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THE COMMON FOUNDATIONS OF THEOLOGY AND SCIENCE. THEIR CHARACTERIZATIONS AS PLURALIST THEORIZATIONS

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ABSTRACT

The present paper leads to discover two basic dichotomies as the foundations of science, one concerning the kind of infinity, either the potential one or the actual one, and the other concerning the kind of theoretical organization, either the problem-oriented one or the deductive one. Their relevance is proved through an analysis of the main categories of the two most celebrated historians of science. The two dichotomies lead to re-evaluate Leibniz' notion of the two labyrinths of human mind and its philosophy of science. It is shown that also theology is based on the corresponding two dichotomies. Each theory chooses on the two dichotomies. Each of the four pairs of choices characterizes a model of scientific or theological theory. Both science and theology are therefore severed into four distinct models of theory. A paradigm is a theory that is so relevant to obscure all others. A change of paradigm constitutes a revolution. In past times, pastoral theology was subordinated to the dogmatic one as being considered a practical theology; yet, it is shown through its two choices that it represents a consistent way of reasoning in a new way on theological subjects; it is applied to both basic Christian dogmas and the effort of main religions to lead humanity to transcend itself. At last the implications for a theological scholar are drawn.

Keywords: *Two dichotomies; Two kinds of infinity; Two kinds of theoretical organization; Four models of scientific theory; Four models of theological theory; Paradigm; Revolution;*

INTRODUCTION

In what follows, the foundations of science are characterized as essentially involving two basic dichotomies, respectively concerning the notion of infinity and the notion of theoretical organization. Through appropriate philosophical translation, these dichotomies are reformulated in theological terms, and it is shown that they also characterize the foundations of theological thought.

Section 2 illustrates the discovery of these dichotomies within science. Section 3 derives from them the notion of a model of scientific theory, as well as the related notions of paradigm and scientific revolution. Section 4 argues that modern Western philosophy has largely failed to understand science in these terms, with Leibniz representing a partial exception—though one later misinterpreted by Kant. Section 5 shows that the same two dichotomies can be rediscovered in theology. On this basis, Section 6 introduces the notions of models of theological theory, paradigms, and theological revolutions. By defining the pastoral model of

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theological theory through its fundamental choices, it is shown to rely on doubly negated propositions characteristic of intuitionist logic. In Section 7, a new interpretation of Christian revelation is developed in accordance with this theological model. Section 8 offers a historical overview of the efforts of the major religions to elevate humanity's spiritual life, expressed through the same logical framework. Finally, Section 9 draws conclusions concerning the choices facing contemporary theologians.

1. THE DISCOVERY OF TWO BASIC DICHOTOMIES AS THE FOUNDATIONS OF SCIENCE

The relationship between theology and science depends crucially on the foundations attributed to modern science. Western epistemology has been unable to identify the true basis of the extraordinary intellectual enterprise represented by the construction of science. It inherited from Aristotle a model of theoretical organization—*apodictic science*— without recognizing any alterative model; moreover it failed to recognize a foundational feature of theoretical physics: the relationship between mathematics and experimentation. As a result, Western philosophy of knowledge proved inadequate to account for the unprecedented accumulation of experimental and formal knowledge produced by modern science.

One consequence is that traditional philosophical polemics with theology must be dismissed as essentially insufficient. Philosophy rested on an insecure understanding of the most significant intellectual phenomenon of its time, while theology simultaneously operated within its own specific paradigm, namely the scholastic one.

In what follows, the foundations of science are identified not with a single philosophical principle or even a single dualism, but with two dichotomies. These concern what unmistakably constitutes the basis of science: mathematics, which formalizes the notion of infinity, and logic, which governs the organization of systematic theory. Koyré's analysis (Koyré 1957) provides a decisive clue to one of these dichotomies. Ancient Greek science deliberately rejected infinity, regarding it as a property of the divine alone. Koyré demonstrated that the birth of modern science was marked by the incorporation of infinity into its very structure. In the fourteenth century, Italian mathematicians accepted irrational numbers, each defined by an infinite sequence of digits. Cardinal Nicholas of Cusa (1401-1464) then introduced infinity into the intellectual conception of the world[1]. Subsequently, scientists attributed to themselves the capacity to manage infinity not through a spiritual discipline, but through technical procedures. The first physical theory, geometrical optics, included mathematical expressions in which points at infinity were treated on a par with ordinary points. Later, mathematicians achieved remarkable results through the manipulation of infinitesimals, conceived in the eighteenth century as the inverse of infinity[2]. Indeed, the mathematical theory of infinitesimals gave a powerful impulse to the entire edifice of science.

