Mathematics as the Language of Faith

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http://doi.org/10.33209/2519-4348-2707-9627-2021-9-104

The interdisciplinary marriage of Mathematics with Theology offers a great insight into both inconceivable numerical truths (such as infinity) that God's personal relation helps us realise and God's unknown nature that is depicted schematically within His creation. As the philosopher, Plato has said "Great God is always using geometry" wanting to depict the importance of geometry in the understanding of the Cosmos and to describe God's features. This phrase is used as a mnemonic for Pi number (3,14159) since the letters of each word give the aforementioned number (Αεί=3 ο=1 Θεός=4 ο=1 μέγας=5 γεωμετρεί=9). Many ancient Greek philosophers share this idea such as Pythagoras, Heraclitus, Democritus, Thalis and others. This passion has passed to me spiritually rather than biologically and will be depicted in this paper despite the difficulties met during the research and the writing of this dissertation. More specifically, the access to the library was limited, not to say forbidden due to the pandemic and the lockdowns that followed. As a result, finding the right books, and the necessary information for my paper was challenging. However, the product seems satisfying and more changes are to come when the whole pandemic settles down. The main difficulty of this paper lies in the fact that the writer needs to be objective and equally distanced from either Science. There is a wide variety of mistakes that could occur. One could be the polarised support and preference of one Science over the other. Another one could be the alteration of mathematical facts in order to achieve an analogy between God and Mathematics. Last but not least, it could also be possible to "downgrade God to earth's level" so one could easily define mathematics as something Divine or even God's language, leading to a pantheistic view of the Cosmos and the world, something that is not compatible with Orthodox Theology and its doctrines. In the introduction, I will try to smoothly induct you to the topic and give you a taste of this proposed interdisciplinary combination without, of course, depleting it.
Ключові слова: *Science, God, Mathematics, Orthodox Theology, Greek philosophers.*

Introduction. The reasons lying behind the hypothetic rivalry and discrepancy between Science and Religion are mostly historical-sociological in the context of

Western modernity[1]. This rivalry is the aftermath of the abyssal gap among the theoretical cognitive principles of the Western Scholastic Theology and the epistemology of Newtonian Physics. The authoritarian Roman-Catholic ecclesiastical policy fortified this philosophical opposition against free scientific research and unrestrained critical thinking. The reality in the context of Eastern (Orthodox) Theology was utterly different, as the standards and the criteria were completely distinct. It is commonly known that in the Byzantine culture, the double methodology of logic and spiritual energy was applied[2]. More specifically, there was a distinction between logical energy, the energy we use to feel and sense the world which leads to Science, and spiritual energy, the one that helps us perceive and feel God and His Essence by which we reach Deification (Theosis). This resulted in the immediate differentiation of Science and metaphysics with Theology, in contrast with the West where metaphysics was replaced with Theology. Theology was thought to be the crowning science (the same applies to Physics today).

However, except for the historical factors that are taken into consideration but they are not analysed here, this paper's primary purpose is to make a systematic and philosophical approach and investigation of the epistemological relation between Eastern Theology and Mathematics. Mathematics includes the study of topics such as quantity, space, structure, and variation[3]. Theology[4], on the other hand, studies logically and systematically God and His relationship with the world and it is debating the existence, nature, and features of God, His rule and principles, the doctrines that preserve the truth and the worship habits that are necessary for the faithful's life. It is the word of the finite man about the infinite God. In this paper, we will try to approach both in attempting to understand more about the engineer by examining his machine and analogising the Cosmos characteristics to God's qualities. Mathematics will be used as a mediating principle between Human and God. The tools needed in order to make this philosophical and theological approach of Religion is Apophatic and Cataphatic Theology, which will be further analysed later on.

A necessary condition is to set ontologically apart the Created from the Uncreated. The created world does not have the same way of living as God so that we might find schematic similarities. Still, it would be ontologically dangerous and theologically mistaken to identify them with God. We have to bear in mind

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1 *P. Harrison,* The Territories of Science and Religion, University of Chicago Press, 2015, pp. 170-182.

2 *N. Matsoukas,* History of Philosophy, Pub. Kyriakides, Thessaloniki 2016, p. 434.

3 Mura Roberta, Images of Mathematics Held by University Teachers of Mathematical Sciences, 1993, p. 25.

4 *K. Skouteris,* The Meaning of the Terms "Theology", "to Theologize" and "Theologian" in the Teaching of the Greek Fathers up to and Including the Cappadocians, Athens 1972, pp. 187-9.

that this interdisciplinary approach, not to say transdisciplinary, considers this reality as single, the one that is knowledgeable and we all experience. Thus, the immediate need for interdisciplinary dialogue and alternative approaches arises in order to understand the complexity and intricacy of life and its aliquot aspects.

1 APOPHATIC AND CATAPHATIC THEOLOGY

In the structure of theological study and research, the approach for knowledge of God and more specifically about the perception of the divine nature which is attempted to be schematised by man[5], two roads are mostly followed. The first is widely known as the road of affirmation *(Κατάφασις)*, and it is expressed with the schematisation of cataphatic theology through cataphatic figures of speech. In contrast, the second road is presented with logical tropes of negation (>Απόφημι= Reject), and it is characterised as apophatic theology[6]. Through physical and divine revelation (such as Holy Bible, Patristic tradition[7]), man tries to elevate himself to the revelated divine supernatural truth by accrediting features to God with either an apophatic character (e.g. unperceivable) or a cataphatic one (e.g. almighty).

Basically, through cataphatic theological study (via affirmationis), we ascribe to God every perfection in the utmost degree and the highest cause we perceive concerning this world. In cataphatic theology two subtle categories can be found: a) The road of ascendance (via eminentiae) which presents the Divine as superior to every other created being and b) the route of causation (via causalitatis) which presents God as the creating and essential cause of everything. Thus, cataphatic theology refers to the approachable, perceivable and known view of God[8].

In contrast with cataphatic theology, apophatic theology through the method of negation (via negationis), rejects to accredit any imperfection of the world to God. The reality of God (ad intra) cannot be depleted in logical expressions and analyses because It is unperceivable. Apophatic theology is *"the*

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5 *G. Theodouris,* Divine and human wisdom according to the Patristic Tradition of the Orthodox Church, Pub. Kyromanos, 1998, p. 17.

6 *N. Matsoukas,* Dogmatic and Symbolic Theology A', Thessaloniki 2000, pp. 203-210.

7 *N. Xexakis,* Orthodox Dogmatics, Athens 2006, pp. 87-113.

8 *Sp. D. Kyriazopoulou,* Prolegomena in the question about God, Pub. Gregory, Athens 2000, pp. 664-667.

exceedance of the demands for objective delineation of truth"[9]. The opinion that God's existence is not dependent on the potential logical backup or denial is not considered irrationalism or misunderstanding of the canons of logic but as a genuine declaration of the restriction in formulating knowledge. Due to this gap between Created and Uncreated, apophatic theology is presented superior to cataphatic. It succeeds in elevating the unapproachable, unperceivable, and unknown view of God, highlighting the substance of the finite dynamic of the created human mind after the Fall.

In every case, either referring to God epistemologically through apophatic or cataphatic theology, it is needed to be clarified that God is and remains beyond every figure of speech. With these theological propositions as a fact, we can define the boundaries of human knowledge in two ways. The first is natural and the second supernatural. In both cases, God is revealed to Man. The divine revelation is considered as the free divine energy, through which the Holy Trinity divulges Its existence, Its energies, Its eternal will, and offers the salvation of man. Basically, God gives the opportunity for man to meet what is impossible to himself. In theology and philosophy, respectively, ontology and epistemology are communicating vessels. Ontology defines cognitive methodology and epistemology defines the ontology.

