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The metaphor of Book of Nature in the Modern Age: history and heritage

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Abstract: A tanulmány Raimundus de Sabunde 15. századi munkásságától a közelmúltig tekinti át a „Természet könyve”-metafora történetét és annak teológiai jelentőségét. A korszaknak ebben a korábbi publikációinál részletesebb tárgyalásában a szerző kitér P. Paracelsus, H. C. Agrippa, G. Galilei, R. Boyle, J. Kepler *Liber Creaturarum*-hagyományhoz adott hozzájárulására (vö. AP 2016, pp. 55-75), valamint e gondolkodóknak a hagyomány újkori szétágazásában betöltött szerepére. A történeti átekintéssel párhuzamosan a tanulmány a hagyomány aktualizálása szempontjából fontos hermeneutikai kérdéseket is felvázolja, miközben az egész témát elhelyezi a II. Vatikáni Zsinat által felelevenített klasszikus Logosz-teológia horizontján. Nyomatott formában a jelen angol nyelvű tanulmány magyar fordítása is elérhető (In: BAGYINSZKI Á. [ed.] [2019]: *A „Természet könyve” mint a „Szentírás könyvének” analógiája*. Konferenciakötet, Sapientia Szerzetesi Hittudományi Főiskola & L’Harmattan, Budapest, pp. 49-76).

I. At the roots of nature’s view in the Modern Age: the case of Raymond of Sebond

As the Italian historian of science Lino Conti has shown, at the root of the Modern Age’s view of the Book of Nature there is 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* (see CONTI 2004).¹ A Catalan born scholar, Doctor in Medicine and Theology, Sebond was professor at Toulouse and his work was remarkably successful, knowing at least sixteen editions in various languages. In the following centuries its content was re-arranged and organized in different ways and for different purposes (see for instance MONTAIGNE 1987; REGOLI 1789-1793; REGOLI 1819).

As Sebond states in his *Prologue* – I am paraphrasing from the Latin text – the knowledge of the Book of Nature allows us to understand, in a true and infallible way, and without much effort, all truths

¹ The name of the Author is indicated in different ways: Raimundus Sabundus, Sabunde, Sabundio, Sebond. Also the title of his work presents some variations in the different manuscripts: *Liber Naturae sive Creaturarum* (Paris), *Scientia Libri creaturarum seu Naturae et de Homine* (Toulouse), *Liber Creaturarum sive de Homine* (Clermond-Ferrand). The title *Theologia naturalis* was added later, by some publishers, starting from its 2nd edition in 1485.

about created things, man 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, it is thanks to the knowledge of the Book of Nature that we can understand without error what is contained in the book of Scripture.² Both *Books* were given to us by God: we received the first one from the creation of the world, while the second one was written thereafter. The Book of Scriptures can be falsified or misinterpreted, while in the Book of Nature there is no room for heretics or heresies; contrary to Scripture, Nature cannot be deleted nor lost.³ In Sebond's view, the relationship between the two books undergoes a subtle equilibrium. From the one hand, the Book of Nature seems to have a certain priority, because it precedes, and in some way confirms, the Book of Scripture; moreover, the knowledge of the Book of Nature is available to everyone, while the Book of Scripture can be read only by the clerics. On the other hand, having the sin debilitated our intellect, the sacred Scriptures were inspired and written to help us read the book of creatures properly. From a cognitive point of view, the Book of Nature is primary and more fundamental, being its knowledge more universal;⁴ from the point of view of dignity, the Book of Scripture has a higher value, because of its divine authority (cf. SABUNDE 1966, *Titulus* CCXV, pp. 322-324).

Although Sebond strives to keep his balance, the matter is critical, and the risk of over-evaluating the Book of Nature at the expense of the sacred Scripture is real. In particular, the autonomy of the Book on Nature is here highly emphasized, in a way unknown to the authors of previous epochs. The fact that Nature can be read and studied as a complete and exhaustive book, allows the material world to teach us by its own, to tell us its own story. Furthermore, if the basic moral content of Scripture is also present and well readable in nature, then the scholars of nature could consider Scripture something additional or even superfluous.

For all these reasons, Sebond's *Liber Creaturarum* was judged in contrasting ways. Some scholars saw in it the danger of reducing the significance of Scripture and weakening the authority of the Church to interpret it. Others saw in this work one a beautiful example of „natural theology”, in tune with the philosophical and theological tradition of all Christianity.⁵ As known, precisely because of its ambivalent value, apparent or true, more than a century after its publication, in 1559, the book was included by Pope Paul IV into the Index of the forbidden books. However, confirming the ambivalence we speak about, only five years later, in 1564, the same Pius IV limited the prohibition to the *Prologue* only, asking that a note of theological clarification be inserted in all the later publications of the work.