Koyré also reports that scientists long debated which notion of infinity was appropriate for science. Ultimately, the proponents of infinitesimals and actual infinity (AI) prevailed over the defenders of potential infinity (PI). Let us now consider some of the central categories introduced by the other great historian of physics, T. S. Kuhn (1969): scientific community, normal science, paradigm, structure, and scientific revolution. All of these notions implicitly refer to the concept of *organization*.

Aristotle (fourth century BCE) not only theorized about nature but also formulated the laws of reasoning (syllogisms) and, above all, a model of theoretical organizaion: a deductive system derived from a small set of axioms. This is Aristotle's *apodictic organization* (AO). Two decades later, Euclid's *Elements* provided the first fully developed scientific theory organized in this deductive manner. For nearly two millennia, Euclidean geometry served as the foundational model for scientific theory, and scholars—including theologians—regarded AO as the sole legitimate form of systematic organization.

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[1] (Cassirer 1927, chap. 1). A similar process also occurred in the history of architecture. For example, by constructing a water channel oriented toward the point on the horizon where the sun sets, architects established a line of continuity between earth and heaven. This innovation was called the "capture of infinity" (Benevolo 1994).

[2] The Catholic Church was concerned by this development and later requested—through Cardinal Antonelli—the opinion of the celebrated mathematician Giulio Carlo Fagnano on this revolutionary novelty (Drago 1983).

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In 1899, after rigorously axiomatizing Euclid's *Elements*, David Hilbert proposed that every scientific theory should be founded axiomatically. However, in 1931 Kurt Gödel proved that even elementary arithmetic cannot be fully axiomatized. In other words, an axiomatic organization cannot exhaust a scientific theory.

Several scholars (e.g., Beth, Hintikka) sought alternatives to AO, but unsuccesfully. An historical examination of the major scientific theories reveals that many of them were deliberately developed outside the axiomatic organization. Authors such as Lazare Carnot, Lavoisier, Sadi Carnot, Lobachevsky, Galois, Boole, Klein, Einstein, Brouwer, Dirac, Kolmogorov, and Markov rejected AO in favor of a different theoretical organization. The same holds for modern information theory and computer science.

Comparative analysis of these theories suggests a distinct form of theoretical organization (Drago 1991; 2012), whose main features are:

1. It is centered on a fundamental problem.
2. It seeks a novel scientific method to solve that problem.
3. It employs doubly negated propositions and *ad absurdum* arguments characteristic of intuitionist logic (according to which double negation does not imply affirmation).

This form is termed *problem-oriented organization* (PO). Examples of the problems of these teorie are the following ones:

1. Chemistry: How many elements of matter exist?
2. Thermodynamics: What is the maximum efficiency of engines?
3. Non-Euclidean geometry: How many parallel lines exist?
4. Information theory: What is information?
5. Computer theory: Which set of functions is computable?

PO theories rely on doubly negated propositions not equivalent to affirmative statements; that is, the law of double negation fails. The most prominent logic of this type is intuitionist logic. Examples include:

1. Chemistry (Lavoisier): "An element is what is not yet decomposed" (≠ "simple")[3].
2. Thermodynamics: the equivalence of heat and work ("it is not true that heat is not work").
3. Computer science: the equivalence of intuitive and formal computability[4].

The significance of PO organization is further confirmed by historical cases. Galileo, for instance, structured his final two books by alternating dialogues (Platonic style) with formal demonstrations (Aristotelian style), writing the former in 'vulgar' Italian and the latter in Latin. Later, in the *Encyclopédie*, d'Alembert argued that an empirical organization—an approximation of PO—was preferable in science to a purely rational (AO) one (d'Alembert 1787, p. 501). Lazare Carnot offered a lucid wordy exposition of this dichotomy in his works on mechanics (Carnot 1783, pp. 101-103; 1803, pp. xiii-xvii). Although neglected in the nineteenth century, the issue resurfaced in the twentieth century through scholars such as Łukasiewicz and Beth (Beth 1959, sect. 1.2).