As a result of the aforementioned gap between Created and Uncreated, the dominant cosmological view in Eastern Theology is the creation ex non esse, compared to the Western ex nihilo creation. As the Greek philosopher states: "Ex nihilo nihil fit" in the context of Emanationism, Orthodox Theology supports that nothing comes from nothing and that God has always been, resulting in the creation of God's will while highlighting the substantial differentiation between Created and Uncreated. In other words, God products the *"esse"* of the world through His energies and not his substance, the basis for the substantial variation. In this ontological context, God is perceived as the uncaused cause of this caused world. The ontological features that follow God's way of being are autonomy, autarky, completeness compared to the ones from the Created world being fluidity, perishing, and vulnerability. God is entirely uninvolved based on His substance but totally perceivable based on His action of His energies inside the world and history.

Apophaticism was the core of Christian Theology in the early years. As it is stated in the bible *"No one has ever seen God"*[10] and it is further expanded from Gregory the Theologian: «*Θεόν νοήσαι αδύνατον, φράσαι αδυνατώτερον*»[11]. God

[9] *Ch. Yannaras,* Heidegger and Dionysius the Areopagite, Pub. Domos, Athens, p. 71.

[10] ***Holy Bible,*** New King James Version, John's Gospel 1:18.

[11] *Gregory of Nazianzus,* De theologia -Λόγος κη΄ (Θεολογικός δεύτερος), δ΄ (4), PG 36, 29C.

cannot be approached as a physical number, as a logical category, or a mathematical thing where the sterilised and one-sided rational approach defines and restricts in logical schematics. The term God is a point where the signified is not expressed, and the signifier is not noticed empirically and immediately. Only signifieds such as first cause, supreme being, etc. define approximately the Uncreated reality[12].

It needs to be clarified that Negative Theology and Affirmative Theology are not something semantically different that belongs to the Scholastic Theology and that they are not equalised with Cataphatic and Apophatic Theology. What is different is the context of Scholastic theology, where strict rationalism and intellectual reduction were dominant. In contrast, in Eastern Theology, there is the realism of the experience of the energies and live practice of the relation of the substances with The Substances. This epistemological tradition of the East is opposite to the one of the West. While the Apophatic Theology held an epistemological undefinition and hesitation, the Scholastic Theology of the West supported an unbendable rationalism and held a linguistic-centric position. For instance, Thomas Aquinas, the great Theologian, and philosopher of Scholasticism, in his famous Work Summa Theologica formulates the theological rationale collective methodology which leads through dialect to the doctrine of Filioque. However, Anselm of Canterbury was the first to suggest the ontological argument of God's existence with his evidence being based on the mathematical method of *"reduction to the impossible"*. Scholasticism is the ground where the rivalry between Science and Religion grew. Succeeding philosophers will later rephrase the argument (Descartes, Spinoza, Gödel) or will try to disprove it (Nietzsche, Hume). The apophatic East never came up against Science and was always in dialectic relation with it. Of course, there are some shady exceptions by the same people who fought against the Fathers of our Church. But it is no coincidence that botany, zoology, geography, alchemy, chemistry (e.g. Greek fire), astronomy, and medicine rose in the Byzantine empire. There were famous figures such as Michael Psellos, Oreivastios, Aetius, Galenos, Alexander the Tralline, Simeon Sith, Demetrios Pagomenos, and others who rose scientifically and did not meet the fate of Galileo or Bruno. The disproven case of Hypatia is not valid since she was always parallelised with Saint Catherine in the Church community and probably was killed by some fanatics[13]. In this paper, both apophatic and cataphatic theology will be used respectively, where needed, justifying this sort of analysis.

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[12] *Ch. Yannaras,* Stated and unstated: Linguistic boundaries of metaphysical realism, Pub. Ikaros, Athens, p. 55.

[13] For more details *Rev. Georgios Metalinos* has given a speech on this topic where he included the primary source.

2. MODELS OF APPROACH TO THE RELATIONSHIP BETWEEN SCIENCE AND CHRISTIAN THEOLOGY

In the last chapter, we analysed the tools Theology uses to approach God through the acknowledgeable world. In this chapter, we are going to categorise the methods, both cognitive and physical sciences use to verify theological statements and to connect with Theology and define which ones we are going to use. The configuration of an interweaving or intercorrelation model of Science with theology depends on the way we perceive those two epistemological approaches. Our initial propositions relating to the nature of Christian faith and Science crucially affect our views on the ability and the level of this integration. A wide variety of theoretical approaches are configured which appertain to the correlation between theology and Science.

By first glance, it looks like we descry two extreme fundamentalistic tendencies. On one hand, there is the radical attachment to the principles and practices of the tradition of the Church (mostly in the western world, now appears in the East). On the other hand, there is the radical attachment to the principles of the rational, scientific, empirical-positivistic methodology. The combination of these extreme tendencies leads to the configuration of more dialectic approaches. In the next paragraphs, an approach will be conducted considering those integration models between Science and religion.

I. *Conflict, aggressive juxtaposition, mutual dispute (Model of conflict, Barbour 2000):* Science and religion approach the same reality starting from a different point and using different methods. The interpretations which occur are heterogeneous and exclude one another. For instance, in the fundamentalistic protestant world, the obsession to tradition and to by letter interpretation of the Holy Bible thrives. Moreover, the scientism, the classic rational view of scientific materialism which accepts as truth only something that can be researched with the methods of systematic observation and experimental verification

In this model, the theological convictions and the scientific theories are put on a pedestal. The distinction between spiritual validation and clarification of the validate boundaries of knowledge from scientific research. The supporters of this model have not indulged in either side's truths, and they are not equipped with an epistemological prospect. This arrogant authoritarian attitude is not the fruit of intellectual vigilance or scientific training but semi-learning and egocentrism. Behind

scientific or religious authoritarianism lies our need to become strong by participating and belonging in a space of power.

Let us not forget, of course, that in the most authentic versions of their realisation, the Christian is above all a lover of humiliation and the scientific hunter of doubt.

II. *Independent approaches (Separate fields, Barbour 2000 | Compartmentalism, Wong 1999):* According to this model, the physical dimension is parallel and supplementary to its spiritual one. Science and religion describe various parts of life with different terms. They basically promote independent, parallel and complementary cognitive approaches that do not interact with each other. Science and theology have developed two separate, conceptual and semantic codes, two foreign languages of understanding and interpreting reality. As Albert Einstein has said (here paraphrased): "Science can only ascertain what it is, but not what it should be, and beyond its jurisdiction, evaluative judgments of all kinds are still necessary. On the other hand, religion has to do with the evaluations of human thought and action, but it cannot reasonably speak of facts and relations between facts".

III. *Dialogue, philosophical propositions and shared methodologies (Model of dialogue, Barbour 2000):* The acceptance of cognitive relativity and uncertainty on the part of Science and the non-fanatical adherence to religious beliefs create the conditions for a creative exchange of views. Researchers have the opportunity to hear and respect diversity. Both sides seek, recognise, respect and accept the nuggets of truth contained in the other view. They respect and accept the truth even if it belongs to «the other camp» and cultivates a peer dialogue without compromising the autonomy and integrity of each space.

Those two fields share more than meets the eye. Concepts and perceptions of religious tradition can be related to concepts and theories of Science without seeking to assimilate or omit the emphasis on diversity. In this case, philosophy (epistemology - ethics) is the natural link between Science and theology.

IV. *Interweaving, co-structure, composition (Integration model, Barbour 2000):* The interaction of theology and Science renews, restructures and redefines the idiosyncrasy of both starting, original worldview approaches. Both Science and theology are looking for new, dynamic, comprehensive visions so that they can grasp the possible truths supported by the other side. Barbour distinguishes three trends in the field of integration model: a: Natural Theology (the project of arguing for the existence of God based on observed natural facts), b: Theology of

nature (the theology of nature follows the opposite path from natural theology. According to this perspective, Science is reduced to a criterion of the truth of religious beliefs.), c: Systematic interdependence (the boundaries that separate the theological from the scientific worldview are broken and an attempt is made to establish a single worldview attitude towards the physical - objective and the spiritual dimension).

V. *Direct interaction view (Interactionism, Wong 1999):* Science and religion interact directly approaching the same reality and come to agreement and disagreement in various ways. Sometimes a scientific point of view is in logical contradiction with a theological point of view. Some others, scientific theories directly or indirectly support the principles of Theology. Proposals, theories, or methodologies of Science can be independent of dogmatic beliefs of theology so that neither field of study offers support to the other nor does one area of study put obstacles in the other.

