Quantum theology, or: “Theologie als strenge Wissenschaft”

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Abstract. The main idea consists in researching the existence of certain characteristics of nature similar to human reasonability and purposeful actions, originating and rigorously inferable from the postulates of quantum mechanics as well as from those of special and general relativity. The pathway of the “free-will theorems” proved by Conway and Kochen in 2006 and 2009 is followed and pioneered further. Those natural reasonability and teleology are identified as a special subject called “God” and studyable by “quantum theology”, a scientific counterpart of classical theology as far as the latter endeavors to justify rationally God (without quotation marks) postulated by religion, but meaning in the present study, first of all, Christianity. The suggested “quantum theology” is situated in the historical opposition and conflict of science and religion in Modernity and its reflection in Heidegger’s conception of “ontotheology”. The conception of “ontomathematics” introduced in previous papers to unite and unify physics, mathematics, and philosophy is reinterpreted in the present context to be conservatively generalized in a way to include “quantum theology”. Two conceptions, “locality” and “nonlocality”, originating initially from physics and especially, from theory of entanglement and quantum information, are also generalized ontomathematically, and thus in relation to the newly introduced “quantum theology”. The “quantum theology” subject of “God” is juxtaposed with God of religion and billions of believers all over the world. Husserl’s conception of “philosophy as a rigorous science” is considered to be generalized now to theology as quantum theology, particularly by the phenomenon (in the sense of his “phenomenology”) of “God”, or by an “epoché” to whether God exists or not. The research of the phenomenon of “God” is extended to the conception of the “totality” being inherent for philosophy, especially for classical German philosophy preceding Husserl’s phenomenology. Those sequences for philosophy implied by the introduction of quantum theology are investigated further, on the pathway of ontomathematics, also in relation to what “God” should mean for today’s physics and mathematics. The option and research field of “experimental quantum theology” is discussed as a direct corollary from quantum theology though being sacrilegious as for classical theology. The concluding section reflects in a more loose way on the relation of “God” for quantum theology to God for religion and billions of believers all over the world.
Keywords: entanglement, Hilbert arithmetic, Hilbert mathematics, Heidegger, Husserl, Husserl’s phenomenology, ontomathematics, ontotheology, quantum information, quantum mechanics and information, quantum theology, religion, special and general relativity, theology

I INSTEAD OF INTRODUCTION: THE OPPOSITION OF RELIGION AND SCIENCE IMPLIES WHAT THEOLOGY IS TO BE

The standard definition of theology relates it to religion inherently since both refer to “God” or God though in different ways. Furthermore, theology is granted to be a science, however rather similar to philosophy than to natural science exemplified by physics or to abstract sciences such as logic or mathematics. So, it is to be enumerated among humanities since it suggests in definition the human free will decisions about its subject once it is God or “God” as far as any human can believe or not in God, and the belief in question divides humankind in a few great

civilizations according to the corresponding religions if one believes in God or rejecting religion in principle if one is an atheist.

Nonetheless, religion is opposed to science historically though rather to natural science than to humanities especially to the modern experimental science after Galileo Galilei and Giordano Bruno or to evolution theory after Darwin. All of them reject religious dogmas as inconsistent with their subjects therefore needing for religion to be at least restricted if not to be removed at all. However, though rather paradoxically, one can use that opposition of religion and experimental and empirical science for the definition of theology out of the scope of humanities thus out of the Socratic human problematics in philosophy.

Indeed, if theology is granted to be a special science intending to study "God", and religion believing in God, on the one hand, and science rejecting God (at least in the scope of experimental and empirical science), on the other hand, are crucially opposed, the relevant options about theology might be the following: (1) it is a quasi-science since it is contradictory in definition; (2) it is a humanitarian science such ethics, jurisprudence, etc. since it is inherently relied on human decisions once any human may believe in one or another God or may not at all in any God; (3) "God" is to be defined as an entity being able to be investigated just as any other entity, but definable by the statement that it reconciles science and religion therefore being in principle impossible if they are divided by an abyss (as in Modernity).

The former two options are historically already realized correspondingly as scientific atheism particularly rejecting theology and as the recognition of theology to be a humanitarian science. As to the latter option, it is rather exotic though many attempts for religion and science to be reconciled have been undertaken and continue also now. One of the main reasons to be too complicated for realization consists in the fundamental Modern opposition established or at least articulated by the Cartesian dichotomy of "mind" (or "subject" in classical German philosophy) and "body" (or "object" *ibidem*). So, the mediation between the two "shores" at issue can be accomplished in definition only by humans due to their free will and capability for decisions or by God Himself (whether in quotation marks or not). So, if the abyss between them is postulated to be "conditio sine qua non" for both humanitarian and natural science, theology turns out to be a mistake in definition since it should study its subject, namely "God" however impossible to be studied by any science otherwise than by the mediation of human decisions, in which and by which the subject at issue, i.e. "God" is able to influence empirical phenomena. Of course, religion postulates for God to influence directly, i.e. without any human decisions, but that influence is granted to be fundamentally inaccessible for science once it is defined by the abyss between "subject" and "object" and God Alone is what unifies them.

However, if one has in advance introduced the philosophical conception of "ontomathematics" (elaborated in a series of other papers: Penchev 2024 April 16; 2023 July 16; 2023 May 3; 2023 January 3; 2022 October 2022), therefore "entangling" the two opposite shores at issue and substituting the jumplike transition between them, particularly needing an arbiter (such as humans, humankind, or God Himself in order to decide in any given case whether entities of both shores correspond to the each other or not), by a smooth homogeneous

substance such as quantum information being simultaneously both mathematical and physical, that substance can be interpreted to be equivalent of a scientific understanding of what is (or at least might be) "God" as a subject of theology[1] if it is suggested to be a "rigorous science" sharing epistemological features with mathematics (being a standard for unambiguous internal consistency) as well as with physics (being a standard for an experimental science permanently testing its conclusions and hypothesis by external, "correspondent" verifications).

There exists a prejudice, overcome only by ontomathematics, about the relation of physics and mathematics in fact originating from the modern organization of cognition dividing them on the two opposite shore of the Cartesian abyss so that mathematics is thoroughly situated on the one shore, that of "mind" or "subject", and physics needs both since its subject is on the opposite shore of "body" (or "object") to its theories being in fact mathematical since Galileo and Newton's age. On the contrary, ontomathematics, canceling the Cartesian abyss, therefore particularly merges mathematics and physics, for example allowing for the scandalous for classical science "creatio ex nihilo" (which only God rather than humans is able to do or make according to religion, e.g., Christianity). Thus, the physical world would appear and really appears "from nothing" permanently, omnipresently and omnitemporally, by virtue of only an ontomathematical necessity (being also identifiable with the proper mathematical necessity). Loosely speaking, all the material observable empirically and experimentally world, just that studied by physics, appears from nothing by itself, due to mathematical laws rather than by "God's Will and Creation": as well as vice versa, the world cannot fail to arise, thus not needing God's Assistance for its creation (rather than only to continue to exist following physical laws). In a sense, ontomathematics only continues and generalizes the "expulsion of God" (or the "process of secularization" featuring Modernity) undertook by classical physics and science as a "redundant hypothesis" removed by "Occam's razor": now further, to the creation of the universe itself rather than only to its existence after the mythical "Big Bang"[2].

In other words, if one wish to discuss theology as a "rigorous science", a necessary condition for that is the unification of physics and mathematics into ontomathematics; as well as vice versa: their absolutely division implies the unknowability of God and thus the impossibility for theology to be a rigorous science thus inherently enumerable within humanities since God might be studied by science only by mediation of human decisions, and the direct scientific research is a quasi-science, an arbitrary fiction maybe in the scope of metaphysics and falling on the criticism of metaphysics since Kant's age and until now including. However, that conclusion needs as its necessary premise that mathematics and physics are absolutely divided so that if it

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[1] The subject of "God and information" is discussed in a series of papers: for example, Gregersen 2014; Haught 2014; Ward 2014; Welker 2014; Soukup, Bouckley, Robinson 2001; Wasserman. Kirby, Rordorff (eds.) 1992.

[2] God's "creation" and the "Big Bang", both physical and theological cosmogony are "consistent topics" linked to each other in many enough publications: e.g., Belben 2010; Cahoone 2009; Gingerich 2001; Russell 2001; Worthing 1996; Drees 1990.

fails as after and within ontomathematics, the pathway to scientific theology[3] is already pioneered, particularly allowing for the present research.

II HEDIDEGGER'S "ONTOTHEOLOGY"

In fact, the aforementioned idea about the philosophical understanding and definition of theology follows further Heidegger's criticism to "ontotheology"[4], a neologism and corresponding concept introduced by him, after deepening his "destruction", but now, in the present study even still deeper, into the origin of philosophy, to Pythagoras and his school (suggested in much more detail in another paper: Penchev 2024 April 16). The starting point of the criticism of theology for him is the "restored question of the being in oblivion" in modern Western philosophy concentrated on the "ontic", i.e. "what exists", rather than on the "ontological", i.e. "what is". So, God as the proper subject of theology is also, though implicitly interpreted ontically, for example by the statement that "God Exists" rather than that "God Is" for which he introduced the proper concept of "ontotheology": namely, to opposite it to theology wrongly (according to him), though implicitly interpreting "God to Exist" rather than to Be.

Meaning the distinction between "locality" and "nonlocality" borrowed from physics, then realized mathematically, philosophically, and ontomathematically in the final analysis (in the already cited paper: Penchev 2024 April 16), Heideger's ontotheology advocates rather for God to be nonlocal than local therefore justifying the transcendence of God to empirical and experimental human experience underlying first of all natural science. Of course, the just mentioned interpretation of God to be nonlocal does not belong to Heidegger himself since it originates from ontomathematics not being realized by him, but furthermore being absolutely inconsistent with his basic education and corresponding way of thought. One might say that rather Husserl might interpreted ontotheology ontomathematically if one had realized a "phenomenological theology", which he had neither done nor he could have done being

[3] The idea of "scientific theology" (e.g. Keogh 2015; Leidenhag 2014; Alvarez 2013; Eglinton, Bräutigam 2013: Kaiser 2007; Moore 2006; Padget 2005; Roberts 2005; Kay 2003; McGrath 2003; Kracher 2000a; Grenz 1999; Turner 1997; King-Farlow 1990; Murphy 1990; Torrance 1972), respectively, "natural theology" as far as just natural science studies nature (e.g., Shult 2012; Anderso 2008: Grumett 2007; Sherry 2003; Anderson 2002; Scarlet 2001; Drees 1999; Hutchings 1999; Larson 1999; Murphree 1997; Fagg 1996; Slezak 1996; Long 1992; Brown 1991; Feenstra 1988; Gillespie 1987; Killen, O'Connel Killen 1986; Gill 1984; Holyer 1984; Blaisdell 1982; Ospovat 1981; Davies 1977; Corr 1973) refers to the relation of science and religion including classical theology in the final analysis (e.g., Zamarovsky 2017; Thurow 2013; Harvie 2011; Turner 2011; Bjørn 2010; McMaken 2010; Yeung 2010; Życínvski 2000; Hunter 2009; Preston, Epley 2009; Goodman 2008; Gregory 2008; Grigg 2008; Stegner 2007; Southgate 2005; Holder 2004; Laszlo 2004; Nelkin 2004; Janko 2003; Lindberg, Numbers, eds. 2003; Cantor 2001; Reich 2000; Morse, Perry 2000; Case-Winters 1997; Westhelle 1995; Peacock 1993; 1990; Buchdahl 1992; Nelson 1991; Bunting 1990; Chelvam 1988; Hefner 1988; Hinton 1973; Duke 1969; McDonald Smith 1962).

[4] Heidegger and theology, his neologism of "ontotheology", as well as the relation of phenomenology or philosophical theology to theology (by itself and traditionally) are discussed in scientific literature: for example. Wolfe 2014; Fehér 2009; Peperzak 2009; Robbins 2002; Moore 2001; Van Wiele 2000; Godzieba 1999; Marion, Carlson 1994; D'Agostino 1993; Irving 1993; Guagliardo 1989; Richardson 1965; Jonas 1964.

absolutely foreign to theology (especially Christian) unlike Heidegger himself. In other words, the idea of ontomathematical ontotheology would suggest a certain kind of synthesis of the doctrines of both Husserl and Heidegger in mismatching even contradictory parts of them.

Meaning that ontomathematical perspective of theology, being the proper subject of the present study, one can reflect back to Heidegger's ontotheology to consider rather the philosophical category of "possibility" and respectively, the fundamental mathematical concept of "probability" as more relevant to the being itself and thus to to ontotheology. What "God Is" would be rather possibilities speaking philosophically or probabilities speaking mathematically, furthermore studied physically by theory of quantum information including as what underlies all the physical world, the universe.

The last statement explains how ontomathematics is able to pioneer the pathway not only to theology as a rigorous science, but further, even as an experimental science such as physics co-relating to each other both religious experience and empirical one of humankind divided by an abyss, which in turn can be interpreted to be similar or even the same as the Cartesian abyss: that absolute boundary of cognition established by Modernity to be "conditio sine qua non". How the so different religious experience and empirical one could be unified is to be investigated following relevant ideas of Husserl's original "Philosophie als strenge Wissenschaft" or the generalized transcendental temporality also recreated by Heidegger even in the title of "Sein und Zeit":

In the clear terms of ontomathematics borrowing in turn concepts of mathematics in order to interpret philosophical ideas, which would be rather blasphemous for Heidegger himself, transcendental consciousness, respectively the "being", should be distinguished from empirical consciousness, respectively, the "ontic" or any "regional ontology" by their corresponding temporality; mathematically said, topological in the former case, but metrical in the latter case. In other words and following rather Husserl than Heidegger, transcendental consciousness should be consider temporally, after which time is reduced to a moving boundary between the past and the future, called "now", just and only within which all the world, but only as existent, is concentrated and only to which empirical experience and experimental science make and might make sense.

Furthermore, the past is also available in the present as "retention" as well as the expectation of the future as "protention" (both according to Husserl's terms). So, his concept of "phenomenon" is correspondingly also temporalized, and before that as well as that of "epoché" to the question whether whatever is "in retention" or "in protention" since both ways of being are merged in the present, i.e. in the boundary between them. This means that Husserl's phenomenon is inherently ambivalent and bifurcated between the unification and the distinction whether about whatever is real or not or about it is "in retention" or "in protection" accordingly. What exists is concentrated just on that frontier between unification and bifurcation, and the concept of phenomenon is not only the unification at issue (though it is expressly emphasized by Husserl being what is newly introduced by him), but also the old Cartesian bifurcation between "mind"

and “body”. So, the temporalization of transcendental consciousness serves to demonstrate the unity of both unification and bifurcation at issue.