In sum, an integrated interpretation of Koyré's and Kuhn's analyses, together with contributions by d'Alembert and Carnot, leads to the recognition of two foundational dichotomies of science: actual versus potential infinity (AI/PI) and axiomatic versus problem-oriented organization (AO/PO).

[3] To make easy to a reader the recognition of the negative words inside a proposition I underline them A point underline indicates each word which is equivalent to a doubly negated proposition.

[4] This dichotomy can also be identified by comparing the different notions of space found in various physical theories (Drago 1986). These differences reveal variations in meaning undergone by fundamental concepts under different types of theoretical organization. It is worth noting that modal expressions often replace or supplement doubly negated propositions, since modalities are more immediately intelligible and avoid the cumbersome repetition of two negations. However, a modal expression is logically equivalent to a doubly negated proposition by virtue of the S4 model of modal logic (Hughes and Cresswell 1996, p. 224), which is itself equivalent to intuitionist logic. For example, *"It is possible that …"* is equivalent to *"It is not true that it is not the case that ..."*

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2. TWO MAIN LINES OF HISTORICAL DEVELOPMENT. FOUR MODELS OF SCIENTIFIC THEORY

The historical development of classical physics is usually portrayed as dominated by the Newtonian paradigm (AI & AO), with thermodynamics relegated to a marginal and obscure role (PI & PO).

When thermodynamics is fully taken into account, however, scientific development appears fundamentally pluralistic. It is no accident that thermodynamics originated largely in the work of Sadi Carnot, son of Lazare Carnot. Its basic concepts—energy, work, the impossibility of perpetual motion, and mathematics without infinitesimals—differ radically from Newtonian mechanics and instead align closely with Lazare Carnot's mechanics; which was re-discovered two centuries later (Gillispie 1971; Drago 2004). (A similar divergence reappears in modern physics in the tension between special relativity and quantum mechanics, two theories that are prima facie incompatible.)

The two dichotomies AI/PI and AO/PO are independent and hence can be crossed together, yielding four theoretical models. Each scientific theory is characterized by its specific pair of choices and belongs to one of four quadrants: AI & AO, AI & PO, PI & AO, and PI & PO.

The most representative theories are respectively Newtonian mechanics, Lagrangian mechanics, Cartesian geometrical optics, and Lazare Carnot's mechanics (or Sadi Carnot's thermodynamics)[5].

This framework rejects the notion of science as a monolithic enterprise and instead presents it as a pluralistic theorization of the world.Differences in either mathematical foundations or theoretical organization produce profound historical and philosophical divergences[6].

This insight provides an operational definition of incommensurability, refining the notions intuitively proposed by Kuhn and Feyerabend. *Two theories are incommensurable if:*

1. *both are organized in a systematic way and make use of mathematics; and*
2. *they differ in at least one of the two foundational choices.*

This definition yields a precise and limited set of *incommensurable theories*; it includies the cases of Cartesian versus Newtonian optics, Newtonian mechanics versus thermodynamics, Newtonian mechanics versus special relativity, and Newtonian mechanics versus quantum mechanics.

In the history of Physics Newtonian mechanics achieved *paradigmatic dominance*, obscuring alternative theories and relegating them to the status of "phenomenological" or "immature" approaches[7]. In this sense, Newtonian mechanics exemplifies Kuhn's notion of a paradigm.

Finally, the concept of scientific revolution can be clarified: *a scientific revolution occurs when a new theory adopts foundational choices different from those of the dominant theory*. Examples include Newtonian mechanics (AI&AO) relative to geometrical optics (PI&AO), Carnot's thermodynamics (PI&PO) relative to Newtonian mechanics (AI&AO), and special relativity (PI&PO) relative to Newtonian mechanics (AI&AO).

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[5] It is also noteworthy that contemporary undergraduate curricula in physics and chemistry converge on identifying four fundamental theories corresponding to the four models of scientific theory defined by the two dichotomies (Drago 2004; Bauer and Drago 2005). Even in ethics, an influential scholar has identified four models of ethical reasoning (Sgreccia 1988, pp. 74–90). These ethical models can likewise be traced back to two basic dichotomies analogous to the scientific ones (Drago 2000).

[6] This difference can be shown to be equivalent to the distinction between classical and intuitionist logic, whose boundary is marked by the failure of the law of double negation. This distinction cannot be overcome through formal translation, which is necessarily partial—much like the Kolmogorov–Glivenko–Gödel translation between classical and intuitionist logic (Troelstra and van Dalen 1988, vol. I, p. 128).