These are the five different models (cognitive methods) of approach between those two fields. Some characteristics must distinguish a model of correlation of Science and Theology with a breadth and high functionality. However, this topic is not going to be advanced any further. The whole point was to define the models and name the one that will be used in this practical research paper. As it has been mentioned earlier, we will use apophatic and cataphatic theology to approach God from nature.

On the other hand, we are going to use the direct interaction view to parallel, compare and try to define in the context of the Economical Trinity (if this were done in the Immanent Trinity, we would eradicate theology). The reason which justifies the choice that has been made will be answered by citing J. P. Moreland's words (slightly paraphrased):

> *"An eclectic model of integration is the most appropriate. Recognises that sometimes the two fields of knowledge deal with two different fields, sometimes they are non-interactive approaches to the same field that provide answers to different kinds of questions, sometimes theology provides an appropriate worldview consistent with the necessary philosophical premise of Science, and sometimes they are interactive, competitive approaches to natural phenomena"*[14].

The aforementioned methodological tools will be applied to the concepts that concern this dissertation in the next chapter.

[14] *J.P. Moreland,* Scaling the Secular City: A defense of Christianity, Baker Academic, 1987, p. 164.

3. INCOMPLETENESS THEOREMS AND FAITH

Before the analysis is conducted, it is crucial to make a historical retrospection. There has always been a rivalry over the crowning science, the Science of the sciences. More specifically, the title was first given to Philosophy which was the mother of all sciences and even Physics was named and considered as natural Philosophy. When Christianity was finally established, theology then received the crown of the Science of the sciences because it could explain the whole world and its purpose. Then the medieval Roman Catholic Church with its unreasonable and authoritarian control over contrasting sciences (e.g. Bruno, Galileo) weakened Theology which was later thrown out of the equation with Renaissance. Many scientists consider this damage as unable to heal, and now the medieval period is known as the dark ages without even taking into consideration the East. Then Physics became the new declared king because it was considered that had solved all the problems by the end of the 19th century. Newton started this rise by downgrading the sky to earth. Until then, the skies belonged to Theology and the Roman Catholic Church. Laplace believed he could explain everything that happened in this world, and when Napoleon asked about God, he answered that he does not need this proposition. Later on, Kelvin used to drive away students who wanted to study Physics because it was only a matter of time, according to him, before those two last loose ends were settled for good. These two were the two most important ones, the constant of light speed and ultraviolet catastrophe. The *"tower of Babel"* fell when these two loose ends started the general and special theory of relativity (the first one) and quantum mechanics (the second one), destroying the deterministic and tied view of classical mechanics. For 100 years now, Physics tries to explain the double-slit experiment. Not to mention that if the Theory of Chaos were found earlier, he would have been shocked and his whole worldview collapsed.

All these bring us to the last successor of the crown, Mathematics. In 1900, mathematicians thought that now their time has come. It was the Science used by all the others, and it was the language of the Universe. Russel tried to prove everything from zero, and it took him 360 pages to logically prove that 1+1=2. Hilbert stated that we have to know and we can learn everything through mathematics and we will do it (unfortunately he did not meet Einstein to learn about field equations). In this rivalry, a youngster called Gödel, who had just graduated, started looking for a mathematical proof of God's existence, as he was himself a believer. As it seems, he changed everything with the incompleteness theorem, and we will explain how later on. Now the seat remains free until today with physics trying to reclaim it with the theory of everything. Unfortunately,

now Theology even struggles to keep its place in the scientific field, and it is even embedded with Philosophy, for it to stay alive.

In this context, Gödel puts forward the incompleteness theorems. In mathematical logic, the incompleteness theorems of Gödel, which were proven by Kurt Gödel in 1931, are two theorems which indicate natural restrictions to every axiomatic (typical) system of Mathematics with arithmetic. This theorem is really important for the philosophy of Mathematics. They are generally interpreted as proof that Hilbert's program is impossible to find a complete and consistent set of axioms for all Mathematics, thus giving a negative answer to Hilbert's second problem[15].

In mathematical logic, a theory is a set of sentences expressed in a standard language. Some statements in theory (axioms) are included without proof, and others (theorems) are included because they are inferred from axioms. As a result of the statements of a formal theory being symbolically written, it is possible to verify that a formal proof from a finite set of axioms is valid. This work, known as automated proof verification, is closely related to automated proof theorems. Nevertheless, many theories that interest us involve an infinite number of axioms. In order to verify a formal proof when the set of axioms is infinite, it must be possible to determine whether a statement which is considered to be an axiom is indeed an axiom. A typical theory is said to be effectively generated if the set of its axioms is retrospectively enumerable. In other words, there is a computer program that could list all the axioms of the theory without including in the list any statement that is not an axiom.

When choosing from a set of axioms, the main criteria is to find those with the best possible results. A complete set of axioms is the one that can be proven by axioms for every statement in the language of axioms (either positive or negative). A group of axioms is consistent if there is no statement that axioms can prove even it and its negation. Gödel's incompleteness theorems show that in some instances it is not possible to have an efficiently produced, complete and consistent theory altogether.

This theory literally has changed the view of Mathematics from Science to a set of axioms (beliefs). Now, knowledge does not come from the objective observation and experimentation of the universal world but by subjectively believing the same set of ideas about the world-leading, for example, to many geometries (Euclidean, Hyperbolic, Elliptic). Now in order to achieve knowledge, you need to develop faith towards a set of beliefs (axioms in this case) and the same methodology applies to ideologies and religions.

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[15] *K. Gödel,* Incompleteness theorem (Translated by Yannis Voulioυris), Pub. Dromon, Athens 2019.

The patristic tradition of Orthodoxy has always talked about the correct way of gaining knowledge about God. At first, you need faith. But what is basically their difference? While knowledge is the appearance of beings, faith is the fulfilment of due. (Knowledge is the relation of consciousness with the being, with the place, with the given. Faith is the relation of consciousness with the being, with the due, with the whole, with the transcendent, with God)[16]. Fulfilment of due is not done only by intellectually assenting these propositions but by actually assenting them. Then you gain experience of God through His uncreated energies. Afterwards, you gain knowledge that is logical but not rationalistic, leading to the last part, which is again faith. You end up where you started but also completely changed. You end up believing again. After all, you cannot rationally explain God's revelation because you experience it with your mind and heart and not logic. Even though you will have gained a deep insight into God's features, you will not get to know him and thus rationally explain him. Is this whole procedure unnecessary? Of course not, as it is life-changing because it prepares you for the afterlife where you will have the view of God and the presence of His light. To be part of it, you need to accept God's fire, His full potential with Him by your side, so you do not end up eternally burnt. If someone is part of God, he lives the delight of Paradise, but if not then he experiences the affliction of Hell[17] (as a way of living and not a place) and not eternally punished in a moral context according to the teachings of the Catholic Church. This is the way our Church Fathers learnt the truth with their mind and heart and tried to put it to words with their logic.

The same methodology is not applied to mathematics as you start by accepting a set of axioms (something that commends itself as evident) and you do not prove it eventually. When you begin to experiment with those set of beliefs, you experience the results and the outcomes of the experiment and yet, you gain knowledge of some behaviours in nature. Still, in Mathematics you do not prove your axiom. For example, in contrast with Orthodox Theology where you get the *"axiom"* of faith proven, in Geometry you do not prove the axiom of *"point"*; you take it for granted. Ultimately though, you return to square one because the knowledge you have gained is based on partial data, so you just got a taste of reality without depleting it. The same applies to Western Theology as Barlaam himself considered God an axiom like the ones we find in Euclidean Geometry, and we get to know him through natural theology. In contrast, Palamas supports that

[16] *K. Papapetrou,* Accesses B' Matters of apologetic theology and philosophical review of our times, Athens 2018, p.174.

