such as the following: matter and energy transform each other; the flow of time depends on the curvature of space and therefore on the matter contained in it; the physical vacuum, once the universe is in being, is the seat of very high energies that can in turn be transformed into enormous quantities of matter. Nature is indeed capable of responding to emergence and also of manifesting itself creatively. In this sense, its history is not one of slow degradation and progressive direction towards uniformity. If this is true on a very large scale, for a low and intermediate scale new structures can be generated that are always more complex, in which information accumulates and increases: physical reality remains something truly *open* to the novelty of history.

Biology, on the other hand, has shown us that the human being assumes in his own corporeal dimension this long cosmic and planetary history. Within a tiny genetic patrimony, to a very large extent common to that of the lower animal species, is contained the essential information of his future corporeal development. To each individual living being is assigned a certain genetic code comparable to a program capable of reconstructing, in a non-reductive but informative way, the physical-corporeal structure and the biological processes of a living being. We now know that the various forms of life on our planet have undergone slow transformations that have led to the appearance of new species and the disappearance of others. Such an itinerary does not indicate only a development or a growth, but a true and proper evolution. Several factors have contributed to make it possible: the adaptation of living beings to the environment in which they have found themselves, a certain natural selection, the development of precise organic functions, the presence of channelings and internal coordinations which, becoming explicit over time, have progressively led living beings towards more perfected and complex forms. Among them, the species *Homo sapiens sapiens* represents a visible vertex. The times and the phases that have paced the appearance of man on earth and the progressive ascent of the first men towards the

conquests of civilization and culture that we know today have been much longer than could reasonably be thought until a few decades ago. Modern astronomical observations outside our atmosphere have also revealed to us that the presence of stars with planets, rotating around them, is a widespread phenomenon. On the other hand, there are no observations of other forms of life, not even elementary ones, but the hypothesis that these have originated in environments similar to ours is highly plausible.¹² Scientific research is increasing the idea that, because of the dimensions of the universe, and the time required to communicate through space, it is not possible (nor will it ever be possible) to have complete information about all the regions of the universe.

Tanzella-Nitti formulates the need to renew the theology of nature and to move towards the elaboration of a theology of science. As has been pointed out, the list of results and perspectives opened up by the sciences is wide and deep. However, only a few questions have been mentioned, especially cosmological, biological and anthropological ones. Others could be added, in the fields of high energy physics, quantum mechanics, chemistry or biochemistry, zoology or human physiology. As far as the mathematical sciences and logic are concerned, they too have been the protagonists of quite significant successes. However, these are to be considered as belonging more to the field of philosophy than to that of the natural sciences. But the point at issue is not to examine an immense mass of results as a whole. It is rather a question of assessing whether these results represent only a source of problems for the theologian's reading of the world and its relationship with God, based on Revelation, or whether what the natural sciences teach us today can truly constitute a positive source of speculation and theological progress. True progress, on the other hand, is possible when the emerging problems are faced and eventually resolved, proposing new ways of understanding Revelation that allow us to increase the intelligibility of reason and, with it, also the credibility of faith in a scientific context.¹³

¹² Tanzella-Nitti deals with the subject in the voice "Extraterrestre, vita", in *DISF*, 591-605. The theme has acquired a growing development in recent years. Cfr. J. FUNES (ed.), *La búsqueda de vida inteligente extraterrestre. Un enfoque interdisciplinario*, Educc, Córdoba 2023.

¹³ There are certain scientific questions that have an impact on the way theological questions are formulated. Just as an example: the original creation has been consid-

Positively, it would be enough to think of the horizon in which today, precisely thanks to the sciences, theology can better frame what it means to say “to be a creature in a created world”. The meaning and importance of these terms today acquire a weight and a context that they did not have before; and even if this does not directly increase the dogmatic content of the theological notion of creation as an act *ex parte Dei*, it increases it, on the other hand, in its implications for its other two meanings: as a relationship and as a created effect.