[7] In *The Essential Tension* (Kuhn 1977), T. S. Kuhn implicitly acknowledged this feature when he emphasized the significance of "Baconian" theories in the history of science. More precisely, I have previously demonstrated the existence of two incommensurable traditions within classical mechanics itself: the alternative tradition initiated by Huygens and Leibniz and brought to completion by Lazare Carnot in 1783.

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3. VERIFYING THE TWO OPTIONS IN THE HISTORY OF WESTERN PHILOSOPHY: A RE-EVALUATION OF LEIBNIZ'S PHILOSOPHY OF SCIENCE

It is almost trivial to observe that Leibniz—by profession a jurist—was a great philosopher. It is equally obvious that he was a great scientist, having invented infinitesimal analysis, arguably the most fruitful mathematical theory in the history of modern science. A century ago, it was also recognized that Leibniz was a great logician. Taken together, this intellectual output far exceeds that of any other philosopher.

What has long hindered this full appraisal is Leibniz's notoriously difficult and seemingly obscure writings on mechanics. At first glance, Leibniz's so-called "reform of dynamics" appears to be an incomplete and unsuccessful attempt to construct an alternative to the triumphant Newtonian mechanics. Closer examination, however, reveals that these writings represent a remarkably astute initial formulation of a genuinely alternative mechanical framework[8]. This program was later substantiated by Lazare Carnot, who developed a complete theory of the impact of bodies and its mechanical consequences—features that differ radically from those of Newtonian mechanics (Drago 2001; Drago 2003).

The extraordinary scope of Leibniz's scientific achievements is difficult to explain without reference to a corresponding metaphysics of science. Indeed, it is possible to reconstruct his project of a *Scientia Generalis*, or "science of science" (Drago 1994). Within this framework, Leibniz clearly articulated both fundamental dichotomies. He famously referred to the "two labyrinths of human reason." The first is the labyrinth of freedom and necessity (or free will and law), which translate, in subjective terms, the dichotomy between axiomatic organization (AO) and problem-oriented organization (PO). The second labyrinth concerns the notion of infinity; Leibniz was fully aware of the dichotomy between actual infinity (AI) and potential infinity (PI).

Moreover, Leibniz emphasized two fundamental principles governing human reasoning: the principle of non-contradiction and the principle of sufficient reason. The former clearly governs axiomatic organization, while the latter governs problem-oriented organization, since it serves as a heuristic guide for resolving problems.

Unfortunately, many of Leibniz's most profound discoveries were recognized only much later. His philosophy was likewise undervalued, in part because Immanuel Kant believed he had exhausted the significance of Leibniz's two labyrinths by demonstrating through them his famous four antinomies leading to recognize the inaccessibility of the *noumenon*. In fact, Kant failed to recognize that the empiricists' arguments implicitly relied on intuitionist logic. As a result, Kant developed parallel lines of reasoning for each antinomy without producing genuine contradictions between their outcomes. His lasting merit lies in having reaffirmed the existence of a priori categories of knowledge; however, his system of categories does not include the two fundamental dichotomies discussed here.

Half a century ago, Lanza del Vasto—who earned his degree in philosophy at the University of Pisa in 1927 and was the sole Western disciple of Mahatma Gandhi (1901-1981)—proposed an almost complete interpretation of the foundations of knowledge. In a 1950 essay, he wrote:

The divine character of intelligence [of life] is marked by the notions of Infinity and Perfection [of the *organization*] .... (LdV 1951, p. 58; see also p. 447)

He expressed this idea even more clearly in 1954, describing the goal of a total conversion of knowledge:

And knowledge [of life], although fallen [owing to original sin], preserves the two signs of its divine dignity.

The "Cord of Truth" (to speak as the *Gita*) is stretched between two poles:

And the one is *Unity* [i.e. *organization*[9] achieving its best result].

The other is [the search for] *Infinity*.

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[8] A comprehensive review and reformulation of earlier studies on Leibniz's mechanics is provided in Duchesneau's monograph (1994).

[9] Unfortunately, Lanza del Vasto banished the term *organization* from his vocabulary, as it appeared to him to be irredeemably mechanistic.