[17] *John of Damascus,* Contra Manichaeos, 44, KOTTER IV, p. 376 (PG 94, 1548A). Basilius Caesariensis, Quod deus non est auctor malorum, PG 31, 345A.

the axiom is no sophistry nor unproved assumption but can be certified. The axiom *"God exists"* can be approached by man but not with mere logic.

A possible parallelisation to God could be that you get to know His energies but not his nature or essence[18]. Analogically, you have a personal understanding of the world and its laws, but you do not precisely know what the world is. You see the microeconomy of either the world or God, but you do not have the mental capacity to understand how the macroeconomy works. We need, however, to differentiate God's revelation *(αποκάλυψη)* with human's discovery *(ανακάλυψη)*. So even though Theology is challenged daily in the academic world, as a matter of belief rather than a science, even though it is humanitarian and not positive Science, as it was said earlier that Mathematics or Physics (theory of relativity-spectator) could be considered that depend on faith as well. That is not necessarily bad because they have helped us evolve as a society with their findings even though they do not express and contain the truth. Still, they bring us a step closer to it. God's revelation and our personal relationship, on the other hand, has given us mysteries. These texts help us save ourselves and reduce the distance between God and us but unfortunately, because of the Fall, most of us have to wait until the afterlife for this relationship to be fully restored. The demonisation of Science in the medieval era has led to the consideration of faith as evil incarnated. We have to understand that life is not just logical thoughts of the mind like the rationalistic view suggests, but it is also experience.

Furthermore, we could parallel the second theorem, which indicates that the system cannot basically prove its fallacy or itself with the world. Humans, as part of the created world, cannot explain, define and establish its autonomy. Still, with the help of the uncreated God (who is out of the "system") and His revelation, we are given the answers and the tools to do so as far as we can thus proving both the axiom and the fallacy of our perception of the Universe.

Many scientists like Nikos Kastanis state the argument he proposes in his article "About Byzantine and Post-Byzantine mathematical education of the 15th century" that claims that Hesychasm shows an aversion to logic to differentiate themselves from Scholastics. This view, he adds, would/did discourage the study of mathematics and cites examples of great mathematicians that were against Hesychasm during that period. Barlaam and the other Scholastics believed that God comes first from standard terms and cannot be proven by the evidentiary method but rather from the dialectic one. Palamas considered there is proof but not using dialectic reasoning but with faith and spiritual enlightenment which is basically a form of evidential reasoning. It is excellent how Palamas juxtaposes

[18] *Gregorius Palamas* Thessalonicensis, Ἀντιρρητικὸς πρὸς Ἀκίνδυνον 5,27, 114. Books C', p. 374.

the doctrines of the Church and axioms as well as how he disproves views like the one Nikos Kastanis holds:

> *« «ὅπερ τοῖς γεωμέρταις ἀρχή καί ἀξίωμα, τοῦθ᾽ ἡμῖν» φησιν «αἱ τῶν πατέρων ἀποφάνσεις· οὐδεμίαν ἄρα χρή ἐκ συλλογισμοῦ λαβεῖν», ὥσπερ οὐδ᾽ οἱ γεωμέτραι τάς τῆς οἰκείας ἕξεως ἀρχάς· «ὁ δέ τοῦτο ποιῶν ἀμαθής καί ἀπαίδευτος». Εὖγε, ὁ πεπαιδευμένος οὐ καί αὖθις ἐξυβρίζων τῇ περιουσίᾳ τῆς παιδείας. Ἀλλ᾽ ἐπειδήπερ ὡς γεωμετρικάς ἀρχάς καί κατά σέ τάς τῶν πατέρων ἀποφάνσεις ἔχομεν, τό ἐκ τούτων συναγόμενον ἀπόδειξίς ἐστιν ἡμῖν, ὥσπερ καί τό ἐκ γεωμετρικῶν ἀρχῶν τοῖς γεωμέτραις.»*[19].

Statements that were made from famous atheist professors, like Richard Dawkins who says:

> *"Religious faith, is a state of mind, that leads people to believe in something, it doesn't matter what, without a whisper of doubt, or a whiff of evidence, and believe so strongly in some cases, that they are prepared to kill and die for it, without the need for further justification.*[20]*"*

does not seem to apply to Orthodox Theology. Orthodox Theology does not identify the uncreated world with the created one, as well as proves the axiom after the *"leap of faith"*. This lived experience which can be certified is expressed with logic and evidential reasoning and not dialectic reasoning as it is not an eventuality. We have to decipher though the term evidential reasoning because a personal relationship cannot be described with rationalistic mathematical proofs but provides evidence that God exists. For instance, when you inspect a poem mathematically and rationalistically, you only see the metre, phonaesthetics and rhythm, but you cannot describe the feelings it arouses. We have witnessed poems with rhythm, metre and phonaesthetics even with great sound symbolism to be worse than others and not appreciated at all and that cannot be mathematically proven. As C.S. Lewis poetically states:

> *"The two hemispheres of my mind were in the sharpest contrast. On the one side a many-islanded sea of poetry and myth; on the other a glib and shallow 'rationalism.' Nearly all that I loved I believed to be imaginary; nearly all that I believed to be real I thought grim and meaningless.*[21]*"*

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[19] *Gregorius Palamas* Thessalonicensis, «Ἐπιστολὴ Β΄ Πρὸς Βαρλαάμ», 38. Συγγράμματα, Π. Κ· Χρήστου (επιμ.-εκδ.) τόμ. Α΄, Θεσσαλονίκη 1962, p. 282·, Γρηγορίου του Παλαμᾶ, Ἅπαντα τὰ ἔργα, Π. Κ. Χρήστου (Εισαγωγή-Κείμενον-Μετάφρασις-Σχόλια) b. 1, p. 558.

[20] *R. Dawkins,* The Selfish Gene, Oxford University Press, 1990, pp. 432-433.

[21] *C.S Lewis,* Surprised by Joy, 1955, p. 170.

To conclude, I will use a practical example: If we would test a couple's love by bringing other men in the experimental room who have an attraction for the wife and we would ask for all of them to hug her, the indicators would show the production of dopamine, oxytocin and vasopressin in all the men. If we asked the wife to indicate her husband by looking at those numbers, it would be impossible. The only way of knowing her husband's love is by the personal relationship and experience, not by logical facts or asking for proof. The same personal, loving relationship we try to develop with God, which could be traumatised by looking for rational evidence backing up this love. Can you mathematically ask someone to prove you that they love you? In the next chapter, we will talk about God's features as the Holy Spirit's enlightenment revealed them to the Fathers of the Church, and we will try to schematically analogise it to a mathematical concept, that of the equilateral triangle.

4. EQUILATERAL TRIANGLE AND HOLY TRINITY

The basic teaching of the Orthodox Church lies within the Nicene Creed or so-called in Greek *"Symbol of Faith" (Σύμβολο της Πίστεως)*, in which we confess our faith to the Trinitarian God. Although many heresies appeared and did not express correctly this faith to the Trinitarian Godhead, we ended up after hundreds of years, through many difficulties and blood to stick to the correct content of this crucial doctrine of our Church. However, we daily see more and more priests neglecting this topic over other more practical, trending, psych-beneficial subjects due to the influence of the moralistic Western Church and society. Despite the difficulty of this undertaking, a trial to schematically parallel in a simple way what the great dogmatologist John of Damascus and other fathers of the Church have written about this subject will be conducted.

A typical example used in the Church to schematically describe the Holy Trinity is that of the water well[22]. The fountain itself is the Father, the ditch which circulates is the Son, and the water itself is the Holy Spirit. Thus, the Father is the source of the Godhead, and His work is unique. The result of Son (the groove) is also outstanding since he comes into the world as a human being, so his idiom is that he is born and is born continuously by the Father as co-ruler and co-essen-

[22] ***Holy Bible,*** New King James Version, John's Gospel 7:37-39.

tial with him. Of course, as a human being, he was born once and for all, and this happened at a certain point in time and we call this «*birth in time*». The Holy Spirit, in the example, as mentioned above, is the water, which comes and cools the creation and especially the crown of the creation, man. None of the three can be missing as part of the source, because if it is missing, there is no source. Thus, similarly and schematically, it happens with the persons of the Holy Trinity. Everyone has its special and unique role (that is its idiom), and no one is inferior or superior to the other, since they are co-essential. This truth was revealed to us by God from the beginning, as we read in the Genesis[23], through the righteous and the prophets of the Old Testament and then through our Lord Jesus Christ[24].