It should be added that it is also interesting for the theology of creation to think that the essential conditions of harmony between physics and biology occurred in the initial moments of the development of the cosmos, that is, long before the successive biological evolution. Therefore, the possible Christological resonances of a teleological centrality, no longer geometrical, of life and man in the cosmos should be evaluated. Tanzella-Nitti questions the biocentrism and anthropocentrism proper to the worldviews prior to the transformation of the way of understanding the universe and the history of life. Today it is clear that the human being is not in the physical – or “geometric” – center of the cosmos, nor in the middle of its history. Something analogous happens with the human being, who has appeared relatively recently in the history of the biosphere. In this sense, the physical and temporal decentering of humans implies reformulating the teleological vision.¹⁴

ered more deeply with the consolidation of the Big-bang model. Moreover, the same inflationary model as the assumption of the fact of the evolution of species has led to formulate in greater depth the doctrine of continuous creation, not only as a permanent participation of being in creation, but also as a support of the ontological novelties of new stellar bodies and new species. In this regard, cfr. M. HARRIS, *La naturaleza de la creación*, Sal Terrae-Comillas, Madrid 2019; P. CLAYTON, A. PEACOCKE (eds.), *En él nos movemos y existimos. Reflexiones panenteístas sobre la presencia de Dios en el mundo tal como lo describe la ciencia*, Sal Terrae-Comillas, Madrid 2021.

¹⁴ The figure of P. Teilhard de Chardin, with his idea of the “Omega Point”, is of interest in this subject. But it is also interesting in his integration of the Christocentric model of Eph 1:3-14 with the idea of an evolving universe and biosphere. For Teilhard’s current relevance in the integration of theology and science, cfr. L. GALLENI, “Teilhard de Chardin: Moving Towards Humankind?”, en G. AULETTA & R. MARTÍNEZ (eds.), *Biological Evolution: Facts and Theories. A Critical Appraisal 150 Years After “The Origin of Species”*, Gregorian & Biblical Press, Roma 2011, 493-516; G. GIUSTOZZI, *Pierre Teilhard de Chardin. La “reinención” de la experiencia religiosa*, Eucasa, Salta 2023.

In this sense, our author continues, genetic information can be used to rethink the Christian doctrine of the resurrection of the flesh, as well as that of the dissolution and resurrection of the human body.¹⁵ Would the great attention directed by Christian thought to the theology of the body, a body that also participates in the image of God, capable of revealing the person and of being a temple of the Holy Spirit, also receive new light from the fact that such a body, even before being human, embodies a very long evolutionary, cosmic and biological history? And how would the order and harmony of a nature crowned at the end of creation by the human being be understood, when one considers that in the history that preceded it, innumerable species have appeared and disappeared, not without reciprocal rivalry and often with painful antagonisms? On the level of salvation history, then, the understanding of the relationship between objective redemption and subjective redemption could receive significant suggestions from the very long times that have elapsed since the appearance of the human species on earth, especially considering that the vast majority of human beings who have lived until now have not come into contact with the paschal event of Christ.¹⁶ The author offers these examples to show the meaning of what we understand, not only because of the potentiality contained in them, but also because of the need for serious and rigorous interdisciplinary work.

Among the questions to be resolved is the importance of explaining today the relationship between the first creation and the new creation in ways that do not contradict the knowledge we have of material reality. The evaluation of the elements of continuity and discontinuity present in that relationship, about which Revelation also instructs us, should be made on the basis of a scientific perspective, with possible implications for eschatology, including intermediate eschatology.

¹⁵ Cfr. in this regard, the application of genetic information on eschatology proposed in: J. POLKINGHORNE, *El Dios de la esperanza y el fin del mundo*, Epifanía, Buenos Aires 2005, 111-119.

¹⁶ Our present understanding of the history of *Homo sapiens* allows us to perceive the following situation: the majority of humans have not had contact with the biblical Revelation and, therefore, have not consciously and freely appropriated the objective redemption of Christ. This implies considering in context the salvific economy, characterized by an implicit presence in a multitude of human beings.