If we look carefully to its contents, Sebond's *Liber Creaturarum* seems to pave the way to a „modern religion of nature”, capable of conveying moral and spiritual values without a necessary reference to the revealed religion based on the Bible. This gives rise at least to a couple of philosophical consequences, which will emerge later as the scientific method will characterize progressively our approach to nature. The first consequence is a kind of „lay sacralization” of nature, different from those spiritual views of nature practiced by Scottus Eriugena, the Celtic Christianity, Hildegard von Bingen or Franciscus of

² „*Ista scientia docet omnem hominem cognoscere realiter, infallibiliter, sine difficultate et labore omnem veritatem necessariam, homini cognoscere, tam de homine, quam de Deo, et omnia, quae sunt necessaria homini ad salutem et ad suam perfectionem, et ut perveniat ad vitam aeternam. Et per istam scientiam homo cognoscat sine difficultate infallibiliter, quicquid continetur in sacra Scriptura. Et quicquid in sacra Scriptura dicitur et praecipitur, per hanc scientiam cognoscitur infallibiliter cum magna certitudine*” (SABUNDE 1966, *Prologus*, pp. 27*-28*).

³ „*Primus liber, naturae, non potest falsificari, nec deleri, nec false interpretari. Ideo, haeretici non possunt eum false intelligere; neque aliquis potest fieri in eo haeticus. Sed secundus potest falsificari et false interpretari et male intelligi*” (SABUNDE 1966, *Prologus*, pp. 36*-37*).

⁴ „*Et ideo conveniunt ad invicem, et unus non contradicit alteri. Sed tamen primus est nobis connaturalis, secundus supernaturalis*” (SABUNDE 1966, *Prologus*, pp. 37*).

⁵ The *Liber Creaturarum* was known and appreciated, among others authors, by Nicholas of Kues, Hugo Grotius, Blaise Pascal, Peter Canisio, Franciscus of Sales, Georg Wilhelm Hegel, Giovanni Regoli.

Assisi. A new natural lay religion can now emerge, having its own rites, prayers and moral prescriptions, which in the climate of Renaissance will meet even the practice of magic. The second consequence is the possibility to see the relation between God, man and nature, putting by parenthesis the mystery of Incarnation and the history of salvation, so preparing the deism of the Western Europe Enlightenment, a religion of reason and nature which leaves aside, and often criticizes, all the *revealed* religions.

II. Toward a breaking of the harmony

In the history of the image of the Two Books, Nature and Scripture, the 17th and 18th centuries were the two centuries in which the meaning of the metaphor underwent the greatest conceptual and hermeneutical transformations. The Patristic and Medieval periods didn't know a dialectic opposition between the two Books, although the search for an accomplished and reliable articulation between them remained a problem to be solved, as shown emblematically by Raymond of Sebond's thought. It is worthwhile to note that, when approaching the Modern Age, the metaphor of the „mirror”, for which the creation was still only a reflection of the divine sphere, is gradually disappearing, testifying that „nature” acquires a progressive and stronger autonomy. Nature is the source of its own meaning, without need to reflect the meaning of something else. However, non-conflicting views of the Two Books are well present in this period, as shown, among others, by authors such as Nicholas of Kues (1401-1464) or even Martin Luther (1483-1546).

It is an opinion shared by many scholars that it was Philippus Paracelsus (1493-1541) who first endorsed a view in which the Book of Nature came into conflict with other books, namely those of philosophers and theologians. All the books previous to the direct and careful study of nature lag behind: finally, the material world can be studied with new instruments, observed with method and rigor. Recalling the scientific and philosophical context in which the Academies operated, mainly indebted to Pythagoras, Plato and to mathematical approaches in general, among the books from which Paracelsus and his students wanted to keep their distance there were especially those by Aristotle, but also the works of Galen and of all 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.”

And one of his students will add:

„Let the others read their compendiums, while we study in the great picture book which God has opened for us outdoors.”⁶

Henry Cornelius Agrippa of 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 the books of theology and philosophy. In these statements there is no direct reference against the Bible, but it clear that authorities other than observation and experience, when speaking of the natural word, must be put now on a secondary level.