What we have said above concerns truths of the Orthodox Faith, but there are heretic's who speak of Christ and mean something completely different. They do not believe only in another, different Christ, but also in another Virgin Mary and even in another Holy Trinity. For instance, more and more ecumenist protestants try to prioritise God's nature over His persons and hypostases to unify with other religions for the sake of society eventually[25]. One could say that these may not be so important as to differentiate us and divide us with heretics. The answer to them is simple; it is vital because a different Holy Trinity forges the path that leads to eternity, that is, to the Deification of man and through him to reconstruct the creation. The heretics path is not the same as that traced by the Fathers and Teachers of the Church[26]. So, it is essential, decisive we would say, to follow the Holy Fathers' teachings because they are the essence of how these saints experienced, recorded and left us as a sacred legacy. So, since we ourselves are not enlightened (we must admit this), let us refer to those who were bathed in the grace of God and drink from them pure water, invoking the Father, the Son and the Holy Spirit. If we wanted the essence of God, of course, we would not be able to do it as it is entirely unapproachable and incomprehensible to humans. Indeed, we cannot have any opinion about or contact with God's essence. We have to mention that God is one and perfect and not three as has been stated in the past. One God with three persons and not one God with three faces as tropical monarchianists said before. We learn about God through His uncreated energies and not by his essence or hypostases[27]. But let us say a few words about each person individually.

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[23] ***Holy Bible,*** New King James Version, Genesis 1:26.

[24] *Ιωάννου Δαμασκηνοῦ,* Περὶ τῆς Ἁγίας Τριάδος, α΄, PG 95, 10A-12A.

[25] *J. Kourempeles,* Theology and Religion in the meaning of finalization and relativity, 2014, p. 102.

[26] *St. Papadopoulos,* Patrology A', Athens 1994, pp. 27-51.

[27] *N. Matsoukas,* Cosmos, human, society, according to Saint Maximus the Confessor, Pub. Gregory, Athens 1980, pp. 247, 59, 298. K. Skouteris, The Meaning of the Terms "Theology",

Let us start with the Father, who is the beginning and the cause of all. He was not born by anyone[28], and he is the only one who is not born and without reason. He is the creator of all and Father by nature to His only Son, who is Christ and even the proceeder of the Holy Spirit.

The Holy Trinity's second person is the Son, who is eternally begotten by the Father and not created as Arius used to believe. Son's birth is timeless and anarchic as he always co-existed with the Father inside him. There was never a time where the Father was without the Son. The birth is a matter of causality and not time as as the Father is never without the Son and the opposite. There is no love and inter-relations in the Triune God; this is just pure anthropomorphism.

Moreover, the essence is not shared because this would lead to hierarchy, and perichoresis can be found strictly in the persons, not the hypostases. For example, creation is God's work, but it is not co-eternal and co-equal compared to the Son. We call the Son begotten because he alone was born of the Father in a unique way, and we cannot understand the way in which this birth takes place, which is incomprehensible to man. But there is another relevant doctrine of our Church on the subject. God the Father acts for the Son in a living Spirit. That is, what the Father does, he does for his Son, not in the sense that he uses him as a external force, but as a natural and innate force. And as we say that fire illuminates, and we also say that the light of fire illuminates, so we say that what the Father does, so does the Son. With the difference that light does not have its own unique status.

Last but not least is the Holy Spirit. The Holy Spirit is uncreated, complete, creative, omnipotent, infinite, which dominates the world of creation and can not be dominated, in the sense that it accepts the requests of others. It is also inherent, that is, it exists as a Special Being, inseparable from the Father and the Son since it has a role that they have in addition to birth and consecration. An important question that one can ask, what is the difference between birth and proceeding, but this is utterly unknown to us. We confine ourselves to claiming that when we confess Jesus Crist to be the Son of God we cannot completely understand our confession in human terms. Indeed, this outburst happens continuously and colourlessly. It is clear that the outing is not confused with the prayer because if this were to happen, there would be in the Deity, apart from the Father, two completely identical persons.

Occasionally we use a symbolic shape in the Holy Trinity, which gives a correspondence with man. Body, Nous or Wisdom and Soul. Only in God, these three

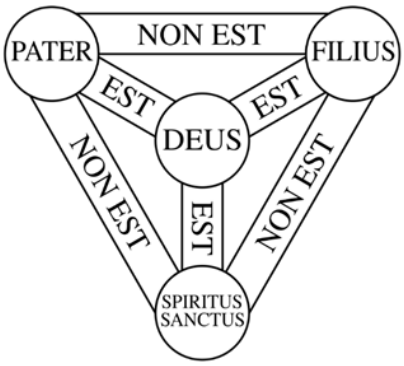
"to Theologize" and "Theologian" in the Teaching of the Greek Fathers up to and Including the Cappadocians, Athens 1972, p. 160.

[28] *Basilius Caesariensis,* Adversus Eunomium B', PG 29, 637B• of the same, Epistula 214, COURTONNE II, p. 205 (PG 32, 789 AB) and Epistula 236, COURTONNE III, p. 53 (PG 32, 789AB).

are not superficial qualities, but unique personalities, persons. And of course, we must not forget that whatever names we use for God are always anthropomorphic expressions. God is unspoken (= cannot be expressed in words) and indescribable. Of course, those shapes do not include or deplete the Holy Trinity; they are just wording we use in order to understand and approach It. If God did not appear in anthropomorphic forms and did not speak in a human voice, he would be completely unknown to humans. As John of Damascus states:

> *«Μὴ θέλων οὖν ὁ Θεὸς παντελῶς ἀγνοεῖν ἡμᾶς τὰ ἀσώματα, περιέθηκεν αὐτοῖς τύπους, καὶ σχήματα, καὶ εἰκόνας κατὰ τὴν ἀναλογίαν τῆς φύσεως ἡμῶν, σχήματα σωματικὰ ἐν ἀΰλῳ ὁράσει νοὸς ὁρώμενα· καὶ ταῦτα σχηματίζομεν καὶ εἰκονίζομεν.... Ἀλλὰ καὶ Θεοῦ σχήματα καὶ εἰκόνας ἡ Γραφὴ ἔχει»*[29].

With that said we will now proceed with our parallelism of the Holy Trinity with an equilateral triangle. It is commonly known in the West and not so much in the East as the Shield of the Trinity or Scutum Fidei. It illustrates many different aspects of the Holy Trinity. It basically summarised the first part of the Athanasian Creed and was even used as heraldry. A short comment on the Quicunque Vult (Athanasian Creed) or Fides Catholica is that even though Athanasius lived in the East around the fourth century, the Creed was falsely accredited to him at the council of Autum in 670 and began to be known by the Orthodox side just around the 12th or 13th century (first official information is the council that was held in Nymphaion in 1234). Then it was wholly rejected at the board of Florence (1438-1439) by the Orthodox Church[30].



The triangle was considered a symbol of Genesis for Pythagoras, and we have to bear in mind that his theorem is based on the right-angled triangle. Xenocrates rated the triangle as divine. This project is all a symbolic representation and not a truth in the field of sacred geometry. Religious mathematics and dogmatic geometry earth man, by either lifting off God or embodying Him and eventually producing ideologies[31]. The triangle is just used to show God's singleness, combined with the differentiation of each person. The illustration consists of four nodes and six links. Here the corners are

[29] *John of Damascus,* Πρὸς τοὺς διαβάλλοντας τὰς ἁγίας εἰκόνας, Λόγος Γ΄, κε΄ (ή 25), PG 94, 1345A.

[30] *K. Skouteris,* 39 Articles of the Anglican Church, Athens 1982, pp. 215-7.