One can rather unexpectedly notice that the formal structure of the pair of “unification versus bifurcation” is just the same as that of a bit of information and thus the concept of information itself is implicitly involved though never articulated by Husserl himself. Of course, that would be impossible in principle since the concept of information (for example, in Claude Shannon’s definition) appeared later than Husserl’s age. In other words and speaking loosely, the ontomathematical description of Husserl’s “flow of consciousness” introduced originally (including for the objective of “Philosophie als strenge Wissenschaft”) is inherently informational rather than only topological.

So and particularly, information can be introduced still in the foundations of mathematics and (as it follows a little below) as a relation of set theory and arithmetics rather than topologically alone, and this means: as the corresponding relation of topological locality to nonlocality, namely as the class of all *infinitesimal* neighborhoods of any point of a continuum to the class of its *finite* ones. That understanding of information in terms of topology is rather intuitive, but it furthermore implies a more formal equivalent, namely as the relation of topological openness and closeness indistinguishably in any discrete topology such as that of integers or natural numbers, for example.

That is: the topologically introduced concept of information could be related only to a smooth continuum immediately rather than to the discrete topology of natural numbers since the corresponding relation degenerates tautologically to identity as for them therefore not making any nontrivial sense. Then and derivatively, information can be inferred from the relation of continuous topology to discrete one, and from the relation of set theory to arithmetic in the final analysis, as far as they are the most essential examples of the corresponding topologies, on the one hand, and information means the general relation of continuity to discreteness, whether interpreted topologically or not, on the other hand.

Furthermore, one may immediately observe that the definition of information is directly related to the Gödel (1931) dichotomy about the relation of arithmetic to set theory, namely either incompleteness of contradiction, now only reinterpreted as the relation of discreteness to continuity. Indeed, each bit of information can exemplify the Gödel dichotomy and here is how. Either of both alternatives of it (often notated as “0” and “1” arithmetically or as “false” and “true” logically) is either incomplete or contradictory to the state before the choice of either of them. Consequently, but speaking rather loosely, one might say that information (since its unit is a bit) measures the “amount of Gödel dichotomies”, and if it is grounded in the foundations of the physical world as quantum information rather than only as the relevant ana;pgical dichotomies in the foundations of mathematics as classical information, the Gödel (also philosophically interpretable as Hegel’s “dialectical contradictions”) are the ultimate substance of the being (even in Heidegger’s sense) rather than the “matter” of materialism or “spirit” of spiritualism and idealism. In fact, their fundamental contradiction (even heralded to be the “main

philosophical problem" by Marxism) is ostensible, seeming, and it is due only to the "spectacles" of Cartesianism being inherent for Modernity thus for Marxism including.

Indeed, the word of "Postmodernity" is frequently used, though in a too vague, unclear, ambivalent, ambiguous, and uncertain sense, just the overcome of the Cartesian episteme (i.e., figuratively speaking, the "taking-off the Cartesian glasses" through which Modernity sees reality too one-sidedly, namely locally excluding nonlocality) is the exact meaning of "Postmodernity", only after which, in particular, "Theology als strenge Wissenschaft" might be properly distinguished, or speaking otherwise, "God" as a certain scientific subject is possible only in Postmodernity, for which Heidegger's "ontotheology" was calling, implicitly synthesizing Husserl's phenomenology with the proper worldview implied by his basic theological education.

One last note about the link of the just sketched viewpoint (about the topological and informational (in the final analysis) understanding of Husserl's transcendental subject (as an initial temporal flow) to Einstein's relativity (both special and general) is necessary or at least possible. The reason is that his theory of relativity is metrical (just as any other physical theory is metrical for being able to allow for measurement) rather than topological, on the one hand, but it means implicitly the class of all metrics, though restricted to be definable whether in Minkowski space or in pseudo-Riemannian space correspondingly, so that it admits a topological re-interpretation further (i.e., now) linkable to Husserl's "temporal flow of transcendental consciousness", once it is also observed topologically as above, on the other hand. The bridge to Einstein's original conception is the fundamental physical concept of "reference frame" being unavoidable for the relative definition of mechanical motion since the definition at issue needs just the relation of reference frames (thus at least two ones) whether inertial in special relativity or not, in general relativity.

In other words, both special and general principles of relativity establish a universal metrics in a sense and the exact meaning of the equivalence of all inertial reference frames in the former case, further generalized to all accelerated reference frames (thus, restricted to be smooth, though, for the quantity of acceleration including zero acceleration to make sense) in the latter case.

The consideration in the above paragraph is to be meant "on the one hand". Then, i.e. "on the other hand", the proper topological consideration can be also involved in both theories of relativity by means of by the "conservation of causality" by virtue of which no future event in any reference frame correspondingly inertial or accelerated might turn out to be a past one in any reference frame as well as vice versa. In other words, the *frontier of time* (rather than time itself), being a topological concept in fact, is what is *absolute* and *conserved* an any corresponding reference frame including in both Minkowski and pseudo-Riemafnnian spaces (as the light cone in both cases though being deformed in the latter one, as far as the admissible transformations between reference frames conserve it topologically, i.e., homeomorphically).

So, the relation of the aforementioned topological (thus mathematical) reinterpretation of Husserl's flow of consciousness (whether transcendental or not), furthermore literally available in both theories of relativity as the principle of causality (thus and particularly, establishing its

conservation), is to be realized to the class of all reference frames, accordingly inertial or accelerated, meaning Lorentz or pseudo-Riemannian metrics since both spaces are metrical, and gravitational interaction is described just by the transformation of metrics between accelerated reference frames in any homeomorphism.

One may interpret the above consideration in only set-theoretic and logical terms; this means a physical theory such as Einstein's theory of gravitation to be linked to the foundations of mathematics since both set theory and propositional logic belong to them. That would be nonsense in the strict Cartesian framework because the aforementioned idea suggests the absolutely forbidden transition over the two opposite shores of the "abyss" since mathematics is situated on the shore of "mind", and physics is on the opposite shore of "body". However, if the "postmodern" worldview of ontomathematics is granted (as in the present study emphasizes again and again), the merging at issue is natural:

So, the problem can be formulated as follows. Whether a (whether smooth or not) topological space can be granted to be equivalent to the class of all possible metrics definable on it just as propositional logic as the universal and thus *inherently single* zero-order logic can be postulated to be equivalent to the class of all first-order logics (as set theory is interpretable) where the equivalence at issue is exemplified by the universal structure of Boolean algebra (featured by maximal symmetry of idempotency, algebraically or homomorphically). This means: whether any homeomorphism (i.e. already topologically rather than algebraically) of Euclidean space once it is (topologically) equivalent to Minkowski space (which is the physical interpretation of Poincare's conjecture proved G. Perelman; in more detail, e.g. in: *Penchev 2023 November 3; 2022 February 4*) is representable by a homeomorphism of pseudo-Riemannian space, or meaning Einstein'general relativity and speaking loosely: whether gravity according to his theory is only all possible deformations of Euclidean space and nothing else. In fact, only the sketched problem rather than its solution (whatever it would be) is relevant to the present section discussing Heidegger's conception of "ontotheology".

lII THE UNIFICATION OF PHYSICS, MATHEMATICS, AND PHILOSOPHY INTO ONTOMATHEMATICS ASKS WHETHER THEOLOGY SHOULD NOT BE ADDED TO THEIR UNITY

One can reckon that the above too specialized mathematical and physical considerations are rather ridiculous, maybe even nonsense, if they are granted to be theological, at least according to usual practice of theology or according to common sense's representation of it. However, they would fit to Newton's "The mathematical elements of natural philosophy" though it is nowadays interpreted to be an only physical theory thoroughly. The reason would be that the standard modern episteme dividing physics and mathematics on the two opposite shores of the Cartesian abyss had not yet been established in the age of Galilei, Descartes, Leibniz or Newton himself[5]. They could be physicists, mathematicians, philosophers or theologians simultaneously, though that kind of research would seem to be absurdly eclectic nowadays. Thus, Newton's

[5] Cf. Leshem 2003.

infinitesimal calculus and theory of gravitation now enumerated in absolutely different, even opposed realms of human cognition could be meant by himself to be closely linked if not even the same in a natural or "naive" ontomathematical approach bridging and assigning furthermore theology rather than only philosophy and particularly explaining the theological research in his later years as a natural continuation of the proper physical and mathematical investigation of his younger years.

One is to stare at Newton's heredity much more carefully than the usual and too superficial "understanding" that (as if) "he is a great mathematician and physicist in his younger years, but ("unfortunately") tending to mysticism, alchemy, and theology in his later years". Of course, that is the commonly accepted contemporary interpretation, but it is absolutely wrong since Newton lived in the epoche when Modernity had not been ultimately established. A much more relevant interpretation would be that he was the one of the first "ontomathematicians", but misunderstood and misinterpreted after his death in order to fit into the Procrustean bed and narrow-minded views of his contemporaries and successors, too far removed from his genius. In fact, the unity of both mathematical and physical discoveries of Newton implies a certain understanding of what God is and thus his research in the later years. On the contrary, Modernity postulated the Cartesian abyss could not even think of their unity, and the understanding what God should be was nonsense for it, being absolutely inaccessible to it, including even only as an option. So, one is to elucidate the unity at issue:

Another paper (Penchev 2023 November 3) considers the topic in much more detail, so a quite cursory recollection would be enough, furthermore substituting Newton original thesaurus by the commonly accepted contemporary one. So, he introduced infinitesimal calculus therefore doubling the preceding finite calculus, which might be interpreted rather idempotently than correspondingly to be local and nonlocal. In fact, the interpretation of infinitesimality to be whether much less or much greater than mathematical finiteness or human empirical finitude was not proper as for Newton himself restricting agnostically to consider them to be mutually different from each other. Indeed, both explicit articulations of Lagrange or Hamilton, expressly opposite to each other, appeared much later than his age. Then and especially essentially, gravitation as the universal force (or interaction, said more contemporary) ruling the universe is only the relation of infinitesimality and finiteness, and its origin is mathematical, unavoidably necessary if they (respectively and in terms of quantum physics, locality and nonlocality), has been in advance introduced. Just that, really ontomathematical understanding of gravitation as a mathematical relation whether between infinitesimality and finiteness or between locality and nonlocality is a thought quite impossible in Modernity after the Cartesian abyss featuring it since the former bridges its two shores and thus necessarily turning out to be "in oblivion". One may try to restore gravitation as an ontomathematical than physical force or interaction presumably following Newton's original approach:

Speaking geometrically, infinitesimality and finiteness are not collinear in general, so one can introduce a variable angle at each infinitesimal point of finite space granted to be usually Euclidean space, and then gravitation is what is to be introduced as a certain function of that

angle being inherently a quantity linked to the relation of infinitesimality and finiteness. That reconstruction is intended to demonstrate that Einstein's gravitation as it is introduced by general relativity can be in fact inferred immediately from Newton's universal gravitation if it is in advance restored to be ontomathematical rather than merely physical as today's reading of it wrongly states.

Then, Einstein's geometrical approach to gravitation can be also realized ontomathematically following two principles: (1) the light barrier (respectively light cone in Minkowski space or as it is "curved" by gravitation in pseudo-Riemannian space) is the boundary between infinitesimality and finiteness mathematically or between locality and nonlocality physically; (2) in each point of Minkowski space, the force or interaction of gravitation originating from the vector angle (with a few components) between infinitesimality and finiteness or between locality and nonlocality allowing for all smooth reference frames being non-inertial in general to be considered as a class of equivalence, to which all physical laws are to be invariant, should be introduced. In other words and speaking loosely, any non-inertial reference frame is reinterpreted to be featured by its characteristic deviation from the "flat" inertial reference frame in the same point rather than by its nonzero acceleration as in classical mechanics, though the corresponding deviation and acceleration are linked by an unambiguous function explicitly inferable from the Einstein field equation.

The substitution of "acceleration" with "deviation" (i.e. with the corresponding vector angle or "curvature") is crucial since it allows for the proper physical theory of "general relativity" to be formulated thoroughly geometrically therefore restoring the ontomathematical unity (originally intended by Newton to be the design of "The mathematical principles of natural philosophy") of physics and mathematics embodied in the force or interaction of gravitation though in an implicit and unarticulated way, obligatory in order to be avoided the "Cartesian censorship" (already too strong in Einstein's age unlike Newton's one). So, "gravitation" is an equating variable to all inertial and non-inertial frames analogical to velocity as to all only inertial frames in special relativity allowing in both cases for considering all reference frames to be a class of equivalence: respectively of all accelerated reference frames in the former case and all inertial ones in the latter (but chronologically preceding) case. Meaning the ontomathematical sense of the geometrical formulation of general relativity, one can reflect back on special relativity after its geometrical reformulation by Minkowski space unlike Einstein's original formulation (1905) in terms of classical physics:

So, one is to reinterpret the way for Euclidean space to be equivalent to Minkowski space after the understanding of the light cone as the boundary between locality and nonlocality, respectively infinitesimality and finiteness, furthermore invariant to all local (or infinitesimal) neighborhoods of all points in Euclidean space. Of course, Euclidean space is a tridimensional real (thus vector) continuum, by virtue of which it is a smooth manifold or topological space. However, the light cone furthermore being locally invariant to all points of Euclidean space suggests an unambiguous metrical interpretation on the rather ambiguous concept of topological boundaries between infinitesimal neighborhoods and finite ones. Only topologically considered,

those boundaries exist necessarily and the transition to them and beyond them is continuous. However, if special relativity by means of the mediation of Minkowski space is interpreted first ontomathematically and then mathematically, it postulates for those boundaries to be metrically determined by the parameter "*c*" physically interpretable as the speed of light in a vacuum and just a certain corresponding, namely *physical* constant. So, the parameter "*c*" implies a cone in Minkowski space similar to the light cone so that it is the invariant boundary between infinitesimality and finiteness allowing for all physical (though now rather ontomathematical) laws to be formulated to the class of all infinitesimal neighborhoods in special relativity (i.e., to the imaginary domain of Minkowski space), but to the relation of infinitesimal and finite neighborhoods as for general relativity (i.e. to the relation of the imaginary and real domains of Minkowski space also representable by only the imaginary area of pseudo-Riemannian space). Speaking loosely, the real domain of pseudo-Riemannian space does not exist at all since its imaginary domain is inherently doubled by the pair of not-coinciding covariant and contravariant counterparts corresponding to the pair of imaginary and real domains of Minkowski space under the additional condition for them not to be idempotent to each other. Here is how in more detail:

The pair of covariant and contravariant vectors as for each point in pseudo-Riemannian space can be now interpreted as the pair of quantities relevant to locality and nonlocality where they mismatch to each other, so that their relation unambiguously functionally lincable to the "curvature" at the point at issue and then, to the force or interaction of gravitation, is now realized as the relation of the corresponding quantities of locality and nonlocality both being finite and not corresponding to each other. Of course, that idea implies for entanglement to be the Fourier counterpart of gravitation (i.e. speaking loosely after the transformation of the variable of time into that of frequency) and thus a relevant entanglement theory of gravitation is possible being interpreted to be "quantum gravitation" in a generalized sense. Particularly, it suggests a real physical mechanism of how possibilities in the form of probability (density or not) distributions and their corresponding characteristic functions (what wave functions are) are able to become actualities in the form of gravitation and its energy.