Starting from the beginning of the 16th century, the Book of Scripture, which for philosophers and theologians was the main book, became a book among the others: the light to understand the Book of Nature must come only from nature, from our way of studying and observing it, not from other sources. In other words, we can approach the natural world without the mediation of sacred Scripture, of theology or scholastic philosophy, and of course without the mediation of any Church. What is at stake is not the

⁶ Texts quoted by CURTIUS 1990, pp. 322; cf. also PEUCKERT 1941, pp. 172-178.

existence of God: for the Renaissance scientists, it remains clear that God himself wrote the Book of Nature. The novelty, rather, is the „lay turn” now available to the 16th century naturalists: the world *can be read directly*, and then also the Architect and the Maker of the world 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, ultimately between Nature and Scripture, an accord that was centered for a long time around the mystery of the two natures of the Incarnated 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 will be shown by the philosophy of the Enlightenment and by the spirit of Romanticism. Born in a Christian context, the concept of the world as a book now becomes secularized and ready to be alienated from its theological origin.

III. Galileo Galilei’s view of the Book of Nature

Because of his influence, it is now to the use of the metaphor by Galileo Galilei that we must turn our attention. To be honest, in the works by Galileo Galilei (1564-1642) we didn’t find any sentence which states an explicit break between the Two Books; however, we find all the elements of a latent controversy.

As known, the most famous viewpoint of the Italian scientist is that the Book of Nature is written in a mathematical language. Its characters are triangles, circles and geometric figures: this is what he states in a well known page of *The Assayer* (1623). As a consequence, only the specialists of the natural sciences are capable of reading it, not exegetes nor theologians. 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.” (GALILEI 1968b, pp. 232)⁷

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 points out, stand out because they do not study nature through Aristotle’s books, but 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.” (GALILEI 1968c, pp. 295)

Therefore, the books employed up to that moment are outdated: the interpretation of nature is now entrusted to the method of „sensible and meaningful experiences” and to a language, mathematics and geometry, which allows to avoid ambiguities, distinguishing appearance from reality.

The key-statements of Galileo’s view of the metaphor could be summarized as follows: a) God is certainly the same Author of the 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 in FAVARO 1968, pp. 197-372); c) Nature is the

⁷ On the meaning of the mathematical language in Galileo’s works see PALMERINO in BERKEL 2006, pp. 27-44.

very object of natural philosophy: therefore a matter for scientists, not for theologians (cf. *Dialogue on the Two Chief World Systems* 1632 in FAVARO 1968a, pp. 25-520; p. 27); 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 in FAVARO 1968c, pp. 293-295); e) Instead of backing each other on their own books, as philosophers do, it is much more reliable to back on the Book of Nature itself (cf. *The Assayer*, 1623 in FAVARO 1968, pp. 197-372).

It is worthwhile to point out that from the epoch of the Fathers of the Church the meaning of the metaphor is, in Galileo's words, surprisingly overturned. If St. Augustine and other authors of the Patristic period could state that „everyone, even the illiterate, can read the book of the universe”,⁸ instead, according to Galileo's view, people qualified to read it 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 the clerics, is here overturned. Nevertheless, the Italian scientist is still convinced that the „Two Books” are in agreement with each other, because God is the only author of them, the sacred Scriptures written by the Holy Spirit, and Nature operating according to the orders received by the divine Word (see GALILEI 1968d, pp. 282). However, Galileo's view sets forth that the Two Books show a remarkable difference: the revealed truths were dictated by God in the Bible using human language, which remains limited and somewhat ambiguous, while the natural truths were written by God with the precise language of mathematics. On closer inspection, it is the limits of verbal language as such – when compared with mathematical and geometric languages – that Galileo seems to want to highlight in his *Copernican letters*, without reducing the authority of the revealed divine Word.