[31] *J. Kourempeles,* Theology and Religion in the meaning of finalization and relativity, 2014, p. 245.

replaced by circles to show the eternity of each person/God. We see three nodes in each angle, one representing each person (Pater=Father, Filius=Son, Spiritus Sanctus=Holy Spirit). All three sides are equally distanced and show the differentiation of each person/hypostasis. The interconnection (half altitude) each node has to the centre leads to the fourth node that says Deus(=God) to show that these three persons are one God, they have the same substance and are equal in power and glory, but they do not have loving communion as they are identical[32]. In this triangle, three heresies are dealt with: Polytheism, Subordination and Modalism. The triangle could symbolise balance, harmony and completion as it used to do in ancient Greece as long as we talk about God, but of course, it cannot rise upwards to show the so-called *"Higher Consciousness"*. If the triangle were turned upside down, this would not mean a hierarchy, even when we number the persons, the numbers consider the one numbering and not God being numbered as Saint Basil the Great has said[33]. Not to mention the fact that the Holy Spirit is not proceeded by both the Father and the Son because it is on the bottom. Each hypostasis has some unique idioms. Father's idiom is unborn, Son's idiom is begotten, and finally, the Holy Spirit's idiom is proceeded. If the Father and the Son shared a *"unique"* idiom, in this case, proceeding, then it should be a feature of the essence and not of the hypostasis, leading in the form of subordination. We notice how ideally this symbol pictures the Holy Trinity by having equal sides, equal altitudes that are cut in half to meet in the centre and equal angles (60°) replaced with circles to show God's infinity. We see how easily mathematics can picture something challenging to express and took the Church centuries to describe and define. It could be linked to the flesh body, the spirit and human soul as well. It is commonly known that a picture equals a thousand words, and here that is the case.

Moreover, we could efficiently parallelise God's transcendence with Pi's number transcendence in order to partially conceive it. I will close by citing a famous painting of Andrei Rublev called the Trinity (or Hospitality of Abraham) to practically show the formation of an equilateral triangle between the angels and how iconography deeply considers this perception of the Holy Trinity, which of course does not deplete It. Unfortunately, the reverse perspective and the schematisation of the eucharist cup do not help to see that with a naked eye.

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[32] *N. Xionis,* About the Holy Spirit, Pub. Ennoia, Athens 2018, p. 142.

[33] *Basilius Caesariensis,* Adversus Eunomium C', PG 29, 657B-660A.

5. CHAOS THEORY AND GOD'S INTERVENTION

In the previous chapter, we made a point about the equilateral triangle and its schematic parallelisation to God. In this chapter, we will speak of another triangle, that of Sierpinski's and generally about chaos theory, fractals and how those could relate to God's intervention.

Chaos is a term which has been linked to cosmogonies and cosmologies since the very first conscious steps of humans on earth. The eternal struggle between order and disorder, harmony and Chaos, represents, instead, a deeply rooted human conception of the Universe which was depicted in myths and theories. Chaos was the first element of the cosmogony of the philosophers of ancient Greece[34]. «*Chaos*» is presented for the first time in the Theogony of Hesiod (8th century BC) as the primary matter of the Universe: *"Το Χάος πρωτογίνηκε κι η Γη μετά η πλατυστήθα ... Κι απ' το Χάος πάλιν γεννήθηκε το Έρεβος και η τρίσμαυρη η Νύχτα"*. In our chaotic world, randomness, complexity, contradictions result in perfect synthesis and coordinated states. Anaximenes (585 BC) explains the various forms of primary matter, Chaos, by thickening and thinning. Anaxagoras (500 BC) admits that «*all the elements, in the beginning, were mixed and confused. Everything was in everything. Everything that is separate today was a separate and calming mass. This mixture would not come out of its calmness if the mind did not give it the movement and did not separate it*». Thus, he deals with the unstable, random, mixed and confused elements of the infinite primordial matter. In the «*Genesis*» of the Old Testament we read with a different orientation that: *"the Earth was invisible and unconstructed and darkness was brought over the abyss"*[35].

Some innate impulse impels humanity try to understand the normality in nature, to investigate the laws behind the strange complexity of the Universe, to bring some order out of the Chaos. In modern times, scientists, physicists, biologists, mathematicians, engineers, chemists and others, by researching various elements to explain some of the Chaos that prevails in the chaotic organic and inorganic world, are led to find a way in which they could change in any case the multiform elements in uniform etc.

Today Chaos describes the subject that studies some too complicated systems whose evolution over time is strongly dependent on the initial conditions under which it is analysed. In particular, Chaos Theory studies the behaviour of specific non-linear dynamical systems, which are characterised mainly by a sensi-

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[34] *Ian Stewart,* Does God play dice? The New Mathematics of Chaos, Pub. Penguin Books Ltd., 1997, p. 15.

[35] ***Holy Bible,*** New King James Version, Genesis 1:1-2.

tive dependence on initial conditions but also by a non-periodicity. This sensitivity results in the apparent randomness of the systems' observed behaviour, even though these systems are causal or deterministic, in the sense that their laws of evolution are well defined and do not contain random parameters. Commonly a non-linear dynamic system presents immobility, expansion or explosion, (semi) periodic motion and chaotic motion. The most difficult to observe and predict is the chaotic motion, a complex, non-periodic motion, which has given its name to the theory. Sensitivity to the initial conditions means that two points in such a system can follow radically different trajectories in the phase space, even if the initial conditions' difference is tiny. Systems behave in the same way only when the initial configuration is precisely the same.

Consequently, Chaos affects Physics, Biology, Mathematics, Economy, Meteorology, Geology, Astronomy and other scientific fields. The Science of Chaos is the third great revolution of the 20th century, after that of quantum mechanics and relativity. It aims to restore order and balance in modern life, after subduing with knowledge the uncontrollable forces of the Universe.

From a mathematical point of view, Chaos Theory studies the behaviour of specific non-linear dynamical systems, which under certain conditions show chaotic behaviour. It is characterised mainly by a sensitive dependence on the initial conditions (butterfly effect) and then by non-periodicity. This sensitivity results in the apparent randomness of the systems' observed behaviour, even though these systems are deterministic, in the sense that their laws of evolution are well defined and do not contain random parameters. We know today that it is possible to have extremely complex, e.g. chaotic, motion and therefore unpredictable, even in simple dynamic systems with two degrees of freedom, while until then it was believed that we have erratic, unexpected motion only in complex systems with many degrees of freedom, such as, e.g. in the movement of air molecules in a room.

With the advent of quantum mechanics, the clockwork of the world became a global roulette wheel. Fundamental phenomena, such as the decay of a radioactive nucleus, are determined by blind chance and not by strict law. We are beginning to discover that systems that obey fixed and specific regulations do not always work in a standard, predictable way. Chaos is a whole new world, a new kind of mathematics, a fundamental innovation in understanding disorder in nature.

We live in an age where the mechanistic, clock-like view of the world has changed to the perception of the world as an ecology. From determinism, we

moved to probabilism (statistic)[36]. The phrase of Pierre Simon Laplace which supports the uniqueness is now considered hyperbolic and is not applicable:

> *"An intellect which at any given moment knew all the forces that animate nature and the mutual positions of the beings that comprise it, if this intellect were vast enough to submit its data to analysis, could condense into a single formula the movement of the greatest bodies of the universe and that of the lightest atom: for such an intellect nothing could be uncertain; and the future just like the past would be present before its eyes.".*

A great example of chaotic movement is the incident that occurred during Voyager's one trip on the 5th of September in 1977 where the predictions had no mistake, Newton's law was not disproved but may cause false predictions and does not imply any absence of physical laws. Nevertheless, Voyager came across Hyperion, which was somersaulting in a complicated way and not facing down as usual.

The Father of Chaos is considered to be Poincare with his discovery of the problem of three celestial objects (earth, moon and sun). At first, everyone neglected him. Then the soviet scientist Kolmogorov understood and others followed. If it were not for Edward Lorenz, we would not have known that iteration creates Chaos. Lorenz's theory of the butterfly that flies to Hong Kong and could create a storm in New York is due to him as well. Suddenly scientists realised that in causal dynamical systems, the possibility of the birth of Chaos (unpredictability) lurks in every detail. And as Lorenz used to say: Any physical system that behaves non-periodically is unpredictable.