One would question: maybe that physical and mathematical consideration of how "creatio ex nihilo" could happen omnipresently and omnitemporally (rather than at the singular point of the "Big Bang") would be a very impressive scientific hypothesis, but what does this have to do with theology and the eventual scientific definition of "God"? In fact, this is a direct link as long one suggests that "God" for theology (i.e. not for religion) substitutes humankind's ignorance of that mechanism so that if it is explicitly articulated, this a reasonable conjecture about what "God" should be for science thus interpreting in a rigorous way the attribution of the "Creator" and "Fulfiller" of human desires and prayers therefore connecting God for religion with "God" for quantum theology[6] as exemplifying the idea of scientific theology.

[6] The idea of "quantum theology" is common enough in various contents: for example, Qureshi-Hurst 2020; Valverde 2018; Basson, Koekemoer 1997. One may complement papers relevant to the relation of quantum physics to God, religion or theology: e.g., Qureshi-Hurst, Pearson 2020; Simmons 2014; Ijjas 2013; Dodds 2012; Fehige 2012; Wegter-McNelly 2011; Brecha 2002; Hodgson 2000; Koperski 2000; Saunders 2000; Stewart 1997; Laurikainen 1990; Davies 1984; Ross-Bonney 1975; as well as

IV OVERCOMING THE OPPOSITION OF RELIGION AND SCIENCE BY THE UNIFICATION OF NONLOCALITY AND LOCALITY

The conclusion of the last section referring to the possible unity of "God" for both religion and theology (once it has been in advance granted to be "quantum") can be continued further from theology to science at all, and immediately to physics and mathematics. One might exemplify and visualize that continuation rather spectacularly by Darwin's theory of evolution meaning all contemporary discoveries in that field and especially involving genetics. As it is very well known, his theory, directly contradicting Christianity, called for a huge debate.

Nonetheless, it has contained a certain difficulty or gap not suggesting any mechanism other than "mutations" for any only possible change in any biological species to be established and fixed so that, combined with all other relevant changes, it eventually results in the emergence of a new biological species.

The hypothesis of mutations suggested that they appear caused by various mutagenic factors absolutely *randomly*, and only then, natural selection and extinction choose only a few of them being relevant to the corresponding environment. However, all those possible mutagenic variations resulting only in the final analysis in those several relevant ones cannot be corroborated really. The natural process of evolution does not seem to be random rather recollecting the reasonable experiments of some hypothetical "designer" acting as a human being researching for the solution of a certain problem far not absolutely occasionally, but trying only an insignificant amount of possible solutions in advance crucially restricting the experiments to a few ones being the most promising to turn out to be the sought solution. As a comparison: of course, Newton did not test one by one all sets of random letters approximately equal to the number of letters, of which "The mathematical principle of natural philosophy" consists, since he is a genius able to think very successfully thus limiting that absolutely random sets of letters only to meaningful ones able to represent what he thought.

The conjecture of mutations is nonsense since nature just as Newton tries only a reasonable amount of possible solutions and thus not all possible permutations being a so colossal number since evolution cannot happen at all even for many billions of years just as Newton could not write his work ever if he had one by one tried randomly all variants permuting the set of all letters of his masterpiece. In other words, nature seems to be no less ingenious than Newton, in order to be able to do real evolution for a single billion of years (or a few ones). Thus, the advocated here "quantum theology" (even more so advocating to be a "rigorous science") suggests a third position in the debate of creationism (also adopted by religion and usually by theology) versus evolutionism (being standard for biology and science) sharing certain features of both, namely:

Quantum theology just as creationism rejects that evolution is absolutely random and that all possible variants are realized due to the action of mutagenic factors. On the contrary, only a few ways of adapting to the environment are tried so that a huge number of those are in advance

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publications about "God and physics" or "physical theology": Ostrowick 2016; Nordlund 2015; Cat 2012; Attfield 2005; Bernstein, Lebow, Stein, Weber 2000; Peterson 2000; Worthing 1996; Hatfield 1979.

rejected as not making sense for the discovery of the relevant evolutionary solutions. That generates the illusion that some unknown reasonable actor, presumably "God" directs the evolution crucially restricting the attempts just as a human being would do for resolving a problem, due to the capability to be just *reasonable*.

However, quantum theology just as evolutionism rejects any supernatural reasonable "force" including God postulated by religion to direct evolution. Instead of that, it establishes that nature by itself, obeying only natural or mathematical laws seems to be reasonable at least in the degree to which a human being (for example, as Newton creating "The mathematical principles of natural philosophy") can be reasonable. Of course, nature though seeming to be reasonable is not "supernatural": it is in definition just natural.

That rather paradoxical state of affairs in evolution can be exemplified by the theorems of Conway and Kochen (2006; 2009) called by their authors themselves the "free will theorems" and proving that if a few statements of quantum mechanics and special relativity are gramed in advance, the suggestion that the experimenter, i.e. one or more human beings, possess(es) free will, this implies that the measured quantum entity, for example an electron possesses the same "valuable commodity" in a not less degree. So, the theorems at issue complemented in turn by the conjecture of natural quantum mechanisms involved or "used" by evolution imply in an absolute rigorous and mathematical way that evolution itself and by itself without the hypotheses of whatever supernatural intervention can be reasonable at least in the degree in which a human observer studying the relevant biological phenomena is commonly accepted to be reasonable.

Speaking loosely, the reasonability of humankind and nature is inseparable and shared. On the contrary, classical science including biology, genetics and evolutionary theory reckoned that it is thoroughly concentrated in human beings so nature could act only randomly: an absolutely wrong prejudice. It originates from Modernity's Cartesian dogmatism that nature (i.e. "body" or "object") and humankind (i.e. "mind" or " subject") are divided by an "abyss" and thus opposed to each other.

On the contrary, quantum theology at all or particularly applied to evolutionary theory and genetics is "postmodern" in the exact meaning that it rejects the aforementioned prejudice even including to be anti-scientific. This means that evolution being an absolutely natural process, nonetheless, can be simultaneously reasonable just as a human being can be therefore generating the illusion of some unknown reasonable actor, e.g. God for religion, as if ostensibly directing or ruling and controlling evolution.

Thus, the polar opposition itself of creationism versus evolutionism as until now is fundamentally wrong and it is due to Modernity's "glasses", only for which creationism is situated on the shore of "mind", but evolutionism is on the opposite shores of "body". The debate between them originates from the "glasses" at issue and which have to be "put off" in fact, after which the debate itself vanishes in thin air. Then and following quantum theology, one can investigate the reasonability of nature and particularly that of evolution utilizing usual or generalized scientific methods in relation to "God" as a scientific subject along with many others already existing or forthcoming to appear in the future: and loosely definable as "natural

reasonability" or "nature's reasonability", or eventually even as scientific "pantheism" (however, "pantheism" is also a wrong hypothesis meaning the eventual ontomathematical solution of the "Yang-Mills existence and mass gap problem" sketched in more detail further).

Then, one can postulate wave functions, i.e. characteristic functions of probability (density or not) distributions involved to describe the quasi-reasonable way of adaptation to environment leading to the emergence of a new biological species following (rather figuratively speaking) a generalized principle of least action as if the evolution itself and by itself finds the shortest pathway for the transforming the parent species into the sibling ones. Indeed, nobody reckons that a material body obeying the literal physical principle of least action and thus "discovering" the shortest trajectory is really reasonable. So, evolution is also quasi-reasonable only following a natural principle though only analogical to that of least action.

Using the same visualization, classical evolutionism would state that the "movement" to a new biological species follows all "mutagenic trajectories" and their probabilities are equal. Then, natural selection picks out a few of them, remains of which are eventually discovered by paleontologists. So, according to that hypothesis, all mutagenic trajectories had really been accomplished, but only those supported by natural selection are revealable since the probabilities for them to be found are essential enough.

On the contrary, and according to the alternative conjecture advocated in the present section of the paper, only those several mutagenic trajectories discoverable by remains had actually happened since nature is reasonable by itself in a sense and according to quantum laws (in turn being in the foundations also of "quantum theology as a rigorous science") so that a preliminary selection of possibly successful mutagenic trajectories had been done by virtue of a probability distribution and the corresponding wave function picking out in advance only the *most prospective* biological designs for further "experiments" by natural selection: in other words, just as if a human and thus reasonable experimenter rather than the "blind nature" has been accomplished the selection. Indeed, a human or a "divine designer" resolving any problem would not act as "nature" wrongly alleged to be ostensibly "blind", but on the contrary, would suggest for costly experiments only a few "proposals". In fact, nature is "blind" only in Modernity particularly articulated by Cartesianism and its famous "abyss" so that nature as "blind" and the human mind or "God" as reasonable (not being "b;ind" but gifted by "sight") are opposed to each other, being situated on its two divided shores.

Anyway, one might question whether some experiments or observations at least as ideas or in the kind of Einstein's "Gedankenexperimenten" could resolve the dispute of the aforementioned two opposed alternatives, since otherwise it would be rather a metaphysic and speculative "hassle" thus being scientifically meaningless. As for the direct results whether unchosen by natural selection mutagenic trajectories had been really accomplished or not, contemporary empirical paleontology is rather effortless, even more so that the absence of relevant remains corresponding to the entire veer of possible mutations might be ever falsified by later refutations. However, one is able to notice that the formal structure of the dispute at issue is analogical to that about the availability versus the absence of hidden variables in quantum mechanics so that the

relevant hidden variables would correspond to the viewpoint advocated by classical evolutionism both being together situated on the shore of classical science and unambiguous causality.

So, one might conjecture "quantum correlations" or "entanglement" as observable phenomena if the alternative of (quasi-)reasonable nature is the correct one. It would mean eventual nonlocal influences on the course of evolution thus not being explainable by classical causality firmly linked to classical correlations. They would consist in jumplike changes favoring, facilitating and crucially accelerating the emergence of a new biological species, consequently shortening the period necessary for it to arise by a certain simultaneous relevant set of mutually assisting each other evolutionary changes rather than their separate emergence one by one. So, the internal "entanglement" of the featuring new biological characteristics appearing inexplicably as a package of amplifying each other's improvements rather than an eventual external nonlocal influence would be more prospective for proving.

That rather extended example by the eventually overcomable opposition of creationism versus (classical) evolutionism, though being very interesting by itself, is designated to demonstrate the way for how religion and science (just by the mediation of "quantum theology as a rigorous science") can be anyway unified regardless of their ancient conflict and even "war" sometimes. The basis would be the conceptions of locality and nonlocality both being interpretable simultaneously physically and mathematically:

Then, the too well-known and so sorrowful opposition of science versus religion would be due only to the wrong restriction of the latter only to locality incorrectly linking any empirical or experimental science (a commonly accepted example of which is physics) to locality as a ostensibly necessary condition of scientificity at all. The opposition of science versus religion is absolute, only wrongly granting that (thoroughly redundant) self-limitation of the former to locality. However, the development of science itself (by quantum mechanics and especially by involving nonclassical quantum mechanics what theory of quantum information is, in fact) breaks down those "chains" of locality, after which its opposition to religion is only a prejudice due to the tradition and Cartesian dogmatism, only for which humankind (and respectively God) are reasonable alone and unlike nature itself, being inherently "blind", i.e. acting absolutely randomly in definition.

On the contrary, nature being nonlocal, but not less than local, is reasonable by itself, and the only cause for not noticing its reasonability (or speaking otherwise, quasi-reasonability) are the Cartesian "glasses" obligatory in Modernity according to its "fashion" or "court etiquette" (in fact not less ridiculous than Descartes, Newton, and Leibniz's wigs being an integral part of the portraits by which their faces are known today). If one puts off them, an immense, though invisible until now, realm of nature appears, figuratively called to be "dark" just for that alleged invisibility. Then, only the "light" nature is paradoxically "blind", absolutely randomly acting and thus "unreasonable". If it is complemented by its "dark" counterpart, nature turns out to be reasonable at least in the degree of humankind, and correspondingly it might be thought as a "pantheistic God". However, the abandonment at all of any opposition of the ostensibly

unreasonable nature versus the boastfully reasonable human beings is much more relevant, and thus particularly, the traditional opposition of science versus religion.

V FROM RELIGION BELIEVING IN GOD TO THEOLOGY RATIONALLY DISCUSSING WHAT GOD IS

If one has already abandoned the opposition of religion versus science (as that is rationally justified in the last section), but now from the viewpoint of religion itself as well, the problem of God, not only as the Belief in Him (as Christianity postulates), but also as a proper scientific subject appears. In fact, that kind of religion claiming that belief is the only way for Him to be accessible for humans is not relevant, being the (dual) counterpart of classical science in Modernity restricting itself to locality as that "conditio sine qua non" for any scientificity at all.

One can trace back that anti-nonlocal prejudice originating from classical science and physics, but acting even to the cognition of quantum reality (being inherently nonlocal, or speaking loosely, "quasi-religious") where it has established classical quantum mechanics and all features of it enumerated above and in more detail in other papers (e.g., Penchev 2023 November 3). So, what quantum reality by itself is would be a relevant starting point to think of "God" scientifically.