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Every operation and in every affirmation of Knowledge is not without them. From them Knowledge derives its value. However, they are never objects of knowledge; the former is previous the known, whereas the latter remains beyond it. It cannot be said either of Unity or Infinity that they are known. (LdV 1993, p. 18; Infinity in Italics in the text)

In sum, since they precede knowledge, both Unity and Infinity function as its categories.

Fourteen years later, Lanza del Vasto restated the same insight with striking clarity:

What is true for Creation [which produces an *organization* from nothing] is also true for Infinity. Both are truths which impose themselves on reason, because the opposite relationship is impossible. They are not drawn from the senses, or from experience, or from reasoning, but they impose themselves on reason. However - and here begins the mystery - they are not possessed and understood by the understanding, but it is the understanding which is possessed and understood by them. (Lanza del Vasto 1968, p. 39).

4.THE SAME TWO DICHOTOMIES IN THEOLOGY

Over two millennia, Christian theology has oscillated between two approaches to the divine and its relationship with humanity: on the one hand, an intuitive and informal discourse on God, largely unconstrained by ordinary laws of reasoning; on the other, a formal deductive system derived from a small number of axioms—especially dogmas—according to an organizational model imported from philosophy and science. Let us introduce instead in an autonomous intellectual foundation paralleling the foundations of science.

Let us begin with the dichotomy concerning infinity. It is apparent that for millennia, theology has attributed actual infinity to God and potential infinity to human beings. That is the dichotomy on infinity.

A second fundamental dichotomy may be added. The enduring influence of Aristotle's philosophy over the past two millennia led theology to adopt axiomatic organization (AO) as its model of systematic reasoning, governed by classical logic. In this framework, theology advances deductively from axioms—in particular, dogmas—to derive all consequences, yielding a *scire per causas*. Thomas Aquinas's *Summa Theologiae* (1274) stands as the paradigmatic example of AO theology. Within this framework, God is characterized either through positive predicates (e.g., goodness, beauty, truth, love) or through negative ones (e.g., infinite, ineffable, invisible). From its inception, Christian theology thus developed both an affirmative and a negative theology.

At the same time, there exist theological approaches whose aim is to resolve a fundamental problem, thereby conforming to problem-oriented organization (PO). The most notable examples include the theologies of Augustine, Joachim of Fiore, and Bonaventure of Bagnoregio, all centered on the problem of personal and collective salvation. Nicholas of Cusa's theology, focused on the problem of how to name God adequately, represents a particularly formal instance of PO theology.

Cusanus reiterated Plato's distinction between the two faculties of human cognition: *dianoia*—which he called *ratio* or discursive reason—and *noesis*, which he termed *intellectus* or conjectural reason (Cusanus, *De Coniecturis*, 1442 in Hopkins 2001). By adopting a pluralistic view of rationality, both Plato and Cusanus privileged *noesis*. Plato developed a "dialectical" mode of reasoning whose precise logical structure still remains difficult to interpret. Consequently, when theology was grounded in *noesis*, it was often regarded as informal or merely practical.

However, it has recently been recognized that toward the end of his life Cusanus achieved a decisive logical result through the *intellectus*. He proposed for God the name *Non-Aliud* ("Not-Other")[10]. This

[10] (Cusanus, *De Non Aliud*, 1462, in Hopkins 2001). It is an unfortunate habit to confuse double negation with simple negation. For example, Willard V. O. Quine characterized Karl Popper's philosophy of science as a "negative epistemology" (Quine 1974, pp. 218–220). Yet Popper's fundamental claims are not negations but doubly negated propositions (DNPs), such as *"Science is fallible [owing to negative experiments]"* (Drago and Venezia 2007). Even in mathematical logic, the translation from classical logic into intuitionist logic—obtained by prefixing each predicate with two negations—is commonly referred to as a "negative translation" (Troelstra and van Dalen 1988, vol. I, p. 49). Worse still is a deeply rooted Anglo-Saxon linguistic prejudice according to which double negation is characteristic of

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designation is a double negation and is not equivalent to the affirmative term *idem* ("the same"). The law of double negation therefore fails, placing this reasoning within intuitionist logic.

Many theologians have proposed "the Other" as the most appropriate way to speak of God. Yet "Other" is a purely negative predicate, and within classical logic its distance from any positive attribute of God is insurmountable. The same applies, classically, to a double negation such as "Not-Other." Cusanus argued that philosophers who reflect on the "Other" intuitively want to approach double negation, yet inevitably fall short of its logical separation.