Galileo, then, did not use the Book of Nature against Scripture, but reaffirms the autonomy and self-consistency of the natural world. The „walls” to protect the autonomy of nature are built restricting the language in which nature is written, so regulating the access to its proper domain. For the first time the readability of nature seems to lose its universality. While for the Fathers of the Church the obstacle to the reading of Nature's book was the absence of contemplative spirit and humility, and while the Medieval theologians emphasized the role of human sin, Galileo now points out that the true obstacle is just the ignorance of geometry and mathematics. The impediment to read 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 is a point of the utmost importance – that such a change becomes possible because the different dimensions owned by the polysemic concept of „nature” now rank according to a hierarchy different from the past. The aesthetic-contemplative dimension, which was the only one available to the Fathers of the Church and to the author of the Classical ages, it is no longer the first one to be grasped. This dimension/meaning does not disappear, but it requires a „supplement” of reflection: the most important meanings that modern Scholars of nature now associate to their object of study are measurability, mathematization and experimentation. In other words, there is an important semantic shift 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 be an object of contemplation – think, for a moment, to Maxwell's equations of electromagnetic field – we don't understand a mathematical formula by reading it, but by accepting its operativeness and its character of legality. Because of the gradual growth of mechanism, made possible by mathematization, natural realities are no longer *read* but rather *analyzed and reproduced*. The symbols that represent them, like those described by a formula,

⁸ „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” (AUGUSTINE: *Enarrationes in Psalmos* 45,7).

begin to express „our way of controlling” those same realities. On an aesthetic and contemplative level, the room for God’s revelation in nature becomes increasingly thinner, unless we identify the Creator with the formulas, the Logos with a computer. If it is true that below the mathematical equations and the scientific laws there exist – as a metaphysical substratum which grounds the readability of the Book – the „laws of nature” that point to the rationality of the Logos and transcend any mathematization, but it remains true that, to bring them to light, science is not enough and we need a „philosophy of nature”.

Concerning Galileo’s understanding of the metaphor, a last question must be addressed. The new reading he proposed, was it 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 mere rhetorical stratagem? How much the Platonic root of mathematics is responsible for this change is, with regard to the history of our metaphor, a not easy problem to solve. The Platonic cosmos, we must not forget, is not a book: to know it, is not to words that one must go, but to ideas and memory. The very belief that the created world can be read has Christian roots and, as we tried to show in our first Lecture, rests on the theology of the Word. If Neo-platonism is able to capture the image of the *book* and leads its understanding, it is because of the „rationality” that the metaphor expresses, rather than for the idea of „readability”. The reasons for the success of the metaphor, which from Galileo onwards will accompany the scientific culture up to our days, 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 noticed that mathematical language is no foreign to a dimension of universality. From Galileo onward, scientific activity is nothing but the work of those who discover „laws” (whose etymology can still be traced back to one of the meanings of *léghein*), those who decipher a content, and then remain, at least in principle, capable of recognizing their Author. All these aspects will be present in the use of the metaphor made by men of science throughout the 17th century and for much of the 18th century, even if the reference to the „second” book, that of Scripture, will become increasingly implicit or even absent.

III. Some different perspectives co-existing along the Modern Age

The references to the metaphor, occasional or systematic, made by authors of the Modern Age related in some way to the activity of science, are so numerous that I cannot give here an account of them. Among the authors who speak of the Book of Nature we find Francis Bacon, Matt Ricci, Edward Topsell, William Harvey, Thomas Browne, Johannes Kepler, Robert Boyle, George Berkeley. Moreover, there are works written for apologetic purposes by clerics, who were familiar with the sciences, whose title is inspired by the metaphor. It is the case of Noël Antoine Pluche, *Spectacle de la Nature* (1732) and John Toogood, *The Book of Nature* (1802). Similar views are present in the works by John Ray, William Derham and William Paley. A good amount of authors endorse the view that creation should be considered „our first revelation”. Other authors, such as René Descartes, Balthasar Gracián and Federico Cesi, emphasize the role of the „Book of the world”, that is, what we can learn travelling and by our own experience, opposed to the learning of traditional education entrusted to printed books and rules.

Because of his scientific authority, the thought of Robert Boyle (1627-1691) is of special interest for us. The image of the book is well present 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:

„The book of Nature is a large and beautiful rolled tapestry that we cannot see all at once, but 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.”

(BOYLE 1690, Part II, Proposition VI, Aphorism XXI.)⁹

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 be superior to Galileo's) and considers the celestial phenomena a revelation of God, a testimony to His greatness and wisdom (see BOYLE in HUNTER & DAVIS 1999-2000, pp. 147-172). 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, as if it were a kind of hermetic knowledge; instead, he has the responsibility to communicate it, to praise the Creator on behalf of all men, a kind of „priestly” function that we will find explicit also in Johannes Kepler (1571-1630).