A preliminary notice is necessary since billions of human beings all over the world believe in God though confessing different religions, but what God is (for example, after quantum theology) might understand probably a few thousands people furthermore even being atheists (most of them); moreover, their atheism than belief is what rather facilitates to think of "God" scientifically. One crucially opposes the understanding of what God or "God" is versus the belief in God, whether being more or less rationally justified or much more frequently being irrational, often even rejecting reason (and thus science including "quantum theology") as irrelevant or contradicting religion consisting in Belief in God, first of all.

Obviously, the human capability of critical thinking rejects practically all texts or statements, postulated to be sacral e.g., by Christianity or Islam, as fictions similar (in its relation to reality) to the novels or short stories created by certain and well known authors, being professional writers and by virtue of their imagination. Analogically, all religious texts or statements are arbitrary and thus irrelevant to reality if humankind relies on reason. However, almost all humankind follows the traditions, social order and hierarchies and authorities, including the Church, without subjecting them to that critical analysis which features science. In fact, that capability of scientific understanding is not only extremely rare, but furthermore needing an extended period of study lasting a few decades to be mastered, at that, only in a very narrow discipline granting that the corresponding subject can be absolutely separated from all other branches of cognition. So, scientific thinking, though being exceptionally valuable and useful for the development of technologies and techniques, on which the modern world relies crucially, is too difficult for humankind in general. Speaking loosely, one might refer to the notorious aphorism of Heidegger that we (i.e. humankind) does not think yet; in other words, oppositely to the preceding pathos of the Enlightenment (and later):

One can illustrate that maybe too provocative thesis quite simply: no scientific theory or hypothesis has been even democratically voted, for example by means of some relevant referendum, or as a law of any national parliament or as an ultimate decision of any court. The reason is absolutely obvious: the scientific theory or hypothesis at issue will be not merely understood by the voters, the members of the Parliament or the Court. Indeed, they have not been elected for their capability of scientific thinking, so that they would be not able to estimate them and to establish for them to be true or false. Furthermore, even one (counterfactually) admits that a certain Parliament or Court is really competent (for example) to a physical theory such as general relativity, it will not be competent to all other theories out of physics and even to many proper physical theories or conjectures not touching the problem of gravitation. One can pay attention to the following paradox featuring scientific cognition: though it claims to be *universal*, in fact it is *universally* incomprehensible or misunderstandable in general.

One can immediately compare with religion: analogically it claims to be universal, but unlike science its texts and statements are universally comprehensible and understandable (though irrelevant to reality according to science, at least contemporary one). Indeed, science states that they are absolutely false. However, they would be those which would be elected in a democratic referendum versus their scientific counterparts on the same subject especially as to quite newly introduced scientific theories or hypotheses even only due to the obvious fact that the latter ones would be incomprehensible and misunderstandable enough for the voters in general.

The aforementioned observation refers to the relation of religion and theology once it would like to be a “rigorous science” particularly “quantum theology”: the believers would reject it as any other scientific text as incomprehensible or eventually misunderstood in general. Though it would share the same interest in God as religion their attitude or respectively, the viewpoint to the same subject would be diametrically opposed even in the following exact meaning: the viewpoint of religion to God is inherently *internal* unlike that of any scientific theology being *external* to the same subject. Then, is it at all possible for them to be unified as the present paper advocates?

One can suggests initially a qualitative “invariance”, though the term is reserved to be usually used in an absolutely exact, and thus quantitative meaning in both physics and mathematics, but now in a rather psychological sense, namely for unifying internal “experience” (such as religious belief in the case) and external “observation” (e.g., including “God” as an subject of science, even a rigorous science as what “quantum theology” is claimed to be).

Obviously, classical science, even as a definitive condition to be at all possible, substitutes always “experience” as inherently subjective, occasional, unreliable, and quasi- or anti-scientific in the final analysis, by observations or experiments repeatable by any other scientists following an unambiguously described procedure for their processing. The replacement at issue is unavoidable if one endeavors science to be objective: however in fact, that is a prejudice, a restriction shared only by classical science, which “cuts” and thus make impossible certain sciences: for example, psychology, but only in its framework:

Indeed, the subject of psychology should be “psyche”, i.e., less or more, internal and subjective experience, but it should be represented by external observations and experiments as classical science needs, and what behaviorism follows literally. However, classical science should really cancel in advance the subject of psychology being inadmissible for it as inherently subjective and thus quasi- or anti-scientific. Once in has been preliminarily canceled, it might be as a result substituted by whatever observations or experiments since what to which they should correspond, “psyche”, is initially removed as “conditio sine qua non” for any psychology in the framework of classical science in order to be “objective”. Speaking loosely, classical psychology destroys its proper subject for being an objective science: an obvious paradox still in its foundations not allowing for it to be a natural science such as a biology, but an interpretative science among “Art and humanities”, i.e. crucially depending on the experimenters or observers’ interpretations.

One can see that substitution of any “subjective experience” by relevantly external and universally repeatable observations and experiments, as a trivial case of the meant “invariance” (in a wide sense, sketched above) where the subjective experience, on the one hand, and any observations or experiments, on the other hand, are absolutely separated from each other therefore excluding any “entanglement” (or respectively, smooth transformation between them). As for the opposition: “God for religion and a few billions of believers” versus “God for (quantum) theology and thus for about a few hundreds of scientists (engaged to study that subject)”, it would share the same paradox of psychology, namely: it is necessarily to be an interpretative science within the framework of “Art and Humanities” once the dogmatism of classical science is granted in advance (after which the present study researching approaches for theology to be a rigorous science is nonsense, in particular):

As well as vice versa: if one shares the context here, the framework of classical science is to be abandoned since it excludes theology to be a “rigorous science”, crucially depending on ones’ interpretations contradicting each other in general. In fact, the present approach is even much more “scandalous” (respectively, “nonsense”) since it approaches theology to be not only a rigorous science, but furthermore a mathematical or “ontomathematical” one thus not only excluding any human (thus contradictory) reflections on “God”: on the contrary, it tends to substitute them with formal proofs, in its essence being the same as any other proofs in mathematics. Speaking quite loosely: what about, then, those billions of believers absolutely incapable to comprehend any mathematical proof (even eventually touching God in Whom they believe rather than studying as “God”)?

In fact, theology has been always incomprehensible or misunderstandable for practically all believers, furthermore, absolutely redundant even maybe harmful for their belief. So, quantum theology would be still more incomprehensible, misunderstandable, redundant or harmful than the standard, interpretative theology. Thus, it would be much more scientific or philosophical than religious. Nonetheless, classical science continuing to dominate science would reject it just as it rejects any theology or religion as anti-scientific. A question is forced: who needs it?

Rather science if it overcomes the restriction imposed by Cartesianism for natural science to be definitively local, but not less religion if it understands the necessity to reconcile itself with science, as well as overcoming the opposition and fight of religion and science since it has originated from the incorrect and limited understanding of what God or "God" is. Utilizing the well-known parable about the "elephant described by blind people", quantum theology is able to describe still one part of it, inaccessible for the others, to be "scientific", i.e. science-like just as those feeling the trunk of the elephant state for it to be serpentine, i.e. "snake-like".

One can complement a new option now introduced by quantum theology: for the collaboration of humankind with "God" (as for religion or classical theology) or with "nature" in terms of classical science. Of course, the collaboration of humans with God is nonsense for religion since He is postulated to be transcendent or fundamentally unknowable, furthermore infinitely more powerful than humankind as a whole. One can suggest again the metaphor for young siblings who have already grown and thus they are really able to collaborate with their parents unlike them being babies, children or teenagers. They are really adults already and thus able to assist. As for classical science, the "collaboration with nature" is also nonsense since it is polarly postulated to be absolutely unreasonable, "blind", i.e. acting fundamentally randomly without any intention or design inherent only for people. For example, it would be funny, ridiculous, or even queerly and crazy if scientists would try to negotiate with nature for any natural law to be surrounded rather than followed unconditionally. Anyway, quantum theology admits the option of dialog with nature by the language of mathematics where the "language of mathematics" being the language of nature, is not a metaphor any more.

Furthermore, that collaboration of humankind with whether "nature" or "God" would be mutually beneficial in a sense since the reason of the former is rather local unlike that of the latter (regardless of interpreting it the whether "nature" or "God") being inherently nonlocal. So, if "nature" or "God" need any local acts or actions, they might "trade" with humankind exchanging nonlocal ones, being presumably useful, but inaccessible as for humankind. The relevant "trade negotiations" might take place only ontomathematically, i.e. in the language of mathematics since both "negotiating parties can speak it". It is the "native language" of "God" and "nature", and humankind is able to master it though not being native for people.

However, at least religion means the converse option, namely that God understands human prayers articulated by languages native to people, even to talk with them by thoughts or words sounding directly in the brain or mind of chosen humans. Nonetheless, contemporary psychiatry reckons those "voices" speaking directly in ones' head to be severe and dangerous pathology featuring, for example, schizophrenia.

A proviso is obligatory. The eventual dialog of people with whether "God" or "nature", but in the sketched above sense of quantum theology, advocated here, needs both sides to be really able to understand each other, rather only in order to liken the necessary comprehension according to an exact criterion, which can be considered as a generalization or interpretation of the "Turing test" since it means originally whether a machine created by humans might be adopted to be reasonable. Of course, neither "God" nor "nature" (meaning the corresponding

references of both words) are created by humankind unlike a computer and its software, including AI though being much more sophisticated and complicated. So, the generalization would consist in the following: the machine supposedly thinking is substituted with any entity ("God" or "nature" in the case at issue) to which the question (or problem) makes sense. The essence of the Turing test's criterion is that humans can be granted to be a standard for reasonability and then, the coincidence with the available standard (by the way, that standard is forced to be single) is a sufficient condition for the investigated entity to be identified as reasonable. Of course, the Turing test can not be accepted to be also a necessary condition for reasonability. One can quite easily admit that there might exist some unknown entities being reasonable by itself but behaving distinguishably enough from an "average human" granted to be the standard of reasonability. (Obviously, there are many enough humans different from that "average human" essentially and speaking loosely rejectable to be reasonable if one uses the Turing test in relation to them[7].)

However, the present modification of the Turing test means both sides of a dialog to understand each other where one of them is postulated to be a human, and the other is conjectured to be "God" or "nature". The latter might be reasonable and nonetheless, to be "non-dialogical" in relation to humankind, but that might not be the case if they have satisfied the Turing test since it presupposes for the entity investigated for reasonability to be dialogical in advance, as a preliminary premise. In fact, the meant generalization or modification of the Turing test researches "dialog-ability" which is more essential in the present context once any non-dialogical Reason or Mind (if "God" or "nature" would turn out to be those) is irrelevant.

One may use the examples of AI based on GPT. They have trained themselves utilizing a huge number of language patterns of human thinking by relevant texts so that they are able to suggest new texts relevant to any parameters originating from a dialog with real humans and the texts at issue to be their "repliques" satisfying the Turing test well enough (at least in relation to almost all people participating in the corresponding "ChatGPT" dialog). In fact, one cannot certainly distinguish whether the ChatGPT really understands them, being really reasonable, or it is only a simile, following a huge set of reasonable examples of human understandings: since the Turing test grants for both to be equivalent in definition. Analogically, if one uses the aforementioned modification, the distinction of whether "God" or "nature" are either *reasonable* or *quasi-reasonable* (so that they would only liken human reasonability) does not make sense once it does not make sense at all in the case of the Turing test[8].

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[7] One might visuale the idea as the following "dual" modification of the Turing test. A human instead of a machine is closed within a "Chinese room", and other humans outside of it are to decide that what is in the Chinese room is reasonable or not.

[8] One can notice that the Turing test postulates the indistinguishability of the axiom of induction in arithmetic and the axiom of infinity in set theory and thus indistinguishability of "finiteness" and "infinity", after which the Gödel dichotomy about their relation does not make sense therefore implicitly demonstrating that it is an additional meta-axiom to the foundations of mathematics. So, the Turing test is consistent with ontomathematics establishing the coincidence of mathematical models and reality in turn inspired by the theorems of the absence of hidden variables in quantum mechanics. Not only figuratively, one can conclude that the Turing test states the absence of any 'hidden variables" able to distinguish

One can suggest an elementary visualization by the free will theorems (Conway, Kochen 2006; 2009) if one interprets "free will" as "reasonability". Indeed, the calculation realizable by any Turing machine (including even the "endless calculation") can be distinguished from reasonability just by "free will" featuring the latter, but never the former. Then and applying the free will theorems already to the pair of "calculation" and "reasonability", an immediate corollary from them would be that for one to grant the experimenters' (or observers') reasonability, this implies the reasonability of the experimented or observed part of nature once the corresponding several statements of quantum mechanics and special relativity has been also accepted in advance as in the premises of the free-will theorems themselves:

Then, one interprets the statements at issue rather philosophically as establishing both nonlocality (for those belonging to quantum mechanics) and locality (for those belonging to special relativity) being mutually contradictory or complementary (in fact) to each other. Indeed, if the experimenters (or observers) need free will and respectively reasonability for being able to choose just the one certain member of any complementary pair, the same "valuable commodity" for choice (and thus for free will and reasonability) follows necessarily for the investigated natural entity whether quantum or not.

Quantum theology, initially attributed to the *conservative* generalization of science (and first of all, physics, by quantum mechanics and information along with the inherently local area researched by classical science or physics), can be now more precisely attributed just to the relation of locality and nonlocality since it implies the reasonability of nature inferable in an absolutely rigorous way utilized the same pattern already elaborated by the free will theorems, after which the thesis meant by the title of the paper (for quantum theology to be a rigorous science) can be considered to be an immediate corollary from the theorems at issue.

VI FROM "PHILOSOPHIE ALS STRENGE WISSENSCHAFT" TO "THEOLOGIE ALS STRENGE WISSENSCHAFT", OR THE PHENOMENON OF "GOD"

The just now starting section will the modify the viewpoint sketched in the previous one (where the viewpoint was the pair of locality and nonlocality, being inherent, at least initially, for physics rather than for philosophy) by means of Husserl's phenomenology (and its fundamental epoché to reality), from whom is borrowed the figure of "Theologie als strenge Wissenschaft"[9] as

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reasonability from quasi-reasonability just as the free will theorems state that no difference between the experimenter's free will and the measured quantum entity's "free will" (so that the quotation marks in the latter case do not make sense being only the humans' prejudice).