As Cusanus writes:

Outside this field negation *is* opposed to affirmation […] Therefore, seeking for God in other fields [from that of not-other], where [of course] He is not found, is an empty pursuit. For God is not someone who [as Other] is opposed to anything, since He is prior to all difference from opposites. Therefore, God is named *animal*, to which *not-animal* is opposed […] in a more imperfect way than He is named *Not-other*, to which neither other nor nothing is opposed. For Not-other also precedes and defines nothing, since nothing is not other than nothing. The divine Dionysius said, most subtly, that God is *all in all and nothing in nothing* (Cusanus, *De Possest*, in Hopkins 2001, chap. 14, p. 1403 no. 41).

Accordingly, this theological approach reasons through doubly negated propositions in order to achieve transcendence beyond material reality. Cusanus called it "eminential theology". He anticipated some laws and employed *ad absurdum* arguments which both are characteristic of intuitionist logic (Drago 2019). Actually, the problem-oriented organization can be identified throughout much of his work.

The crucial conclusion is that theology grounded in classical logic and theology grounded in intuitionist logic possess equal theoretical and scientific dignity. The latter, in particular, is not informal or irrational, but formally articulated through a distinct logical framework—the intuitionist logic of double negation. Historical ignorance of problem-oriented organization has obscured this alternative mode of theological reasoning.

In conclusion, theology, like science, is structured by the same two fundamental dichotomies.

5. THE FOUR MODELS OF THEOLOGY: REVOLUTIONS IN THEOLOGY

Once again, the paired choices arising from the two dichotomies generate four models of theory—here, of a theological nature[11]. It is noteworthy that contemporary approaches to theology commonly distinguish four types: systematic (or dogmatic) theology, historical theology, biblical theology, and practical (pastoral) theology (Bowald). These four types also correspond to the standard departmental divisions within faculties of theology.

Systematic theology appeals to dogmas whose propositions rely on notions of actual infinity (AI) and is organized according to axiomatic organization (AO). Historical theology refers to the same ideal notions (AI) but is structured as an inquiry into a fundamental problem—namely, the salvation of humankind—and therefore follows a problem-oriented organization (PO). Biblical theology is based on empirical facts (PI) as narrated in Scripture, understood as God's interventions in history, and is organized axiomatically (AO). Finally, practical or pastoral theology is grounded in personal and communal experience (PI) and aims to solve the problem of individual and collective salvation (PO). Thus, this fourfold division corresponds precisely to the four possible combinations of choices within the two theological dichotomies.

These four types of theology can also be correlated with the Wesleyan Quadrilateral, which identifies four principal sources for theological and doctrinal development: reason, tradition, Scripture, and Christian

"primitive" languages (Horn 2002, pp. 79ff). The opposite is true: all languages except English exploit the expressive richness of double negation.

[11] Some theologians (e.g., Scharlemann 1973) have compared theological approaches to scientific models, understanding a model as a partial theory that accounts for certain properties. This conception is narrower than the present one, in which a theory is defined by a pair of foundational choices. Other theologians have instead sought a model of theology broad enough to encompass all theological systems (e.g., Trokan 1997; Tanzella-Nitti 2007). In these cases, the notion of "model" is broader than that of model of theological theory, but only in a philosophical sense.

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experience. Each of these sources corresponds to one of the four combinations identified above and therefore to one of the four theological models.

Already the great theologian Hans Küng emphasized the importance of the notion of a paradigm for understanding theological history (Küng 1991). He re-constructed the biblical history and the history of the history of the Christianity in terms of an intuitive notion of paradigm. Through the four models of theological theory it is easy to define in exact terms a theological paradigm as a phenomenon generated by the intellectual dominance of a representative theology on all others. The theology of Thomas Aquinas, for example, became so influential that it was regarded as *philosophia perennis*.

It is important to note that also theology, like science, has undergone revolutions—each defined by the emergence of a theory based on a new combination of choices, at least one of which differs from those of the dominant paradigm. The first major revolution was Augustine's foundation of pastoral theology, grounded in an intuitive conception of human existence and characterized by the choices PI (the search for the self) and PO (the problem of salvation). Later, Thomas Aquinas initiated another revolution by grounding theology in the alternative and well-defined choices of AI (dogmas, which at his times were well-defined) and AO (deductive organization).