The metaphor of the Book is also present in another of Boyle's work, entitled *Some Considerations touching the Usefulness of Experimental Natural Philosophy* (1663). Boyle is convinced that knowledge of the 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 will do short later, but he rightly maintains that the Christian virtues that illuminate the relationship with God, such as humility, gratitude, and reverence, are fostered by a deeper encounter with the works of the Creator, an encounter now promoted precisely by science. The great balance with which Boyle exposes the relationship between the two Books is, in my opinion, surprising. The Book of Scripture is superior, because if the „naturalist” contemplates many attributes of the Creator reflected in his works, there are still many and more important ones, such as love and mercy, about which the Book of Nature is silent. At the same time, in his work *The Excellency of Theology compared with Natural Theology* (1674), Boyle specifies that the study of Scripture is far from rendering 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 drives 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 co-exist in the Modern Age. The first is that contained in works having an apologetic or theological-catechetical character, even if written by men 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 is precisely what renders Scriptures superfluous: it is the perspective of Deism. The third tradition, finally, having a naturalist and Neo-platonic character, affirms that the book is no longer public and is often associated with a polemic vein: it preserves the idea that only specialists, that is, „natural philosophers”, can read this book. In this last case, the careful observation and study of nature is reserved for those who know the formal language of science, a terrain in 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, founder of a school of medicine called „iatro-mathematics”. In his work *De motu animalium* (1679), Borelli tried to interpret the living beings by means of mechanism and mathematical interactions.

It is interesting to underline that many scientists of this epoch, especially those belonging to the Anglo-Saxon, Protestant cultural environment, propose „their own” and personal reading of Scriptures, without any worry of reconciling this direct reading, that is 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, in his *Copernican Letters*, although he intended to go back to

⁹ The translation from an Italian edition is ours.

the Fathers of the Church to justify the use of non-literal exegesis, presented to theologians his own exegetical solutions, not without argumentative deficiencies and some contradiction (see MCMULLIN in MACHAMER 1998, pp. 271-347; FABRIS 1986, espec. pp. 43-44).

Different currents of thought also co-exist regarding the capability of human reason to read and understand the Book of Nature. For some authors, the role of sin (as for most of the Middle Ages) would prevent the recognition of the Creator starting from creatures; for others, the exaltation of reason and scientific knowledge inexorably migrates the metaphor towards the use that the deism of Enlightenment will make of it. For the latter, the Book of Nature will still show a character of universality: however, this is no longer the universality of God's aesthetic and salvific appeal, but the universality of reason. Even if the term „God” does not disappear, Samuel Reimarus (1694-1768) and other deists now replace the reading of the Book of Nature with 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.”

(Reimarus in Lessing 1954-58, p. 734)¹⁰

Here gradually consolidates the idea 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, despite a greater realism in judging reason wounded by sin, this idea was slowly coming into 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”, because it educates to humility and to those other virtues necessary to understand biblical revelation and receive 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.

In the following course of history, and perhaps up to our days, the apologetic and catechetical use of the metaphor seems to have had a longer life compared to the Neo-platonic tradition and to the drifts of deists. Many Christian authors will feed it, although not always equipped with enough scientific competence. They have often underlined the order and harmony of the Book, the intrinsic finalism of nature oriented to the service of man, the evidence of a Creator who has planned morphologies of the living beings and biological processes. The naivety of some of their considerations, though endowed with a certain heuristic value, will make the tear of Darwinism more severe and critical, once discovered that the 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 the Darwinian interpretation of nature and history didn't realize that the image of the „Book” would continue to have a value also within an evolutionary perspective: actually, the Latin term *evolutio* expresses the unfolding of the *volumen*, that is, of a book, the unrolling of the tapestry of nature

¹⁰ *Apologie oder Schutzschrift für die vernünftigen Verehrer Gottes* published by Lessing with the title *Aus den papieren des Ungenannten* (1774). *Unmöglichkeit einer Offenbarung, die alle Menschen auf eine gegründete Art glauben könnten* (LESSING 1954-1958, pp. 686-734). The English translation is ours.