[9] One can also interpret it as a kind of "mathematical theology", for example after: Król 2018; Harrison 2017; Albertson 2014; Creegan 2014; Kalvesmaki 2013; Richards 2011; Russell 2011; Bridgeman 2009; Sriraman 2009; Byl 2007; Cohen 2007; Benford 2006; Hemming 2006; Valente 2005; Mazzotti 1998; Driessen, Suarez, eds. 1997; Fleischhacker 1997; White 1987; Brams 1980; Friedman 1974; Granville 1967; Miller 1957; or "phenomenological theology": e.g. Dica 2017; Masterson 2013; Ciocan 2009; Morrison 2007; Kracher 2000; Mall 1991; Farber 1943. One should furthermore mean the "formal distinction of philosophy from theology" (Philipse 2009; Robbins 2002; Nuyen 1991; Seidler 1977; Rawlins, Ian 1945), incl. after Heideeger (Capretto 2014; Russell 2011). Anthropology as a rigorous science (e.g. Bossert 1982 in relation to Strauss's "structural anthropology") would correspond to that "rigorous anthropology".

derivative from his original title “Philosophie als strenge Wissenschaft” (furthermore introducing the “flow of consciousness” in a rather transcendental sense and then interpreted to be “fundamental ontology” and the fundamental ontology simultaneously, already in relation to Heidegger).

Indeed, he meant immediately “epoché to reality” (also grounding the concept of “phenomenon” after him), but it implies necessarily the relation of “mentality” and reality where “mentality” is to be understood as correlative to reality and following the modern Western philosophical tradition particularly in the Cartesian dichotomy of “mind” versus “body”. Then, “Theologie als strenge Wissenschaft” is at once derivative from “Philosophie als strenge Wissenschaft” only considering “epoché to reality” as the unified (i.e. both philosophical and theological) relation to reality.

The same approach can be once more discussed and illustrated by “phenomenon” after Husserl, translating it, for example, into the ancient philosophical tradition as the opposition of Plato to Aristotle (partly veiled by the fact that Plato’s doctrine had been preceding Aristotle’s one). “Phenomenon” means the unity of “things” and “ideas”, but therefore the relation of things and ideas is presupposed, particularly embedded in the “correspondent theory of truth” where the relation at issue is interpreted to be just that correspondence, “adaequatio” however criticized by Heidegger and replaced by “Aletheia”. Heidegger’s “Aletheia” is derivative from Husserl’s “epoché to reality” just as “Theologie als strenge Wissenschaft” is derivative from “Philosophie als strenge Wissenschaft”.

Then, one can think of “quantum theology” (an idea rather philosophical than theological) as a doctrine of truth, by the way following the proper theological tradition after which “God is truth” (along with all the rest). One may think of the “phenomenon of God” applying Husserl’s “epoché to reality” (i.e. whether God exists or not) as “truth” in a sense however needing a few provisos or clarifications at least since “truth” is a universal philosophical concept though not less fundamental than reality rather than theological and applicable only indirectly to religion or to religious belief.

First of all, one is to trace back the way how truth is above introduced as the relation of “mentality” and reality, and then, generalized after “epoché to reality” implying for reality and “mentality” not to be at all distinguishable. Then, “truth” seems to be rather trivial since it is a trivial corollary from the relation of identification (of both reality and “mentality”) originating from Husserl’s “phenomenon” or “epoché to reality”. In fact, “truth” is not trivial (and thus redundant) if reality and “mentality” do not coincide absolutely and in definition so that their correspondence (respectively, “correspondent theory of truth”) makes sense (i.e., a nontrivial sense).

If one states that the “phenomenon of God” is “truth” starting from the trivial case where reality and “mentality” coincide absolutely and in definition, the explanation of that statement as for “mentality” and reality not being the same, is necessary. The most natural conjecture would suggest that the “phenomenon of God” is to be identified with “cognition” since it endeavors and tends for restoring their initial identification, after which “truth” is trivial. Meaning that, one

should reflect how that consideration reinterprets the relation of science and religion themselves once the former is engaged with cognition and truth, but the former, with God and eventually and only indirectly, only by means of His Mediation with truth as well:

Obviously, but interpreted just in that way, science and religion would mean the same, however observed from two different, complementary, mutually excluding viewpoints therefore contradicting each other being applied simultaneously. Indeed, religion means the internal viewpoint of belief or being "within God" just by virtue of belief, and unlike science being inherently "outside God" thus able to reflect "His phenomenon" removedly, i.e. outside, or in other words scientifically and objectively as cognition and truth.

One might utilize the following, quite natural metaphor about both relations to God and "God" (those of religion and science accordingly): being *home*, consequently inside it, versus the case of observing it outside, i.e. removedly and "objectively", as a *house*. Obviously, whether one's house (thus home in a proper sense) or merely a house, it is the same, but in two mutually excluding relations, attitudes or viewpoints to it, thus implying a contradiction being applied simultaneously. However, the question which attitude is more correct does not make sense though "being home" is emotionally positive (at least for the fact that nobody stays home permanently).

Following the lesson of that "home parabel", one can conclude that the question which relation to God or "God" (namely, "Both" of religion or science) does not make sense inherently suggesting their unification just according to the objective of the present paper. Then, "Philosophie als strenge Wissenschaft" can be interpreted to be a generalization of "Theologie als strenge Wissenschaft" relying on the statement of the phenomenon of God (or "God") as truth.

One is to pay attention also on the following: the course of thought unifying religion and science as above is relative to that of Husserl to ground his "phenomenology" at all, rather than only "Philosophie als strenge Wissenschaft", and it can be called the invariance of the external and internal, an epoché to the external (implicitly starting from the internal) as well as an epoché to the internal (implicitly starting from the external), or briefly notated as "phenomenological thought". Then, one can reveal the same "phenomenological thought" in many other relations: for example, those of: locality and nonlocality; special and general relativity to quantum mechanics (which will be discussed in detail in Section VIII); experimental science and theology (in Section IX); etc. Furthermore, it can be interpreted as a specific approach to the totality (in the next Section VII), which in turn might be granted to be the subject of philosophy.

VII THE DEFINITION OF THE TOTALITY AND THE DEFINITION OF "GOD" (FOR THEOLOGY AS A SCIENCE)

One can represent what is above called "phenomenological thought" as an implicit definition of the totality just as the eventual proper subject of philosophy. Indeed, if one unifies "mentality" and reality, respectively the external and the internal or whatever pair of the enumerated above (as well as many others not mentioned), the totality is what is meant implicitly; and here is how. If one considers any dichotomy, i.e. consisting of two parts so that the one member is the

negation of the other one, or respectively, consisting of two areas so that the one is the complement (including in the exact meaning of set theory) of the other (also an idempotent relation), i.e. to any idempotent pair in the final analysis, what is "phenomenological thought" can be applied so that both alternatives (said otherwise, both members of opposition, dichotomy, idempotency, etc.) to be unified into a single entity granted to be the "totality" including as what philosophy means as its subject.

One can immediately notice that what is now called to be "phenomenological thought" is very similar to that thought invented by Hegel as "dialectical logic" or "dialectical thought" as being inherent and fundamental for philosophy. Indeed, if one considers his "thesis" and "antithesis", they can serve as a formal notation of all pairs enumerated above, and their "synthesis", as an "epoché to antithesis", but not less to be an "epoché to thesis". Obviously, any "synthesis" in Hegel's sense means the totality, or at least that aspect of the totality accomplished by the opposition of "thesis" and "antithesis" (in any given and thus certain exemplification).

One can relevantly suggest that what philosophy has eventually granted to be its subject, namely the totality, is what predetermines both "phenomenological thought" and "dialectical logic". Even much more, one reveals the same formal structure in … a bit of information. In fact, its two options (often notated as "0" or "1" or as "false" and "true") are formally and mathematically isomorphic to Hegel's "thesis" and "antithesis". However, the "directions" of a bit of information and Hegel's "dialectical logic" are opposite: the choice of any alternative of both in a bit of information suggests for their unity to precede which is then chosen. On the contrary, Hegel's synthesis unifies them being granted to be in advance separated.

If one accepts that information or quantum information is the ultimate substance being both mental and physical, and the corresponding units are bits or qubits (where a qubit can be granted to be an infinite set of bits), the universe (or the being in a philosophical reflection) consists of choices and only of choices in the final analysis. The usual understanding of choice is to be one's choice just as that of information is to possess a certain carrier. Then extrapolating the same comprehension of "choice" as for those fundamental choices of which the universe consists to be always "one's choice", that one (who makes choices) can be postulated to be just "God" and thus defined for theology as a science.

However and not worse. one can reject that "One", called "God", as for all those choices of which the being (respectively, the universe) consists in the final analysis by admitting that the suggestion that all choices are always one's choices is not more than a prejudice, and consequently: those choices being the ultimate substance of the universe or the being are not one's choices. They are nobody's choices or "subjectless choices" underlying the standard local physical entities or quantities so that the prejudice at issue (that all choices are one's or ones' choices) is absolutely relevant only to locality, even being definitive for it.

Indeed, if locality is where time and energy (mass) can be separated from each other absolutely (as well as vice versa: nonlocality is where they are linked by any nonzero entanglement) that ostensibly universal separation (in fact valid and even definitive only for locality) of physical entities thus possessing energy (mass). On the one hand, and time absolutely

independent of them, on the other hand, can be accordingly interpreted as choices equivalent to the well-ordering (what time is, mathematically, after applying the equivalence of the axiom of choice and the well-ordering "theorem") and those physical entities to which time, and thus its inherent well-ordering and originating choices, refers. Then, the same distinctively separated structure of physical entities versus choices can be interpreted as implying the postulate for all choices to possess always physical correlates with nonzero energy (mass), being a counterpart of the requirement for all choices to be one's choices where that one ostensibly making choices is gifted by "free will" (just as above nature is granted to possess that "valuable commodity" of free will following the free will theorems).

As well as vice versa: if one means nonlocality where the distinction at issue does not make sense, nobody's choices (or subjectless choices) are to be adopted even as the general and universal case. If an inhabitant of the locality (such as all humans or humankind as a whole until now) tries to think of that universal essence what subjectless choices are and following the natural prejudice that all choices are one's choice (by the way, being quite relevant for their shared environment of locality), the conjecture of God as that One making those fundamental choices of which the universe and the being consists is absolutely justified.

Now, the relation of "God" to the totality is to be elucidated so that it can be linked to the just explained definition of "God" relied on subjectless choices, respectively to information or quantum information. The philosophical interpretation of "God" as the totality is common and can be traced back at least to (and since) German classical philosophy. However, following the above distinction of the "opposite directions" (of "choice" versus Hegel "synthesis"), the understanding of "God" as the universal substance of subjectless choices seems to contradict that of the "totality". In fact, those two directions and, respectively, their discernible distinction is one more prejudice originating from locality and Modernity established for it to be implicitly universal. As for nonlocality and the coherent states inherent for it (a particular case of which is locality), the distinction of both "directions" above is vague, merged, and irrelevant in the final analysis. Then, "God" is the 'totality' and all 'subjectless choices' (i.e. information and quantum information) simultaneously in a "coherent superposition" originating from nonlocality. Summarizing, "God" as a subject investigated by theology adopted in advance to be a "rigorous science", appears only as a relation of locality and nonlocality, for example, the nonlocal experience or experiments of local observers (such as any humans or humankind as whole are granted to be by classical science).

Once both understandings of "God" (as the totality and all subjectless choices underlying the being or the universe) are merged, this implies for information (together with quantum information) to be the omnipresent, universal and ultimate "substance" (where the quotation marks are obligatory since that "substance" is total, by virtue of which nothing out of information exists) so that the most general law of information conservation in physics is relevant including particularly that of energy conservation (e.g. and first of all, in classical quantum mechanics).

One more notice refers to the interpretation of the unit of information, i.e. a bit of information as two oppositions rather than as a single one as the commonly accepted prejudice is and according to which a bit of information is to be identified with its two possible alternatives (frequently notated as "0" and "1" or as "false" and "true"). In fact, the necessary preliminary condition for the choice between them needs the distinction of the "decoherent" state "after choice" (respectively, "after measurement" in quantum mechanics) versus the "coherent" state "before choice" (i.e., "before measurement" in quantum mechanics). Then, the opposition of the totality versus all subjectless choices would correspond to that preceding opposition in each choice distinguishing the state "after choice" versus that "before choice".

VIII "GOD" FOR MATHEMATICS AND "GOD" FOR PHYSICS

The exact definition of "God" for "quantum theology" (being "ontomathematical" in its essence) implies reflections in both mathematics and physics, which will be considered first separately and one by one, and then unified just as ontomathematics needs. One can start from mathematics (though the alternative approach from physics is not less possible) and use the visualization of the "creative subject" of intuitionism (suggested by Brouwer) as for the foundations of mathematics, but now in the present context (in fact, rather loosely to Brower's original).

Then, the necessity of the "creative subject"[10] can be observed in the choice of any tuple of axioms (for example, that of geometry as the most famous example). Once the tuple at issue had been specified (whether by Euclid initially or by Hilbert ultimately), all theorems of any first-order logic (such as geometry itself) follow from it and the universal tuple of propositional logic being relevant to all possible mathematical theories (in the exact meaning of first-order logics). No creative subject is necessary any more, once the tuple of relevant axioms had been unambiguously determined. A Turing machine supplied by a relevant software would prove them being absolutely estranged from "free will" and the "capability of choice" if the list of axioms is correct, respectively consistent and complete.

So, if the sketched picture is relevant, reason, reasonability, free will, and choices are necessary only for the creation of the corresponding tuple of axioms, but redundant after that. Almost all real mathematicians can be substituted by computers, at least in principle, since their labor and proofs can be absolutely represented and modeled by Turing machines. In fact, reality seems to be quite different: the mathematical profession is very creative, and thus one needs an explanation why:

A part of mathematical skills may fit to the aforementioned pattern to be a thoroughly axiomatic and deductive construction: the human mind is not suitable enough for calculations, especially so long, complicated and sophisticated as a proof of a theorem in general. A computer supplied by a relevant software program would accomplish those calculations for seconds, but which would take weeks, months, furthermore preceded by years for the education and preliminary selection of mathematical capabilities as for humans. One might state rather

[10] "Creative subject" can be related to "God" in mathematics: cf. Zamarovský 2017.

paradoxically that the mathematical reason is necessary only to be substituted by a Turing machine. Indeed, any computer automatizes calculations so it is able to replace millions or billions of calculating humans. Then, one might conclude that all humans' mathematical creativity is a pseudo-creativity being able to be successfully replaced by computers: thus to be concentrated only into the enumeration of relevant lists of consistent axioms.