The Protestant Reformation constituted a further revolution by proposing, in contrast to the Thomistic paradigm, the free interpretation (PI) of Scripture narrating God's intervention in the history (AO). In the twentieth century, the Second Vatican Council introduced another revolution by privileging pastoral theology based on PI and PO. Importantly, these choices did not exclude other theological models; rather, it inaugurated a *de facto* pluralism of models within Catholic theology.

Liberation theology was likewise revolutionary, insofar as it replaced the traditional choices of dogmatic theology (AI and AO) with a strong emphasis on the problem how overcoming capitalism PO—actually in that it was supported by social theories of socialist revolution—and with an appeal to AI insofar as it sanctified all means deemed necessary to achieve social change, including, in some interpretations, violence.

6. A CONSEQUENCE: A NEW INTERPRETATION OF CHRISTIAN REVELATION IN HISTORICAL AND PASTORAL THEOLOGIES MAKING USE OF INTUITIONIST LOGIC

Recognizing the precise formal role of intuitionist logic in historical and pastoral theologies leads to several striking consequences.

(*i*) Whereas classical logic inevitably represents the dual nature of Christ as an oxymoron—simultaneously God = man notwithstanding clearly God ≠ man—intuitionist logic expresses this doctrine through a straightforward doubly negated proposition (DNP): *"*It is not true that Christ is not at the same time true man and true God.*"* The corresponding affirmative proposition, which would equate the two natures, is trivially false. Significantly, the Council of Chalcedon (451 CE) defined Christ's dual nature through four adverbs, all of which are exactly double negations: *"*without change and without confusion," "without separation and without division." This provides strong historical evidence for the implicit use of intuitionist logic in theology.

(*ii*) In characterizing the economic Trinity—that is, God as Tri-Unity—classical logic leads to paradoxical formulations such as "three = one." By contrast, intuitionist logic resolves the difficulty by characterizing the internal relations among the three divine Persons as "not other," for example: *"*The Father is not other than the Holy Spirit.*"*

(iii) In human history, Christ's mission included leading humanity to accept social commandments that are, in fact, DNPs of intuitionist logic (e.g., *"*Do not kill*"*), even when prevailing social structures force contrary behavior. For believers, this implies a struggle against structural sin and unjust powers—those very

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powers offered by Satan in the second temptation of Jesus (Mt 4:8–10)[12]. Christ rejected them by affirming the absolute validity of the social commandments found in the second table of the Law.

(*iv*) Jesus' central teachings also exhibit an intuitionist logical structure, as they are formulated through DNPs that have often been misinterpreted as affirmative propositions: *"*"Do not resist evil [by means of evil actions]"; "Love [whoever actually is not] an enemy"; "Love your neighbor as [= *neither more nor less than*] yourself".

From a logical perspective, Jesus introduced into human life a mode of reasoning radically different from both the ancient logic of obedience to absolute commands imposed by a separate authority and the logic of violent conflict; both are characteristic of classical thinking. He positioned himself as a bridge overcoming the *spiritus divisionis* that governs both obedience and violence. By introducing love that transcends self-interest—both in the relationship between humanity and God and among human beings themselves—he sought a third possibility beyond the binary opposition of good and evil, thereby employing a fundamentally different logic.

In summary, by operating as absolute Oneness, God's external action fulfils through classical logic while intuitionist logic governs both the internal relations within God and the human approaching to God intended as Not-Other, the incarnation of the Son, and the teachings of Christ, all of which are expressed through DNPs. Thus, by introducing an additional kind of logic into religious thought, Christian revelation may also be understood as a revelation of a logical nature[13].

7. ANOTHER CONSEQUENCE: THE HISTORICAL CHAIN OF RELIGIOUS EFFORTS TOWARD HUMAN TRANSCENDENCE

The following brief account illustrates—through doubly negated propositions of intuitionist logic—how the historical contributions of the world's great religions have cooperated in humanity's spiritual development. This path, which began millennia ago, is marked not by commands but by counsels. Its culmination is represented by Hindu Gandhi, who replaced servile obedience with brotherly love so much to admirably practice the love for enemies indicated by Christ. This love must not be reduced to mere goodwill or vague benevolence; it must instead be expressed through double negations that reveal the depth of the required effort.