One way to visualise chaotic motion, or any other motion, is to construct a phase diagram of activity. In such a diagram time is implicitly entered and, in each axis, a variable of the state is represented. An easy way to portray a chaotic tractor is to start with a point in the 'basin' of the tractor's attraction, and then plot its next trajectory. And this can probably produce a picture of the whole ultimate attraction. These phenomena are better described with fractals and fractal mathematics. Basically, Fractal is a pattern that never ends, driven by recursion to form an image of a dynamic system or a picture of Chaos. For instance, we observe those images in nature, e.g. trees and rivers.

To conclude with the definition of Chaos in Science, I will refer to Quantum Chaology. It is said that Chaos was revealed by mathematical imagination, and was born of physics. The term Chaology had long referred to the study of the era of Chaos - the period when *«the Earth was empty and without shape»*. Chaology is no longer an active field of Theology, so the term is free for a more modern

[36] *M. Begzos,* Contemporary Physics and Philosophy of Religion, Athens 2009, p. 211.

meaning: the study of deterministic Chaos. Quantum mechanics is modern physics for the Universe on atomic scales. In quantum mechanics, quantities such as energy are not continuous: on the contrary, quanta appear in discrete pieces. Einstein could not cope with this view and said that God does not play dice, and that hoped that someone would find a more *"realistic"* explanation according to his word.

Nevertheless, quantum mechanics events still seem to take place in the way that quantum mechanics determines. And while radioactive decay statistics, for example, follow specific laws, no one can predict when a given individual will reach the critical point of decomposition. Einstein then proposed a second Idea to Max Born that we do not understand the more in-depth game. In my opinion, we do not do, and we will never do because we do not have the mental capacity to understand the created world.

But where does Theology jump in the equation? Most of the western scientists would say in the matter of free will and creation. All the books we read are about God playing dice, determinism and the autonomy of the Cosmos. Surprisingly, I will not go down that road. I will take my time though to answer to *"laymen's opinions"* of scientists like Sabine Hossenfelder in whose video *"You do not have free will, but do not worry"* she makes statements like: *"let me tell you what science says" & "I proved that free will is nonsense"*. Those opinions are overgeneralised and unproved. Starting from the unprecedented logical leap that a possible deterministic behaviour of particles imparts, it saves for good, determinism of thought. As if to say that the same hardware will produce the same results in the software.

Continuing with the logic of rejecting the deterministic «*Laplace Demon*» that chaos theory combined with Heisenberg's indeterminacy sealed his tombstone forever. Yes, chaos theory is based on determinism. Still, it loses it along the way, except that no one will ever be able to know position and speed with absolute precision at the same time, so as not to put forces and interactions, not even a single particle, let alone of the whole Universe. The complete disconnection that she tries to indicate between the confirmed random quantum events and the thought/consciousness exposes her irreparably. The most accepted scientific interpretation (of Copenhagen) considers that the collapse of wavefunctions occurs with observation, which is caused by the will to control, and probably leads to consciousness or otherwise free will. Quantic Probabilism shattered determinism at its root. All the great Nobelists suggest we search into the unknown waters of quantum physics with cognitive sciences' help to find the answer. We do not have answers on that subject yet, and it is not necessary to support one in order to fulfil your scientific vainglory. Accordingly, Orthodox Theology cannot be placed into a narrow box of a philosophical movement like

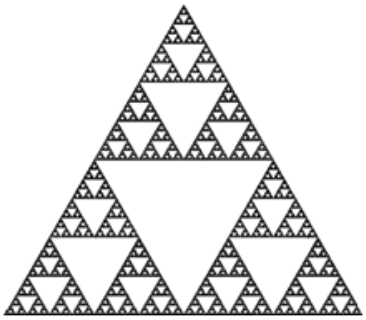
determinism or libertarianism. Those movements cannot describe the state of freedom Human has like the Fathers of the Church do. Theology cannot identify as the other sciences but can have an interactive relationship with them.

The intersection point that will be tried to be found is that of Chaos and God's Intervention, also known as miracles. At first, we have to define miracles in Orthodox Theology, so they are not conceived as they do in the West. The miracle is part of the relationship between the created and the uncreated and often contradicts the sciences. This contradiction though is shallow, like the one Science and Theology have. Science and Theology cannot be compared but can intersect if sciences retire this positivistic model. They should not come in controversy because they are different. In the case of the miracle, the natural law (Science) seems to conflict with the metaphysical law of Theology and vice versa. But the miracle confirms nature and is not metaphysical or supernatural. Must we always distinguish between the natural and the unnatural. We define natural as the one that exists while unnatural is the state of man's Fall, rather than nature's state and life. It is not natural for a human to decay and wear out, but it is somewhat unnatural and a consequence of the Fall. A miracle for Westerners is God's intervention in the world by exception, and it is not a natural event. For the Orthodox Tradition, however, there is no deviation from the natural law. It is a historical event and not an extraordinary intervention of God. The grace of God and his glory is our daily life. The miracle is done to glorify God and not to solve a problem or to make a man believe. Thus, it is neither metaphysical nor the extraordinary intervention of God but something natural and the point of presence of God in the world. The miracle does not correct nature but restores it, and we interpret it from the perspective of the created-uncreated and not on a moral basis. Christ refuses to perform miracles in front of the unbelievers because they are unbelievers, and they will interpret it as they want. Faith and communion with God precede the miracle as it happens for those who do not see it as a miracle, because, precisely, they believe. For the believer, the miracle is the natural consequence of his faith and communion with God. As long as one communicates with God, he lives in the society of miracles, when someone lives despite nature, then he sees it as a miracle. Both the miracle and the presence of God are achieved through a man's realisation for his oneness with God.

The final observations indicate the existence of a mathematical order behind what seems to us as random events occurring in the Universe. Chaos Theory eventually supports the idea of a Creator who gave motion governed by mathematical principles. The illustration of Sierpinski's Triangle will help us understand. After random choices of points, we begin to notice a pattern which is clearly shown in the picture. This could be related to the passage from Romans 8:28: *"And we*

know that in all things God works for the good of those who love him,[37]. Daily in our life, faithful people experience the uncreated energies of God and his miracles. Positivistic scientists and atheists try to rationalise it and call it luck.

In chaos theory, we observe that the things we call luck or exceptions are instead natural. So, we go back to our definition of miracles. It is a natural event that occurs as a result of the relationship between the Uncreated (God) and the created world. Those miracles are natural events and those who characterise them as lucky and exceptional eventually help me prove the point that is not luck but planned events that seem spontaneous and chaotic to us as a result of our insufficient mental capacity. Lucky coincidences are basically God's completely natural miracles. We cannot scientifically find those energies and trace them as they are uncreated and they do not have a specific pattern precisely because they are chaotic, but they are natural, and they are planned and not random. But we notice their aftermaths both in our daily life and experience but also on a cosmological scale. The glorification that God offers is a miracle that happens in history and God always test and help us in order to set sail according to His purpose and will. Western Theology cannot cope with that perception as it considers that man's features of His image are completely tarnished and does not believe in the uncreated energies of God, thus enlarging the distance between man and God.



Consequently, it assumes that God's intervention is exceptional and mostly for our help and not His glorification. For example, the Immaculate conception of Holy Mary is a miracle. Still, if you try to rationalise it, it would seem like a lie or a lucky case of parthenogenesis, but this is not merely the case as we inspect that there is no thing as luck just God's plan and human's freedom in the context of the natural laws.

6. ASYMMETRICAL CHRISTOLOGY AND PERFECTION

In this chapter, we are going to relate Assymetrical Christology according to the doctrine Chalcedon and the golden ratio φ. Before diving into the theolog-

[37] ***Holy Bible,*** New King James Version, Romans 8:28.

ical part, it is necessary to give a clear picture of the φ number and Fibonacci sequence.