One may further compare the just sketched pattern of an absolutely deductive and axiomatic mathematics with a physical theory starting from postulated principle similar or even identical with the axioms of any mathematical theory, but nonetheless permanently needing experimental or observational confirmations. The invented and then suggested mathematical "image" of physical reality inherently originating from principles and consistent with already existing and well-corroborated physical theories is only more or less probable, but not necessarily following from the principles and preceding theories unlike a set of theorems, constituting a theory in mathematics. Is that absolute distinction of physical cognition versus mathematical knowledge relevant?

One can also refer to that revolution in geometry realized by Euclid as far as it had been, before him, an experimental and empirical science similar to modern physics. What did he do to transform it from a physical science into a mathematical one therefore creating a deductive and axiomatic pattern for a few next millennia? He only wrote out a brief list of axioms and postulates and after that demonstrated that all available then geometrical knowledge could be inferred deductively from the initial short tuple. Even much, much more: the same list of axioms and postulates implied new and unknown theorems, i.e., crucially extending the existent geometrical knowledge following only formal and logical rules.

Relating his revolution to contemporary physical cognition and reflecting it philosophically, one may suggest two alternative or even complementary "Gestalts" thus originating from the creative subject's intention and objective rather than from what is studied, which can be legitimately called "physical Gestalt" versus "mathematical Gestalt" therefore exhaustively describing Euclid's revolution to geometry as a relevant "Gestalt change": namely, from the physical understanding of geometry to its mathematical comprehension thus establishing the model for analogical Gestalt changes from physical to mathematical theories as well as vice versa rather than only a pattern for the deductive and axiomatic building of any mathematical theory as the commonly accepted estimation of his epochal contribution is.

One might postulate whatever consistent tuple of axioms, whether much or less conventionally or "really", and then infer all theorems, which are necessarily implied from them without any care whether they "correspond to reality" or not. That is the proper mathematical Gestalt invented by Euclid relevant to mathematics for more than two millennia and preceding the modern empirical, experimental and observational science established only for the last several centuries following the standard of Newton's work at least in physics.

One may compare Euclid's "Elements" with Newton's "The Mathematical Principles of Natural Philosophy" just according to the above viewpoint for distinguishing the mathematical Gestalt from the physical one. Though Newton also postulated a few principles as well as a

newly invented by him method (now known as infinitesimal calculus and very widely applied in physics), he did not claim for them to be the ultimate foundations of mechanics and the theory of universal gravitation not needing any further perfection and specification by observations and experiments such as those of Galilei, Kepler, or Newton himself. So, what is now called "physical Gestalt" means the permanent refinements by virtue of new and new experiments and observations. The creative subject's work should continue to constantly complement the initial list of granted statements, even modifying them if need be.

Thus, the distinction of the creative subject's two Gestalts, provisionally called mathematical versus physical, consists only in the participation of that "creative subject" in what has been created, i.e. in the "creation": if the Gestalt is mathematical, the creation is in advance granted to be perfect forever, but it the Gestalt is physical, the initial tuple of axioms describing the creation is not exhaustive, ultimate, and complete thus needing permanent refinements, efforts and the creative subject's participation making new and new experiments and observations for adding new true statements in the starting list or even modifying the already established ones including by their negations.

One may illustrate the two Gestalts in a nontrivial way by the conjecture of the Big Bang commonly accepted by contemporary physics, astronomy, cosmology, and cosmogony, but rather wrongly according to quantum theology advocated here. Indeed it corresponds, to the mathematical Gestalt, as well as to God of Christianity and thus following the Bible according to which the Creation of all existent had been ultimately ended in a finite time (the literally indicated term of "six days" is not essential: it may be granted to be any other finite one) not suggesting for God to refine His Creation since it is perfect by virtue of God's omnipotence and omniwisdom. Speaking quite loosely, one might say that God according to the Bible shares the mathematical Gestalt and thus He might be called a "Mathematician" regardless of the fact that His Creation is really physical even only due to being studied by physics (rather than by mathematics, at least immediately and directly).

Anyway, another worldview, though rather marginal to the Church's official dogma, was also available, sometimes ascribed to Descartes, that God acts permanently for further perfecting His Creation, consequently sharing the physical Gestalt if He is granted to be thar "creative subject" allowing for Him to be reckoned to be a "Physicist".

However, the Big Bang hypothesis does not share that "dissident" approach, on the contrary, adhering to the postulate of the ultimate creation of the universe once forever (though claiming to be atheistic or at least agnostic). So, the Big Bang turns out to be the absolute limit dividing the mathematical Gestalt, in which the universe somehow had been created, from the physical Gestalt shared by all physicists, astronomers, cosmologists, and cosmogonists, all being humans, studied and studying the universe only and definitively ***after*** it has been created and thus allowing for them to refine their cognition permanently not more than tending to the universe by itself (or "an sich" after Kant) and never reaching that limit (being quite consistent with the Church's dogma of God's omnipotence and omniwisdom fundamentally inaccessible as for humankind).

However, quantum theology destroys that dogma, in fact, still after daring to study what "God" is. If one shares the physical Gestalt also to the "Creation of the universe" itself (rather than only to studying it after it has somehow appeared), the scandalous "creation from nothing" should be admitted instead of the ridiculous "Big Bang", in which all violations of energy conservation being permanently (omnitemporality and omnipresently) are summoned not to disturb the picture of the "brave new world" of Modernity where religion and science are opposed to fight with each other, and particularly, both mathematical and physical Gestalts are fundamentally divided into two separate and quite different sciences: mathematics confessing the deductive and axiomatic method versus physics being inherently experimental and observational.

However, whether Newton himself once he had worked before the ultimate distinction at issue was established as firmly as now, i.e., in the dawn of Modernity, had shared it? Whether his "Philosophiae Naturalis Principia Mathematica" really supported that worldview or it was later brought in it in order to be absolutely divided his theory of universal gravitation (to be a proper physical theory) from his infinitesimal calculus (as a mathematical theory calling for its proper mathematical foundation what Cantor's set theory ultimately supplied only about two centuries later)? Whether his religious investigations in his later years were to be opposed to his great and fundamental both physical and mathematical discoveries? Speaking loosely, whether Newton was not the first "ontomathematician" or at least one of the first ones thus suggesting though rather implicitly a revolution in human cognition in fact far beyond those discoveries and then suspended quietly and secretly by his "heirs" unfortunately not being gifted to be so great geniuses as he was?

Whatever truth be, now, only in the beginning of the 21th century, the conjecture of ontomathematics can be already articulated quite explicitly relying not only in his eventual genial insight but much more, on all meanwhile achievements of physics, mathematics, science and philosophy. Anyway, the alternative viewpoint predetermining for both mathematical and physical Gestalts to be situated on the two opposite shores of the Cartesian abyss (correspondingly, "mind" versus "body") is so crucially dominating, that the idea of ontomathematics is yet marginal as well as the consistent with it "quantum theology as a rigorous science" advocated in the present study.

Ontomathematics (quite cursorily mentioned since it is the main subject of a series of other papers, Penchev 2024 April 16; 2023 July 16; 2023 May 3; 2023 January 3; 2022 October 2022) means for mathematics and physics to be the same, merged, two complementary viewpoints to which are the standard physics and mathematics being absolute divided from each other as extreme and particular cases of ontomathematics in general. The formal mathematical structure able to underlie both simultaneously is Hilbert arithmetic in a wide sense and in a narrow sense accordingly. Hubert arithmetic is the foundation of Hilbert mathematics not sharing the Gödel dichotomy of the relation of arithmetic to set theory (namely, "either contradiction or incompleteness"), in fact originating from the prejudice of Modernity (for mathematics and physics to be situated on the two opposite shores of the Cartesian abyss) rather than from mathematics itself thus allowing for that dichotomy to be interpretable as an independent axiom

within mathematics or as a metaxiom of metamathematics yo mathematics regulating its relation to reality in two alternative ways: in the usual Cartesian manner for which the notation of “Gödel mathematics” is utilized versus a newly introduced non-Cartesian manner, after which mathematics is properly “ontomathematics”, and that kind of mathematics is called “Hilbert mathematics”. In other words, Hilbert mathematics is non-Gödelian mathematics, so that both follow two alternative versions of the same axiom just as the pair of Euclidean and non-Euclidean geometry in relation to the “Fifth Postulate” of Euclid in his “Elements”.

So, one may conclude that “God” to both physics and mathematics is to to be defined by their natural link in ontomathematics. The modern viewpoint to both, opposing them on the two shores to be divided by the Cartesian abyss, excludes what “God” is for quantum theology from both therefore resisting and fighting with religion, which in turn postulates for what it reckons to be God to be absolutely inaccessible as for science at all and thus for physics and mathematics in particular.

As for physical condition and the contemporary physical knowledge, quantum theology can suggest a new and different philosophy of physics, methodology, as well as quite unexpected horizons of investigations directly originating from the huge extension of the physical Gestalt to the ontomathematical one. Not to deviate from the proper subject of the present paper (only to define what “quantum theology” should be as a “rigorous science”), the newly-introduced directions of eventual physical research will be only enumerated without entering any detail:

Maybe first of all, one should mention the omnipresent and omnitemporal “creation from nothing” instead of the mythical “Big Bang”. The notorious “creatio ex nihilo” is one of the “red” demarcation lines between science and religion established by modern science to distinguish itself from any “pseudosciences”, “quasi-sciences”, “parasciences” or religious doctrines, particularly embodied and observed by classical quantum mechanics with its inherent features: the absolute inviolability of energy conservation, unitarity and only Hermitian operators for all physical quantities, Pauli's “particle paradigm”, the Standard model, etc. Following strictly those dogmatic postulates, the theory of quantum information (usually notated as only “quantum information”) should be qualified as a pseudoscience (or as a quasi-science, a parascience, a religious doctrine eventually). However, the 2022 Nobel Prize in physics for “entanglement and quantum information” crossed (in fact, intentionally since yet Einstein paid attention on what he sardonically notated to be “spooky actions at a distance” are implied by quantum mechanics), yes, really crossed that “red line” being a breakthrough to ontomathematics and thus destroying by its authority the prejudice of classical quantum mechanics, or reflecting philosophically, that of all the modern sciences therefore pioneering the pathway for studying that scandalous “creatio ex nihilo” as a legitime area of scientific research.

Not in second place (since it is directly linked to the “creation from nothing” at issue), entanglement theory of gravitation is to be mentioned including for the fact that it would be a nonstandard solution of the problem of “quantum gravitation”, and thus inconsistent to all aforementioned features of classical quantum mechanics. For example, Einstein’s general relativity as the very well confirmed theory of gravitation violates energy conservation: the

operators in pseudo-Riemannian space (by which the Einstein field equation is formulated) do allow for their corresponding Fourier counterparts to be neither unitarian nor Hermitian. The Einstein field equation itself is inconsistent with Pauli's particle paradigm, though both are inherently local. If quantum gravitation is granted to be similar to the three fundamental interactions established by the Standard model (namely: "strong"; "electromagnetic"; and "weak"), it is necessarily inconsistent with that definition of gravitation according to Einstein's general relativity. Mass at rest according to the Higgs mechanism and according to general relativity should be equated since two different physical quantities of "mass at rest" should otherwise exist; etc. and etc.

The theory of quantum information, first of all as the most fundamental physical discipline generalizing quantum mechanics (especially, classical quantum mechanics), underlies the former two breakthroughs in physics suggested by "quantum theology" advocated here as well as the unification of science and religion. A kind of quantum-informational "field" obeying the most fundamental conservation of quantum information should rule the transformations between locality and nonlocality, "creatio ex nihilo" including the division or merging of what space-time is and those physical entities *within* space-time (being somehow in advance). Therefore, quantum-informational "field" would generalize quantum field (without quotation marks as far as quantum field in a narrow and proper sense is defined by classical quantum mechanics being also one of the most fundamental concepts for the Standard model). Indeed, the quantum field suggests space-time and what "quantum substance" (within it) might be called to be absolutely divided from each other so that the former is the very complicated "argument" of the "function" in a rather narrow and exact mathematical meaning, but overcome by ontomathematics. However, quantum field is an extreme and quite particular case of quantum information "field": appearing physically (according to which physics is until now), that is: inherently locally, as the gravitationally observable phenomena of "dark mass" and "dark energy" crucially prevailing in the universe (being approximately about twenty times more than the "light mass" and "light energy", which are the only studied even at all admitted ones by physics until now).

Another corollary along with the previously mentioned two ones about the frontiers of physics inspired from quantum theology is "mentality" (or less scandalously said, "virtuality") as an absolutely new field of research far beyond the boundaries and framework of classical physics including relativity and classical quantum mechanics, stigmatized though rather implicitly to be out of science at all, i.e., "pseudoscience", "quasi-science", "parascience", etc.: "physics of mentality", which seems to be a "mistake in definition", but only according to the Cartesian prejudice. That "physics of mentality" would be very closely linked to "experimental and observational theology", one more option of investigation implied by quantum theology, which will be discussed in the next section, as well as to "ontomathematical and mathematical psychology", still one "pseudoscience" being absolutely nonsense according to today's commonly accepted prejudice about what science is.

The enumeration in detail of all those newly introducible areas of the yet or already forthcoming "informational physics" is out of the scope of the proper subject of the present study

restricting itself only to demonstrate that quantum theology inspires quite unexpected and immense domains of physics not only inaccessible, but even "invisible" if one supports the Cartesian dogma about the "abyss", including absolutely dividing physics from mathematics as situated on its two opposite "shores".