Tanzella-Nitti clarifies that it is a matter of *implications* and not necessarily of *problematizations*, that is, of intelligibility requirements for a better dogmatic understanding of Revelation itself. On the basis of the continuity/discontinuity relationship between the first and the new creation, some elements linked to original sin should be framed. Independently of the possible hermeneutics underlying the biblical narrative – whose explanation in accordance with the essential content of the dogma is the task of exegetes – if the historical entrance of sin into a world already created long ago is presented with precise consequences for human nature and for the material world as a whole, then theology should clarify whether or not the *discontinuity* introduced by such consequences has aspects observable at the scientific level. If so, a confrontation with the sciences would shed light on the way in which human death should be understood, suggesting for example the distinction between the fulfillment of a biological cycle and the dramaticity with which the end of physical life is noticed by a rational creature who questions the goodness of its Creator. A confrontation with the sciences could also suggest that the disorder introduced into nature by man's sin would admit interpretations that emphasize the anthropological dimension (disorder in the relationship between sinful man and nature), without necessarily insisting on a physical dimension intrinsic to nature itself (disorder in nature). This would also lead to different ways of understanding what *physical evil* consists of and its significance in God's plans. Finally, indications could be drawn on the correct way to understand the relationship between the historical and meta-historical dimension of original sin itself.

The meaning and logic of the history of salvation—which is the history of God's freedom and man's freedom—certainly surpasses anything that the sciences can reconstruct about the meaning of the evolutionary histories of the cosmos and of life. And yet the history of salvation takes place in those histories and is interwoven with them. The realism of the mystery of the Incarnation, by which the Word, taking upon himself the human nature, has also taken upon himself all the relationships with creation, implies that we must take this intersection seriously, exploring its consequences in depth.

III. THE THEOLOGY OF SCIENCE IN THE UNDERSTANDING OF REVELATION

In his voluminous work *Teologia della Rivelazione in contesto scientifico*,¹⁷ Tanzella-Nitti frames the question of theology and the sciences in the theological theme of the understanding of Revelation. As its title indicates, this is a text of fundamental theology, in which he includes the contribution of the sciences in the activity of deepening the Church's knowledge of the revealed deposit. This constitutes a novelty for Catholic theological epistemology, not because it had not been postulated in a general way, but because it has been systematically applied in a treatise on fundamental theology.

The theme of the dogmatic development of the Church in the context of scientific progress implies, first of all, addressing the delicate question of the increase in the understanding of Revelation. Our author reviews the subject historically, focusing on the thought of J.H. Newman. The dogmatic development of the Church consists, according to the English theologian, in a homogeneous progress, as it occurs in a living organism. Newman offers seven criteria for discerning a homogeneous development of Revelation in the history of the Church.¹⁸ This is a historical reality, which is facing new cultural situations, and which must propose the Gospel to each generation with fidelity, but with depth at the same time. Tanzella-Nitti recalls the luminous text of *Dei Verbum* no. 8, which points out that the apostolic Tradition progresses in the Church with the assistance of the Holy Spirit, and that the understanding of both the realities and the words transmitted grows. This growth is produced jointly by “contemplation and study”.¹⁹

It is in this context of growth in the knowledge of revealed truth that our author places, as an important aspect, the role of the sciences.²⁰

¹⁷ G. TANZELLA-NITTI, *Teologia della Rivelazione in contesto scientifico*, vol. 4, *Fede, Tradizione, Religioni*, Città Nuova, Roma 2022. Of the extensive work, we will use vol. 4 and, in particular, we will confine ourselves to what the author develops in chapter VIII, under the title: “Lo sviluppo dogmatico della Chiesa nel contesto del progresso scientifico”, 491-534.

¹⁸ TANZELLA-NITTI, *Teologia della Rivelazione in contesto scientifico*, 500.

¹⁹ *Ibidem*, 502.

²⁰ Point VIII, 2 deals with: “Il ruolo delle scienze nell'intelligenza della Rivelazione e nello sviluppo dell'insegnamento dogmatico” (*ibidem*, 506-534).

There are two ways in which dogmatic teaching moves towards development: one *ad intra*, by which the Church progresses in the knowledge of the mystery of God through meditation, prayer and study; the other, following a stimulus coming “from outside”, through the knowledge of different fields of knowledge that demand that theology broaden its hermeneutical horizon. There are three main thematic areas in this last task: the use of the natural sciences in the work of theology, the clarification of dogmatic progress, and the orientation of the transmission of the faith taking into account the contemporary scientific context. We will refer in particular to the first two.