The golden number φ was first detected by the ancient Greeks, who observed that everything on earth, from plants to the human body itself, developed in an analogy. Pythagoras was the first to formulate the mathematical definition of proportion using two straight lines. His thought was that if a line segment and an intersection point is intersecting it asymmetrically so that the length of the largest segment to the entire length of the segment is equal to the length of the largest segment to the length of the smallest, then their ratio reveals some kind of analogy. The result that is always given is 1.618, which is the golden number. It is the only number for which the relation $\varphi = \varphi + 1$ and $\varphi = 1 + \sqrt{5} / 2$ applies. The main finding is that a result is an implicit number. This shows that a smaller line segment can't fit in a larger one exactly. Therefore, there are some numbers whose function is beyond human comprehension, and their field of the definition is the ideal. Thus, the concept of the idea was discovered, which Plato researched and formulated the theory of Ideas. For instance, the pentagram, which was the symbol of the Pythagorean school is subject to this analogy, showing they knew everything about this number.

Pythagoras was the first to observe that plants and animals do not grow randomly, but according to precise mathematical rules. That is, the beautiful designs of the flowers are not accidental. The ancient Greeks found that flower designs are based on geometric proportions. The sequence also makes its appearance in the arrangement of the sexes around the stem. With the actions of the Italian mathematician Fibonacci, who was well known in his day and is still recognised today, he found that the key to beauty is the ratio 1 to 1.618, the number φ. Later, the architect Le Corbusier (1887-1965) built a scale of proportions called Le Modulor, which is based on the human body. According to her, the navel divides the human body into a golden ratio. Also, the width of the mouth is φ times the width of the nose.

The ancient Greeks considered the Golden Number as the divine analogy where its application in artistic creations and constructions led to «*excellent*» and «*beautiful*» results. After many years, Fibonacci discovered a sequence of numbers that had the property of displaying the golden ratio. We daily encounter many forms of art that have used (consciously or subconsciously) the φ number. The Parthenon's façade, Michelangelo's David, music, Quran, Pyramids etc. have all used the golden number. The Geometry of fractals, the ones we mentioned in the previous chapter also has golden tome. The human body itself, our DNA and even cyclones use the number above. We even saw it with Alan Turing's Tommy flowers. Many other examples and forms of φ number could be mentioned but will be avoided because the topic is not about the golden number itself but its relation with Christology.

Therefore, φ is an «*implicit*» or «*asymmetric*» number, that is, a number that cannot be written in the form of an integer fraction. Why is it simultaneously both asymmetrical and symmetrical? In contrast to the static symmetry (symmetry of equilibrium, also known as balance), the dynamic symmetry (golden tome division) is the perfect asymmetry form. The theory of perception states that there are two different optimal possibilities of a harmonic division of a whole: first is the mirror reflection (also known as symmetric division) and the golden section division (an asymmetric division, where basically the ratio of the smaller part to the bigger is the same as the ratio of the bigger to the whole). Dynamic symmetry is a characteristic of living matter, while static symmetry exists in the world of crystals.

Analogically we can spot the divine analogy, the golden number in Christology. First, it is necessary to distinguish between the asymmetrical Christology of the West and many other misconceptions. We have seen Thomas Aquinas' asymmetry[38], which generates the whole tension, followed by Calvin, Bonhoeffer, Austin Farrer and last but not least, Balthasar. The asymmetry they introduce considers the Divine nature of the word (uncreated) and the nature of Christ (created). The same asymmetry is used in Rowan Williams's book *"Christ the Heart of Creation"* but in the extent of perceiving Christ as two different agencies and not one as a result of the two natures' interpenetration. He is leaning towards the separation of God and the world that Scotus and Ockham introduced, even though he rejects this opinion in his book.

Georges Florovsky, in his book "Collected Works, vol. 9: The Byzantine Fathers of the Sixth to the Eighth Century" introduced the Asymmetrical Christology considering the doctrine of Chalcedon. The principle does not state an asymmetry in nature as mister Jordan Daniel Wood falsely states in his article "*Against Asymmetrical Christology: A Critical Review of Rowan Williams 'Christ the Heart of Creation'"*. What Florovsky tried to say is that Christ has one hypostasis and two natures and not one hypostasis and one nature as we do. Also, Christ has two natural wills and not a gnomic will *(γνωμικό/ fallen human will)*, in contrast to us that have one natural will and one gnomic will. This view could be understood as a symmetry according to the Tome of Leo[39]. Thomas Aquinas, for instance, introduced 'De unitate Christi quantum ad voluntatem' (The unity of Christ's will) and 'De unitate operationis Christi' (The unity of Christ's energy) respectively, which leads to the perception of one end-product rather than the

[38] *Thomas Aquinas,* Summa Theologiae I, q. 28, a. 1, co.

[39] *J. Zizioulas, F.* Georges Florovsky: The ecumenical teacher, magazine "Synaxis", 64/1997.

two end-product Orthodoxy supports (both John of Damascus[40] and Maximus[41] the Confessor and not only Maximus as Doucet states). In fact, Maximus embodies the asymmetry of the personal hypostasis (which in Christ's case is divine) with the symmetry of the two, both human and divine, natures, whose unity constitutes the "material" hypostasis[42]. There is a danger for Christology to lose its balanced asymmetrical symmetry (or symmetrical asymmetry) if there is no analogy between the asymmetrical personal hypostasis and the proportional material hypostasis leading to over(a)symmetrical and eventually damaging directions. An entirely symmetrical Christology would restrict humanity in the context of self-existence of the created, and in this case, theosis as the true communion with God would be unachievable.

Consequently, we notice a connection between the asymmetrical Christology and the golden number. As the dynamic symmetry is the perfect form of asymmetry, similarly Christ's dynamic existence, which is also living matter, is the ideal form of asymmetry by being symmetrical or it is the perfect form of symmetry by being asymmetrical. Christ's asymmetrical symmetry follows the pattern of the golden section. As Christ has two natures, one hypostasis and two natural wills and not a gnomic one, therefore having an asymmetrical symmetry by having the symmetry of hypostasis, will, nature but at the same time exceeding it by also having the divine nature and not a second hypostasis. The same way an asymmetrical symmetry could be found in nature where two eyes exist, but they are not identical, but still, they result in balance and analogy. Eventually, we see the name *"divine analogy"* might not be a coincidence because after all, Christ is the perfect human and the perfect God at the same time. Indeed language and nature cannot and does not exhaust or deplete the reality, but it is supposed to picture it authentically and reliably.

Epilogue. In this paper, we tried to bridge the sciences of Mathematics and Theology. Their methodologies may vary but eventually both concern the same reality we all live into. Through the philosophy of religion, I tried to bring down the wall between those two sciences and show how God's intervention or economy is displayed in the reality we measure with mathematics. Surely others, like John Lennox, who are both mathematicians and theologians, could find this paper shallow, lacking both profound theology or mathematics, or even including mistakes. The point was not to dive deeper into either Mathematics and

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[40] *John of Damascus,* Expositio Fidei, 59. 41-3, 104-18 (Kotter (ed.), pp. 146, 148 respectively), and De duabus in Christo voluntatibus, 43. 7-13 (Kotter (ed.), p. 229).

[41] *Maximus the Confessor,* Disputatio, PG 340D-341A.

[42] *D. Bathrellos,* The Byzantine Christ (Person, Nature, and Will in the Christology of Saint Maximus the Confessor), Oxford Early Christian Studies, 2005, p. 68.

Theology but to show their connections and show that our faith is logical and not hyper-logical or illogical. Newton, for instance, who introduced the physics, which is considered deterministic, considered atheism senseless and odious. It is an important debate about whether post-modernity is an atheistic or a faithful era. What is important though is not to exclude Theology and religion from universities as a result of a political agenda. After all, in this paper, we had a great insight that they share many similarities according to axioms and faith. I will finish my dissertation with a quotation of Robert Jastrow from his book *"God and the Astronomers"* which says:

> *"At this moment it seems as though Science will never be able to raise the curtain on the mystery of creation. For the scientist who has lived by his faith in the power of reason, the story ends like a bad dream. He has scaled the mountains of ignorance; he is about to conquer the highest peak; as he pulls himself over the final rock, he is greeted by a band of theologians who have been sitting there for centuries."*

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