As for what "God" in mathematics would contribute to its development and mastering new frontiers, one may refer to the Seven Problems of the Millennium (as they are enumerated and formulated by CMI) in order to illustrate the possible breakthroughs. One is to suggest for them to share the same ground of what Gödel mathematics is notated to be above (and in much more details, in other papers, e.g., *Penchev 2023 July 16*): in fact, postulating for mathematics at all to be the "Cartesian mathematics", i.e. to be identified as that mathematics not only historically (i.e. more or less occasionally) situated just on the one shore of the Cartesian abyss (and thus recognizing it to dominate, and respectively, obeying it), but as any at all possible forever mathematics. However, Hilbert mathematics convincingly demonstrates that, on the contrary, it is only a conventional postulate, in fact, the serial prejudice heralded to be an absolute truth only for the insufficient reasonability of humankind anyway gradually overcome though too painfully and by means of huge efforts and redundant victims.

Said rather aphoristically and partly humoristically, the CMI "Problems of the Millennium" are really not resolvable since they would be otherwise resolved a long time ago. They are not only extremely difficult. If they were not more than exceptionally difficult, the huge army of professional mathematicians would conquer them (even more so in the future, during a thousand years). In fact, one may reasonably conjecture that the Millennium Problems at issue belong to the class of all Gödel unresolvable statements so that if one needs both arithmetic and set theory (of course, as well as propositional logic) and thus practically almost all areas of contemporary mathematics as far as they are grounded on the enumerated three "whales" supporting its foundations, they are literally unresolvable being crucially dependent on some statements of the cited class.

One can illustrate the above suggestion by Fermat's last theorem proved by Andrew Wiles in the eve of the third millennium which the millennium implicitly meant by the CMI problems is. As it is very well known, it has not been explicitly and correctly proved for almost four centuries regardless of the huge efforts of the best world mathematicians. So, it is commensurable by its difficulty with those proclaimed by CMI.

Andrew Wiles's proof infers it is a direct corollary from the modularity theory (also known before his proof as the "Taniyama - Shimura - Weil conjecture"). Its essence consists in the link of modular forms, being inherently discrete and formulable in Peano arithmetic in particular, with elliptic curves in turn continuous (even smooth, but the fact to be continuous is sufficient) and thus needing a continuum relied on set theory. So, the option for Fermat's last theorem to be a Gödel irresolvable statement as far as Wiles's proof is correct is quite admissible. Ergo, that is a blame against it; namely, that it (though implicitly, secretly, and too smartly) goes out of that standard contemporary mathematics grounded on the quoted three "whales". So, it is indeed correct, but not within its strictly outlined boundaries. On the contrary, Andrew Wiles himself,

furthermore supported in his opinion by many authoritative mathematicians, rejects that suggestion.

However, if one demonstrates that Fermat's last theorem belongs to the class of the Gödel unresolvable statements, that would prove about Wiles's proof to gout out of all the standard mathematics rigorously definable to be inferable from arithmetic and set theory by means of classical propositional logic. Indeed, this is rather easy to be shown by Yablo's paradox, furthermore relying on its link to a certain relevant Gödel irresolvable statement: already done completely in another paper (Penchev 2021 March 11).

The blame against Wiles's proof refers to the suggestion that it cannot help but introduce inaccessible countable cardinal numbers though unarticulated and thus implicitly, for which it is proved to be beyond the aforementioned limits of standard contemporary mathematics. Those cardinal numbers are quite easily visualizable by the following recurrent construction: the "first" (being furthermore the greatest) one of those cardinal numbers is such that corresponds to the set, the set of all subsets of which is countable; then any next further cardinal number satisfies recurrently the same definitive condition to the immediately previous one (being the next grater one). One notices that the set of all those inaccessible countable cardinal numbers would constitute another Peano arithmetic, dual (being anti-isometric) to the usual one, therefore both in turn homomorphic to Hilbert arithmetic in a narrow sense.

Thus, Fermat's last theorem being an unresolvable statement in Gödel's sense is fundamentally undeducible in the standard mathematics as it is meant above (and called "Gödel mathematics" in other papers, e.g. in the series of five studies: *Penchev 2024 April 16; 2023 July 16; 2023 May 3; 2023 January 3; 2022 October 2022*) and consequently, Wiles's proof as far as it is correct goes out of that standard mathematics, e.g., by virtue of those implicitly introduced inaccessible countable cardinals. Indeed, any transition between modular forms relying on Peano arithmetic to elliptic curves grounded on any continuum and thus on set theory in the final analysis needs those inaccessible countable cardinals, though the demonstration where Wiles (1995) has been unavoidably forced to refer to them in his huge and too sophisticated paper is extremely difficult. Nonetheless, the above argument shows that the reference at issue originates directly from the formulation of modularity theorem itself and thus being a necessary condition for his proof of Fermat's last theorem. By the way, if one grants inaccessible cardinal numbers, e.g. by introducing Hilbert arithmetic and thus relying ultimately on the completeness of quantum mechanics (proved by the theorems of the absence of hidden variables in it: *Kochen. Specker 1967; Neumann 1932)*, a few different ways to be proved Fermat's last theorem are demonstrable (Penchev 2022 June 30; 2022 May 11; 2021 March 1) as well as a reconstruction of an eventual purely arithmetic proof, just following the written in margins own claim of Fermat himself, can be also suggested: *Penchev 2020 August 10*.

One may admit that Wiles's pattern for Fermat's last theorem is also applicable to any correct solution of the CMI problems of the (third) Millennium. That idea can be immediately checked by the single problem officially recognised to be resolved, namely, Poincaré's conjecture by Grigori Perelman, furthermore inherently relating to a physical interpretation and thus, to the link

between physics and mathematics introduced by ontomathematics. The conjectural homeomorphism between Euclidean space and the unit 3-sphere is in turn *homeomorphic to the homeomorphism*[11] of Euclidean space and Minkowski space utilized by special relativity (however, meaning both real and imaginary domains of Minkowski space as for Poincaré's conjecture unlike Einstein's theory excluding its real domain as not making any physical sense).

Further, if one applies the axiom of choice (respectively, the well-ordering "theorem") to both domains of Minkowski space, the light cone can be enumerated by natural numbers in two ways idempotently anti-isometric to each other (thus interpretable to be dual mathematically or complementary physically). Perelman's proof introducing the concept of information, in fact, equates the information defined in the real domain with the "imaginary" one (i.e. defined in the imaginary domain of Minkowski). The sense of that equation of information defined in both areas of Minkowski space admits an absolutely correct, but quite elementary visualization by a bit of information, i.e. being inherently embodied in any of its unit therefore explaining why the involvement of information is so fruitful for the solution of Poincaré's conjecture:

A bit of information, in which the one alternative is chosen, can be correctly equated to the same bit if the other alternative is chosen. The equating at issue can be also visualized as any Turing machine cell remaining the same independently of whether "0" or "1" has been recorded in it. Physically interpreted by Minkowski space, both domains of it are isomorphic, but they can be unambiguously distinguished from each other, for which what is absolutely sufficient is any member of the pair of isomorphic points of both domains accordingly to be notated either "0" or "1" therefore isomorphic to each other (just as a Turing machine cell independently of whether "0" or "1" has been recorded in it).

Then, both enumerations of the light cone being inherently anti-isometric to each other can be granted to "double" the light cone so that the one "copy" of it belongs to the real domain of Minkowski space, and the other one belongs to the imaginary domain, and both are idempotent to each other. Obviously, the same 2-sphere once belonging to the one enumeration, and twice belonging to the other, anti-isometric enumeration constitute a structure isomorphic to a bit information. Furthermore, that is the same bit information after the idempotent exchange of the two enumerations, and that is the observation which is crucial for Perelman's proof:

Indeed, if one unifies both enumerations of the light cone in turn implying the derivative unification of the real and imaginary domains, they would together constitute a whole homeomorphic to the unit 3-sphere, on the one hand, but also can be physical interpreted as Euclidean space in which a spherical light wave propagates simultaneously in both directions of time, on the other hand, therefore analogically allowing for Euclidean space to be doubled. Finally, one can equate what is "in the one hand" above with what is "in the other hand" by virtue of the fact that those are Minkowski space as an abstract mathematical structure ("in the one hand") and the same structure however interpreted physically, namely as after special relativity ("in the other hand"). Indeed, any mathematical structure and its correct physical interpretation can be always interpreted to be isomorphic or homomorphic and consequently, the

[11] That implies a composed homeomorphism transitively.

"same" in that sense. The equation and unification of what is "in both hands" ends Perelman's proof, though quite loosely schematized for its visualization in the present context.

One can complement that the proof of Poincaré's conjecture elucidates that (as well as "how" constructively) Hilbert arithmetic in a wide sense is homeomorphic to Euclidean space (rigorously speaking, Euclidean space is homeomorphic only to the class of all "empty qubits" of Hilbert arithmetic in a wide sense), and then, by virtue of the identification of all "empty qubits" with all units of Hilbert arithmetic in a narrow sense, the identification (as far any bit of information "before choice" and "after choice" can be considered to be the "same") of Peano arithmetic and Euclidean space is what follows.

If one reflects back, again to Wiles's claim for his proof to be thoroughly within the framework of the standard mathematics, it seems to be "partially" correct in the following exact meaning of "partially". If the above identification (of Peano arithmetic for the "modular forms" and Euclidean space for the "elliptic curves") is somehow granted in advance (i.e. speaking otherwise, postulated), his claim is justified. However, that identification cannot be proof within Gödel (i.e. the "standard" mathematics), but only in Hilbert mathematics so that, even added as a postulate to Gödel mathematics, it transforms the latter into the former, particularly realizing Hilbert's program for the complete arithmetization of mathematics absolutely (in other words, not being realizable in the standard mathematics, which his original intention was).

Returning now to Perelman's proof, one can see that the introduction of information is crucial for it since its concept allows for any mathematical structure (e.g. in the case, that is Minkowski space) to be identified with the class of all correct interpretations of it or with any element of that class (e.g. in the discussed case, the physical interpretation of Minkowski space by special relativity). Of course, Cartesianism by itself definitively forbids that identification since it would link entities situated on the two opposite "shores" of the Cartesian "abyss". So, mastering the lesson originating from the success of Perelman's proof, one is to apply the concept of information to the abyss at issue. Any pair of corresponding entities situated on the opposite shores (such as a mathematical structure and its physical interpretation, being discussed above) can be reduced to the alternative of that choice inherently meant by a bit of information, therefore implicitly involving their unification to be the same as the definition of "bit" needs.

One may discuss another "puzzle" from the Seven Problems of the Millennium, now from the ontomathetatical viewpoint according to the objective to what "God" of quantum theology should be for mathematics and its foundations. The "P vs NP" problem, unlike Poincaré's conjecture, is not resolved, at least by its officially recognised solution. Here, a visualization of the problem, practically very important, will be considered. The Turing machine and thus all contemporary computers are "P", i.e. they are able to resolve any problem for a "polynomial time", but never qualitatively faster, i.e. for any non-polynomial ("NP") time. If one suggests the conjecture that the implementation of quantum computer (or said more exactly: the quantum Turing machine where its "type" consists of a series of qubits rather than of bits and this is its single difference from the Turing machine) embodies the alternative "NP", the problem would be exemplified as "the Turing machine" (i.e. all contemporary computers for the "P" side) versus

“the quantum Turing machine” (i.e. the forthcoming quantum computers for the “NP” side). Informally, this means whether the quantum computer might resolve a problem *qualitatively* faster than a usual computer. Obviously, any problem resolvable by a quantum computer, but unresolvable by any usual computer would be a solution of the “P vs NP” problem in favor of the alternative “P ≠ NP” since a usual computer would need an “infinite period of time” to resolve the same problem, but unlike a quantum computer able to resolve it for a certain “finite period of time”, and thus qualitatively faster as far as any finite period of time is qualitatively shorter than any infinite period of time.

One can suggest a class of those problems, to which the next illustration would belong. The problems at issue would be for a certain computer, whether quantum or not, to guess whether “Schrödinger's cat” would be alive or dead after opening the door of the cell in a certain moment of time. Then, one demonstrates rigorously and mathematically that the Kochen - Specker theorem (about the absence of hidden variable in quantum mechanics) implies for the Turing machine (and thus for all usual computers) to be fundamentally unable to resolve the above “problem of Schrödinger’s cat” at all, but on the contrary, a quantum computer would resolve it for a finite period of time (Penchev 2020 August 5).

After generalizing the above example one can outline all the class of problems unresolvable at all and consequently for any “P time” by any usual computer, but resolvable by a certain quantum computer for a finite period of time. The class of those problems comprises all problems, the solution of which is a quantum state, respectively a wave function, or a probability (density or not) distribution, which corresponds to the former in the final analysis. As well as vice versa. all problems such that the solution of which is representable by a classical (i.e. not quantum) state are not able to distinguish a usual computer from a quantum one since both would resolve it for qualitatively similar time, though the quantum computer would be eventually faster, but never *qualitatively* faster than a usual computer. Of course, the above “problem of Schrödinger’s cat” belongs to the former class inherently distinguishing all usual computers from the quantum computers.

Another example can be the “traveling salesman problem” yet unresolved though not being one among the seven CMI problems. As for any certain finite set of points (which the traveling salesman should visit), the solution consists in the simple checking of all possible roots including all points and then the choice of the shortest one among them. Nonetheless, it cannot be generalized as an algorithm applicable to any other set of those points, i.e., to a wishful general solution (which would be the proper solution of the traveling salesman problem). Furthermore, the problem of checking all cases where the points are in advance given is a “P problem”. On the contrary, the general solution is supposedly a “NP problem”. Then, one is to discuss how the quantum computer might resolve the problem in general; for example, as follows:

Let a material point moving with a constant subluminal speed thus obeying the principle of least action serve as a model of the “traveling salesman” (also a few rather technical specifications about the change of direction after each visit of a certain point). Of course, the

material point would “resolve” the problem only by virtue of the principle of least action not being at all “able” to visit them otherwise than following the shortest route.

Now, the classical material point is substituted by a quantum one so that Feynman’s interpretation of quantum mechanics holds. Then, the quantum material point would “travel” simultaneously following all trajectories, thus suggesting an idea applicable as for the general solution of the problem. In other words, the general solution of the “quantum traveling salesman” is always a wave function originating from that corresponding probability density distribution where the set of points tends to an infinite set. Consequently, a quantum computer would be able to follow a certain algorithm (which can be called “quantum algorithm” rather conventionally) supplying a general solution of the problem. In fact, if that “quantum computer” is granted to be a quantum Turing machine (according the definition above), the software would be (or at least, might be theoretically) identical, and only the “tape” would distinguish the case of the solution by the checking of all given in advance finite configurations from the general solution. A qubit tape is able to accommodate in itself the general case of all possible finite configurations by a finite series of sells, but unlike a classical tape able to accommodate only classical information thus eventually needing an infinite series of sells to accommodate that (quantum) information relevant as for the general case.