1. The Sciences in Theology in the Ecclesial Context

The use of the sciences by theology has been discussed in point 1, based on the respective voice in the *DISF*. In this work, our author takes up and deepens that discourse. He maintains that in speaking of “utilization” it is not done in an instrumental way, in the manner of the auxiliary sciences, but within a cognitive synthesis in which the singular disciplines concur with equal dignity in the search for truth. This can only happen if a realist scientific epistemology is practiced, one that recognizes itself as capable of accessing well-founded and irreformable knowledge, distancing itself from visions of science that consider its results always reformable. It is an epistemology that admits a hierarchy of levels of intelligibility in such a way as to allow science to find its foundation in a philosophy of nature; and, in turn, that makes it possible for the latter to find in itself the foundation of an ontology open to a theological reading of reality.

Using Ian Barbour’s classic classification (conflict, independence, dialogue and integration),²¹ Tanzella-Nitti points out that this approach goes beyond *dialogue* to *integration*. Our author affirms that a mature expression of the *mutual creative interaction* (Russell) would be the elaboration of a “theology of nature”, a discipline that is being consolidated within

²¹ I. BARBOUR, *Religion and Science: Historical and Contemporary Issues*, Harper Collins, San Francisco 1997. Other typologies: J. HAUGHT, *Ciencia y fe. A New Introduction*, Sal Terrae, Maliaño 2019 presents five: conflation, conflict, contrast, contact and confirmation. A typology that includes time and is, therefore, diachronic, in L. FLORIO, *Ciencia y religión. Perspectivas históricas, epistemológicas y teológicas*, Eucasa, Salta 2020, 29-38.

the horizon of interdisciplinary dialogue. Its epistemological status distinguishes it from the theology of creation. The former is concerned with examining “natural reality, as *the object of the sciences*, in the light of Revelation, while the theology of creation, which inaugurates theological anthropology as protology, has as its object God as creator and, secondarily, created reality as the effect of God”.²²

Tanzella-Nitti takes up the thesis of St. Thomas Aquinas²³ which affirms that a better knowledge of nature can contribute to a better knowledge of God and his plan of salvation. The fact of bringing to the present the Thomistic texts on the importance of rational knowledge of nature to access the knowledge of God is appropriate, since it allows us to see the value assigned to human reason to deepen the vision of theology. In his brief historical tour, he rescues one of the several examples of mentioning nature as one of the two books written by God. It is Tommaso Campanella, who speaks of “the book of Christ”, which is the world, and which belongs to us, Christians, who must know how to read with expertise.²⁴

However, as Tanzella-Nitti points out in her quick historical overview, the idea that the sciences help theology, and even faith itself, allowing it to progress in its knowledge, is not a thesis accepted by all in our time. The main resistance comes from the current view of epistemology, which emphasizes its fallible and permanently revisable character. There is a tendency to relativize the results of the sciences “with the aim of not putting too much into discussion formulations or theological visions already acquired, whose overcoming would require a supplement of theological research and an intellectual synthesis not available at the moment”.²⁵

In this regard, it is interesting to note the testimony that our author gathers from K. Rahner. The German theologian pointed out that it was very difficult today to arrive at a unity of knowledge between faith and scientific thought and, therefore, to arrive at a theology of nature. Science, with its limits and methodological complexities, does not offer results, but paradigms. The faith of the Church should be limited to the

²² TANZELLA-NITTI, *Teologia della Rivelazione in contesto scientifico*, 508 (our translation).

²³ THOMAS AQUINAS, *C.G.* II, c. 2.

²⁴ *Apologia per Galileo*, III, tr. it. 99. Quoted in TANZELLA-NITTI, *Teologia della Rivelazione in contesto scientifico*, 511.

²⁵ TANZELLA-NITTI, *Teologia della Rivelazione in contesto scientifico*, 512 (our translation).

creative sovereignty of God and his merciful condescension towards us, fully revealed in Christ.