– to use the metaphor employed by Robert Boyle. Pope Benedict XVI gave witness of this, on occasion of a speech to the Pontifical Academy of Sciences in 2008.¹¹

Another author who deserves to be quoted here is the 19th century geologist and Catholic priest Antonio Stoppani (1824-1891), who enlightened the import of the Book of Nature for educational purposes, especially for the youth:

„The study of Nature – he wrote – is not new, it is very old, primitive, as old as the physical instincts and all the intellectual and moral needs of man. Nature speaks, teaches with a language intelligible to all, and with an eloquence that overcomes the strength of the human words. After the primitive teachings that God gave to the first human beings, in addition to the light of reason, nature is our first educator, the teacher of the teachers.” (STOPPANI 1878, p. 774)¹²

A remarkable change of perspective occurs with the rise of German idealist romanticism. Many of the contents associated with the concept of nature are now shifted into the concept of *history*. It is true, of course, that the encounter between the metaphor and the scientific environment, happened two or three centuries earlier, had already produced its fruits, that is, it has conferred authority, autonomy and systematic to the study of the natural sciences. However, from the 19th century onward, both nature and human life will be seen primarily as *history*, and so will be the Bible. The true nature is history, and nature itself is a history. Consequently, the world of books is considered only the parody of the real world and the metaphor of nature as a book loses interest. Nature has its own story to tell, the „natural story”, and it does so using the material and finds that the scientist collects, observes, reads and deciphers, just as the historian does using his documents. From the comparison between „Two Books” we have moved, then, to the comparison between „Two stories”, the history of the natural cosmos and the history of biblical salvation. Contemporary theology has then inherited a paramount task. It is that of showing, not without labor, that these two stories are 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.

IV. Conclusion: science, theology and the future of the metaphor

Theology and scientific thought have much to tell each other, even today. The metaphor of the Two Books, familiar to both, reminds them of the convenience of keeping dialogue alive. This is true not only for the help that the natural sciences can give to theology, for example to improve biblical exegesis or to foster the dogmatic development of certain truths transmitted by Revelation. Faith in a Creator, which the Book of Scripture founds and nourishes, can also help the reader of the Book of Nature to carry out his work of investigation with more optimism and greater patience. This is what Georges Lemaître, cosmologist and priest, expressed in an occasion, precisely using the metaphor of the book:

„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

¹¹ „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’” (BENEDICT XVI, 2008).

¹² On this Italian priest and geologist see ALESSANDRINI 2016.

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. That will not give him, perhaps, new resources in his investigation, but it will contribute to maintaining in him a healthy optimism without which a sustained effort cannot be kept up for long."

(GODART & HELLER III/21, p. 11 quoted in JOHN PAUL II, 1979)

There is today an urgent need, in my opinion, that theologians include in their studies also a good reading of the Book of Nature; and this, precisely to show in a convincing way why natural history and history of salvation are part of the one and some history. Due to many reasons, most of theologians have lost the familiarity that the clergy of the 18th or 19th centuries had with the results, and even the practice, of the natural sciences. With regard to this need, Tommaso Campanella used very lively tones in his *Apologia pro Galileo* (1622), a writing in which, by the way, we also found a wide use of our metaphor of the *book*. Invoking Augustine and Thomas Aquinas as teachers, he recalls that in the Christian faith human reason finds itself at home; so it must continue to be, because «those who prohibit Christians from studying philosophy and the sciences, prohibit them also from being Christians». And he adds his personal witness:

„The acceptance of the value of science by Christianity is, along with others, one of the major bonds that hold me back in the Church of Christ. And I think it's the same for others. Why should we break it right now?"

(CAMPANELLA 1622, nn. 14, 26)

As scientific knowledge goes forward, we do not know what future is reserved for the metaphor of the Book of Nature. At a time when the book has become a digital document and its readability has become a computer code, science gladly speaks of „cosmic code”, making the image of the Book of Nature migrate towards that of a computer program. For instance, we find today this new metaphor when cosmology reflects upon the delicate harmony among the fundamental laws of nature expressed by the Anthropic principle, or when biology reflects on the meaning of DNA molecule or looks at life as to a complex system of interrelations. This new metaphors would make the problem of the language in which the book is written even more severe, and its accessibility more restricted. But even if these were the winning metaphors of the future, theology would not lack opportunities for dialoguing with the sciences. Think, for instance, that Francis Collins, the scientist who directed the „Genome Project” for the coding of the human genome, felt the need to write a book about DNA entitled *The Language of God* (2006); he gave rise, just after his conversion to Christianity, to a Foundation for interdisciplinary research on science and faith called „Bio-Logos”.

The future strategy, in my opinion, is to suggest theology to shift the very meaning of the book metaphor toward the powerful notion of *information*. In so doing, the relations between information in the universe, information in life, and a theology of the Logos should be carefully explored, re-evaluating a philosophy of nature centered on *formal causality*. In this case, the reference to an Author, that is the very source for information, would not lose all its relevance, and the amazement before the readability of nature will continue to wonder.

V. References

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