Let us recall that Lanza del Vasto eloquently contrasted the fundamental attitudes of two major, ancient religions:

Whereas the Hindu says Yes to everything, conserves and accumulates and adapts to contrasts like nature itself, Buddha says No to Yes and No to No, and no to the struggle of Yes and No. But his denials are not negative, they transcend. And the negation of the negation does not imply a new affirmation: it leads to a suspension favorable to "crossing the Threshold" (Lanza del Vasto1954, p. 124).

In this sense the two religions represent the polarities of all religious thought.

Three thousand years ago, Judaism received from the Eternal Father an invitation to transcend spontaneous life through counsels expressed as DNPs: *Thou shalt not kill; Thou shalt not commit adultery; Thou shalt not steal; Thou shalt not bear false witness against thy neighbor.* These propositions were interpreted as severe prohibitions, and the first was made bearable by restricting its scope to proximate life. Islam adopted a similar limitation.

Christ, however, taught that the first social commandment must extend to even social conflicts, thereby transforming obedience into universal love—even love of enemies. For centuries, Christians reduced this

[12] It is also worth noting that Jesus' rejection of the three temptations is expressed through doubly negated propositions. Two responses explicitly involve the term *"*only*"* (i.e., not otherwise), while in the third he states: *"*Do not put the Lord your God to the test*."*

[13] Finally, I do not claim that Christian Revelation is *merely* a matter of logic, but that it is *primarily* a matter of logic. For example, authentic love follows logic, since without logic love risks becoming a futile dispersion. As Nicholas of Cusa—echoing Augustine—states: *"*Love follows knowledge and the thing known, for nothing unknown is loved*"* (Cusanus: *Idiota de Mente*, 1459, in Hopkins 2001, p. 845, n. 9).

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teaching to sentiment or goodwill, while social conflicts escalated into the absurdities of world wars and nuclear weapons.

Nevertheless, religions have long taught the Golden Rule. Almost all its formulations are 'negative', or better genuinely doubly negated, such as: *"Do not do to others what you do not want done to you."* This formulation is operational and objective, whereas positive versions remain indeterminate expressions of goodwill. Brotherly love thus possesses a specific logic—not the classical Yes/No logic of barracks, but the logic of double negation.

A century ago, Gandhi taught the transcendence of all social conflict through the doubly negated principle of non-violence, thereby summarizing all four social counsels. In doing so, he re-discovered transcendence through a concept valid across all religions: love expressed through nonviolent action in social life and even in war (Lanza del Vasto 1978, p. 164). Notice that applying non-violence within conflict requires an additional act of faith in the goodness of humanity and/or in God.

Thus, the historical chain of religious efforts to teach transcendence has reached its culmination. At present time humanity has entered an age of maturity characterized by awareness of the transcendent power of religion. Today, within any religion, individuals can understand and enact this power insofar as they choose non-violence during conflict with renewed faith.

CONCLUSION

The intensive integration of scientific thinking into intellectual life inaugurated a post-metaphysical age characterized by the rejection of metaphysics. Yet certain implicit metaphysical assumptions have remained operative. It is therefore necessary to identify the metaphysics underlying contemporary scientific development—namely, the basic dichotomies discussed above which actually constitute the (least) metaphysics of science itself. This metaphysics introduces an essential pluralism. Drawing lessons from the plurality of scientific theories that formally organize our knowledge of reality, this work proposes a new systematic organization of theology.

In particular, even pastoral theology—once considered merely practical—can be treated with the same formal rigor as deductive theology. Rather, it leads to discover new aspect of the theological discourse, even new version of basic Christian dogmas which surprisingly are more consistent than past versions.

In an age of pluralism in both science and theology, science should no longer dismiss theological thinking as incapable of high-level formalization, because all four kinds of theology have a scientific dignity, at least inside logic; nor should faith seek from science a single definitive answer to ultimate questions; scientific solutions to theoretical problems are inherently fourfold, and they compel theologians to make ethical choices illuminated by religious principles. Rather, theology must critically assess the fourfold development of science and guide individuals regarding the paradigmatic commitments involved. Ultimately, each believer must decide, in light of his religious tenets, which model of science and theology to embrace and promote.

Inside this pluralism, the immense expansion of contemporary theology has made increasingly difficult a certain orientation. The two dichotomies function as a compass for navigating theological thought.

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