2. *The Scientific Vision of the World as a Factor of Dogmatic Progress*

With regard to the dogmatic contents that are integrated into the new perspectives of the sciences, these seem to concern the treatise on creation – protology and anthropology – and also eschatology. The reference is not so much to the “notes” of creation, whose philosophical-theological dimension transcends the plane of empirical analysis, but to the set of teachings that show some kind of interaction with natural history. Among these, the location of the human being in the cosmos. In particular, it is interesting to think about the moral role of the human being in creation, the cosmic-natural dimension of the contents associated with the Blessing, the Covenant and the Promise.

In this sense, it should be noted that the biological origins of the human species modify the understanding of the way in which Revelation has entered history and left its mark. In particular, ecclesial teaching must explain, within the framework proposed by the sciences, how sin has spread and what has changed in the objective and universal aspects of the human condition. It is also within this same framework that the historical and meta-historical dimension of original sin must be explained.

Tanzella-Nitti formulates an interesting synthesis of the theological program impacted by the sciences. He points out that, in addition to moving theology to better hermeneutically and contextually punctuate the various problems, the sciences have to suggest which aspects of dogma are still waiting to be more adequately explored, made explicit and understood.

An example of this is the new dogmatic horizons of the cosmic capitulation of Christ, the Incarnate Word. During the first part of the twentieth century, P. Teilhard de Chardin awakened this question to the theological conscience. Still today this theme needs to be deepened and consolidated.²⁶ Questions such as the following must be part of the theological task:

²⁶ Cfr. in this regard JORGE PAPANICOLAU, *Cristología cósmica*, Ágape, Buenos Aires 2005; IDEM, *Cristología cósmica* in L. FLORIO, S. ALONSO (eds.), *Nociones clave para una Ecología Integral*, DeCyR, City Bell 2024, 108-116 (<https://seminarioteologiafilosofiacienciaytecnologia.wordpress.com/2020/03/15/nociones-clave/>; consulted December 13, 2024).

What does Christ have to do with the cosmos, with the long history of life on the planet and with the hypothetical expressions of life in other parts of the universe? What is the relationship between Christ and the long religious history of *Homo sapiens*?

According to our author, the question of understanding the new creation in relation to the first is related to this cosmic capitivity of Christ. If there is a continuity between one and the other, a “*physical history of salvation*” must be presented.²⁷ This means that the history of salvation must be read within the horizons of human and religious history, but also within those of the physical and biological cosmos. In other words, it is not possible to maintain a double vision, in parallel, of salvific history and the history of the universe, to which we have access through scientific activity. An integrated vision is needed, even if the differences between one and the other are clearly pointed out. Tanzella-Nitti’s thought can be summarized by paraphrasing St. Irenaeus of Lyons in his polemic against the Gnostics: there are not two economies, but only one, to which we have access by different but complementary ways. The history of salvation is inserted in a physical and biological history of the universe.²⁸ This is nothing other than affirming that salvific history and creation constitute a unity, even if they can be distinguished.²⁹

²⁷ This is how our author defines it in: TANZELLA-NITTI, *Teologia della Rivelazione in contesto scientifico*, 519. The italics are the author’s; the translation is ours.

²⁸ Here again, one can refer to the intuition of P. Teilhard de Chardin, for whom there was a succession of phases in a single history, namely cosmogenesis, biogenesis, noogenesis and Christogenesis. Cfr. L. FLORIO, *Une réception inachevée L’apport de la pensée de Teilhard de Chardin à la théologie académique*, in *Colloque international New York - Poughkeepsie 2023, Pierre Teilhard de Chardin. La Messe sur le monde*. Le Centenaire, Saint-Léger Éditions, Paris 2024, 117-149 (expanded version in Spanish: *Teilhard de Chardin y la teología de la creación actual. Algunos elementos estructurales y conceptos vigentes*, «Razón y fe», vol. 288, n° 1463 [2023] 439-462).

²⁹ The binomial between salvation history and the history of the universe and life can be thought of in the key of redemption and creation (cfr. E.M. CONRADIE [ed.], *Creation and Salvation*. Vol 2: *A Companion on Recent Theological Movement*, LIT Verlag, Münster 2012). Likewise, another possible integration between the different accesses to reality is using the “paradigm” of the “Big History”, which synthesizes the accounts of the history of the universe, with the history of salvation (cfr. A. UDÍAS VALLINA, “La ‘Gran Historia’ [*Big History*] y el Antropoceno: dos nuevos enfoques del pasado y el presente”, «Razón y fe», vol. 279, n° 1437 [2019] 72-73).

Tanzella-Nitti then addresses the question of doctrinal progress brought about by the use of the sciences by theology. He does so by means of J.H. Newman's criteria. What the Italian theologian intends to show is the existence of an important space of reflection for a vital incorporation of some results of scientific knowledge in theological knowledge. The objective is to strengthen the exercise of the mission entrusted by the Risen One to the Church: to proclaim in a credible way the Gospel of salvation, showing its significance for all human beings of all times.

IV. CONCLUSIONS

The work of Giuseppe Tanzella-Nitti highlights that the challenge of the sciences for theology is complex and arduous. It is a task that is not simply that of a generic dialogue between the sciences and religion(s), but a dynamic and complex link between the sciences, critically approached by epistemology, and theology, as a rational instance of biblical faith. This task seeks to achieve an integrated vision that can be called "theology of nature", "theology of the sciences" or even "theology-and-sciences".³⁰ It is a theology whose nature is configured as a complex interdisciplinary that integrates biblical faith – studied with the help of historical and literary sciences –, scientific theories, epistemologies, history of thought, etc.). Its purpose is to provide "an enriched vision of reality".³¹ This occurs when theology in its globality allows itself to be impacted by the challenge of scientific rationality, in an analogous way as it was by Greek philosophical rationality, or that of modern philosophical currents such as kantism, phenomenology, analytical philosophy, among others. The originality of the dialogue with the sciences lies in the fact that they focus on an empirical and mathematical method, from which a vision of the world is configured. This configures a task of added complexity to theology, traditionally linked to philosophical thought as a conceptual instrument for its systematization. However,

³⁰ See, in this regard, the proposal for a theology-and-science course involving the various disciplines with a historical perspective: L. GALLEN, *Una proposta: il programma di un corso su Teologia e Scienza*, «Quaerentibus. Teología y ciencias» 11 (2016) 3-36.

³¹ A. MCGRATH, *Una visión enriquecida de la realidad. El diálogo entre la teología y las ciencias naturales*, Sal Terrae-Comillas, Madrid 2019.

this is not a substitution but a complementation, that is, an integration of scientific reason within the theological task.

This spirit appears in the works of Tanzella-Nitti that we have analyzed. The author lets us glimpse in them his concern to find foundations for the novel task of introducing the complex scientific rationality in the theological task. The first of the texts we have chosen, a voice from the *Dizionario Interdisciplinare di Scienza e Fede*, is more focused on weeding out the terrain of the interaction between science and religion, according to the dictionary's program. Even so, he conceptualizes several intuitions that he will later develop within the framework of a more systematic theology. Indeed, it is in the second selected text where he incorporates contents and methods of the natural sciences into a treatise on fundamental theology. This is based on a theology of dynamic Revelation, as taught in the Dogmatic Constitution *Dei Verbum*. This Revelation is given to the Church to be communicated, but also to be deepened – homogeneously with its nucleus, as H. Newman pointed out – by means of contemplation, study and embodiment in its life. The great theological movements of the 19th and 20th centuries – the biblical, patristic, liturgical, theology of the cross, the renewal of Trinitarian theology, etc. – have made it possible today to practice a mature incorporation of an experimental science – also evaluated philosophically – making explicit its scope and limits.

The theological situation of these last decades allows the development of dialogue and integration of the sciences, without falling into scientism or concordism. On the contrary, this task is making it possible to expand theological knowledge thanks to the broadening of the vision of the universe and of life provided by the natural sciences. The need to continue with this work of introducing scientific contents and methods in the theological task is imperative in our present time, to the extent that the current language and worldviews are shaped by the scientific and technological language with ever greater depth.