What follows is a proper quantum and theological reflection on both last problems: “P vs NP” and the “traveling salesman”. “God” (interpreted as above, i.e. from the newly introduced viewpoint of quantum theology) “calculates” rather “NP”, conjecturally as a quantum computer, than “P”, i.e. as all usual contemporary computers. The eventually proved alternative “$P \neq NP$”, and specified more precisely, that there exists a nonempty complement of the “P” problems to the “NP” problems, would mean that “God” is able to process “quantum ordinals” (e.g., Penchev 2005), i.e. corresponding to inaccessible countable cardinal numbers (above conjectured to be implicitly necessary for Wiles’s proof of Fermat’s last theorem). So, “God resolves” the traveling salesman problems permanently by virtue of the “inherently teleological” principle of least action rather in the general quantum version articulated by Feynman’s “many paths interpretation” leaning only in the limitless approximation of the border transition to the classical one.

The “Yang–Mills existence and mass gap problem”, being also yet unresolved one among the “Seven Millennium Problems”, is exceptionally interesting since its eventual negative solution (i.e. “no mass gap”) represents what “God” is directly for ontomathematics and thus for physics and mathematics simultaneously. Unfortunately, its original formulation is too sophisticated and thus accessible only to advanced specialists: consequently, a translation into the rather philosophical language of quantum theology is necessary preliminarily:

The first proviso refers to the distinction of the two parts: the Yang-Mills existence from the mass gap problem being closely linked, but not absolutely identical. The mass gap “part” will be first “translated”. The eventual positive solution (for any finite nonzero gap) is consistent with the complete paradigm of classical quantum mechanics, namely, first of all, Pauli’s particle paradigm, and then: energy conservation, unitarity, “Hermiticity” (meaning that only Hermitian

operators correspond to physical quantities) so that all of them result into the Standard model. The nonzero mass gap grants loosely that “the particles are particles”: what exists physically is necessarily featured by any finite nonzero energy or mass, thus gapped from what does not exist physically, and particularly needing the alleged “Big Bang” to overcome that gap once forever in the mythical “beginning of the universe”.

The same eventual solution supporting the nonzero finite mass gap implies a derivative mass gap in special and general relativity, however contradicting the latter by virtue of which it does not support energy conservation in general, but only locally. In other words, a derivative gap separating the surface of the light cone from its internality necessarily follows. This means that what possesses any finite nonzero mass at rest (and thus being strictly within the light cone) is to be gapped from the surface itself of the light cone, so that the formulation of the problem means just the implied gap of mass at rest. Then, the eventual solution in favor of the absence of that gap as for mass at rest is anyway consistent with the nonzero gap solution as well as with the Yang - Mills existence, therefore elucidating the reason for both “parts” of the problem to be distinguished from each other:

Then, one may notice still one and very curious, ever ridiculous option about the solution of the problem, after which its two “parts” to be identified as absolute equivalent. This would mean that quantum information and energy are Fourier counterparts, so that Einstein”s general relativity and the forthcoming, but yet unarticulated entanglement theory of gravitation would be a derivative Fourier couple. That option for the relation of the Yang-Mills existence and the mass gap problem is especially interesting for reflecting philosophically. So, one may discuss the corollaries if that is the case:

Then and first of all, what exists physically is local and as a whole, it is the Fourier counterpart of what does not exist physically being identifiable with what is nonlocal. So, the physical existence and locality are absolutely equivalent to each other just as what does not exist physically is inherently local. The notorious “creatio ex nihilo” completely forbidden by classical physics and science (including classical quantum mechanics, but not by general relativity) consists only in the Fourrier transform of the changes of nonlocal probability density distributions, being non-Hermitian in general, into their local counterparts where and for which energy and time are necessarily thoroughly divided from each other as two absolutely different physical quantities and thus all locally admissible probability density changes are Hermitian and thus studyable by classical quantum mechanics.

However, if that is the case, the scandalous “creatio ex nihilo” should happen omnipresently and omnitemporarily, but always “censored” by classical science and physics and thus exiled into the mythical ridiculous “Big Bang”, in fact an ideological rather than scientific construction establishing locality to be universal, at least after the “Big Bang”. Then, the visible universe appears from nothing omnipresently and omnitemporally only by virtue of becoming just visible. It out of the extending area of visibility does not exist at all (in the sense that energy is indistinguishable from time, out of the coinciding areas of visibility and locality) rather than only to be invisible but ostensibly physically existent though invisible.

Then (i.e. after granting the equivalence of the Yang-Mills existence and the mass gap problem), “God” is really pantheistic as the nonlocal counterpart of locality identifiable with physical reality (until now). However, if the aforementioned equivalence is no granted in advance, “God” is identifiable with the existence of Yang-Mills field, to which all physical existent is only a *true* class, so that Heideger”s distinction of the ontological *being* from the ontic *existent* would be quite relevant as a proper philosophical equivalence. His appeal for restoring the problem of the Being, forgotten in oblivion for millennia, would pay attention to the area of “pure information” without any Fourier counterpart strictly within time and thus not featured by possessing zero energy. Particularly, the light cone of Minkowski space would be supplied by a compose infinitesimal structure of two gapped infinitesimality, thus opening an absolutely unknown even unexpected area beyond that of photons featured by a certain nonzero energy and definable by infinitesimal energy but presumably a certain finite quantity of quantum information. That conjectured area might be identified with all “virtual particles” once Pauli”s particle paradigm has been in advance postulated to be universal as it was usual until now.

One should pay attention to one more extraordinary circumstance about the Yang-Mills existence and mass gap problem: it is formulated and thus claimed to be purely mathematical, but obviously it smoothly passes into physical one (even due to the terms borrowed from quantum physics), by the way, just according to the generalization of ontomathematics and its Pythagorean endeavor to be the “first philosophy”. Particularly, one can question what Hilbert mathematics grounded to Hilbert arithmetic would be to state about the same CMI Millennium problem:

A detailed elucidation in a series of papers explains the relation of Hilbert mathematics to Gödel (i.e Standard) mathematics including that of Hilbert arithmetic to the Gödel dichotomy about the relation of arithmetic to set theory: either incompleteness or contradiction. Then, what is sufficient to be now demonstrated is how the Gödel dichotomy is to be associated with the mass gap problem and by means of it, with the Yang - Mills existence. At first glance, the attempt to connect them is even ridiculous since they belong to two areas of mathematics too, even maximally remote from each other. Nonetheless, the inherent link between today’s greatest mathematical problem (e.g., those seven suggested by CMI and including the Yang-Mills existence and mass gap problem) is above granted, loosely speaking, conjecturing for them to be Gödel irresolvable statements. On the other hand, Hilbert arithmetic underlying Hilbert mathematics is introduced to overcome the Gödel dichotomy along with other reasons:

If one identifies dual anti-isometric Peano arithmetic (being constitutive for Hilbert arithmetic) with the mass gap problem, which will be justified below though rather philosophically, it is just dual or complementary to the initial Peano arithmetic (another substructure of Hilbert arithmetic): so it is incommensurable to the latter. That observation transforms the mass gap making it also incommensurable to locality, i.e. to the framework of the physical world as it is postulated by classical physics. Thus, for classical physics including classical quantum mechanics and the Standard model the mass gap problem, is fundamentally irresolvable, which is implied in the present context by the hypothesis that the Yang - Mills

existence and mass gap problem is insoluble in the strict outlines of standard mathematics being a Gödel irresolvable statement in relation to it.

Then, being complementary, both solutions of the mass gap problem would be admissible just as any conjugate quantity can be equally well granted to be whether zero or nonzero as to its really measured counterpart being just incommensurable to it. On the contrary, Hilbert mathematics by itself (i.e. transcending the model of Gödel mathematics within Hilbert mathematics), for which no insoluble statements might exist at all and in principle, would resolve it unambiguously in favor of the zero mass gap, but simultaneously, in favor of the Yang - Mills existence including for infinitesimally small masses, i.e. infinitely close to zero, therefore introducing a new "quantum informational field" with zero mass and energy along with locally observable gravitational field (granted to be exactly described by general relativity) if the newly introduced "quantum information field" is postulated to be equivalent to the Yang - Mills field after the Fourier transform of its argument from spacetime by Minkowski space into the separable complex Hilbert space of classical quantum mechanics.

Indeed, all quantum fields (within the Standard model) are defined as a mapping (sometimes, even a bijection) of spacetime into the separable complex Hilbert space so that any spacetime is featured by a certain quantum state (unlike classical physical fields determining a certain value for each point of space). "Quantum information field" substitutes the argument of spacetime by another separable complex Hilbert space keeping the mapping to be into the initial separable complex Hilbert space admitting for the two separable complex Hilbert space to be entangled, or said informally, their Cartesian product to be "curved", for example and very instructively, by some gravitational field, which can be always suggested and thus considered as derivative from the general case of quantum information field. The particular case of quantum information fields to be "flat", i.e the two separable complex Hilbert spaces, so that the one is mapped into the other to constitute a certain quantum information field, not be entangled, is just what classical quantum mechanics studies.

What follows is to be demonstrated that the Yang-Mills field, by the way, being fundamental for the Standard model underlying both electro-weak and strong interactions, is just that "flat" particular case of quantum-information field. This is directly implied by the fact that the Yang-Mills field represents physical quantities being only Hermitian operators in classical quantum mechanics. Indeed, the alternative case of "curved" quantum information field, equivalent to entanglement, respectively, to entangled values of the argument and function of the field, implies for the corresponding operators to be non-Hermitian and thus, not physical quantities according to their definition in classical quantum mechanics.

If one represents quantum information field (defined just as above to fit the conceptual thesaurus of classical quantum mechanics) by the mapping of the qubit Hilbert spaces of quantum information rather than by the separable complex Hilbert spaces, the description is much more visual: the set of all qubit vectors (equivalent to the separable complex Hilbert space) is mapped onto itself. Then, the Yang-Mills field is again the particular "flat" case not introducing a third qubit being obligatory for any pair of qubits "rotated" to each other if the case

is “curved”, after which the third qubit is necessary to describe unambiguously just that mutual “rotation”, being definitively zero in the particular case of the Yang-Mills field. Obviously, if the case is any mapping of any numerical (rather than qubit) vector variables, the third qubit is just definitively zero.

Then, the composed fundamental symmetry {[U(1)]X[SU(2)]X[SU(3)]} underlying the Standard model is immediately visible meaning the case where the three aforementioned qubits are identical so that any interactions representable by the Standard model is necessarily any violation of the symmetry at issue, or said otherwise, tends to restore it. Indeed, U(1) refers to a single qubit, SU(2), to a pair of qubits, and SU(3), to a triple of qubits. Forced to be “flat”, due to the framework of classical quantum mechanics, in which it is elaborated, the Standard model describes the “third qubit” as a “second” Yang-Mills field attached to strong interaction and doubling the initial one, that of electro-weak interaction. Furthermore, the two copies of the Yang-Mills fields are unifiable only within the singular point of the mythical Big Bang, after which they are divided, and the description is able to be “flat” consisting of two Yang-Mills fields independent of each other.

Hilbert mathematics, relevant to ontomathematics and quantum theology, paints a very different picture substituting the single and inaccessible “Big Bang” with a field of omnitemporal and omnipresent “Big Bangs” in fact equivalent to quantum information field, inherently unifying both copies of the Yang-Mills field only abandoning the dogmas of classical quantum mechanics, by the way, inferring Einstein's gravitation as an almost trivial corollary to be a Fourier (more exactly, anti-Fourier) counterpart of quantum-information field therefore reasoning its inherent unrepresentability within the Standard model: it “vanishes in thin air” after quantum information field is seen only as two Yang-Mills fields, *absolutely* independent of each other, since “quantum gravitation” corresponding to Einstein’s gravitation consists just in the their correlation, this means: dependence on each other.

Now, the rather physical interpretation of the Yang-Mills field as well as its generalizability into quantum-information field will be returned in Hilbert arithmetic in a wide sense since the Yang-Mills existence and mass gap problem is formulated to be a proper mathematical problem and heralded by CMI just as such. Hilbert arithmetic in a narrow sense is necessarily “flat” if it is able to introduce only numerical variables, to which neither the Yang-Mills field nor quantum-information field might be defined. On the contrary, Hilbert arithmetic in a wide sense admits the corresponding, “equi-enumerated” qubits to be arbitrarily “rotated” to each other therefore needing the “third qubit” at issue to describe unambiguously that “rotation”.

Then, the Standard model solution by the two independent Yang-Mills fields would consist in the doubling Hilbert arithmetic in a wide sense to be able to represent that rotation of corresponding dual qubits unlike the introduction of quantum-information field involving an additional “third qubit” to describe the “rotation” at issue. The third qubit can be equivalently introduced between “Hilbert arithmetic in a narrow sense” (being definitively “flat”) and “Hilbert arithmetic in a wide sense” (being “curved” in general), which is an option discussed in detail, including by its philosophical reflections, in another paper (Penchev 2021 August 24).

Then, if one returns to the interpretation of the Yang-Mills existence and mass gap problem in Hilbert mathematics, it refers to the distinction, including quantitative and representable by an additional, "third qubit" of Hilbert mathematics in a wide sense in relation to Hilbert mathematics in a narrow sense, consequently after the relevant philosophical reflection suggested in the cited paper, that of the physical world to its relevant mathematical "model" (or speaking otherwise to the *mathematical world*), however, from the generalized viewpoint of ontomathematics, after which physics studying the former world and mathematics investigating the latter are (only now) smoothly bridged as two extreme particular cases.

The proper interpretation as above reveals the fundamental meaning of the Yang-Mills existence and mass gap problem to both philosophy and quantum theology: the latter refers to the quantitative distinction (namely, by the physical quantity of mass at rest) of the physical and mathematical worlds therefore corresponding to the Cartesian abyss between them historically articulated in Western philosophy by that between "body" and "mind" initially, and later, between "object" and "subject" in classical German philosophy.

Indeed, Hilbert mathematics confirms that gap being an insoluble statement in Göödel's sense (1931) remaining in the framework of the standard mathematics. Even more, the gap at issue, but already abandoning it, is just the physical correspondence of all those Gödel insoluble statements though speaking rather loosely and needing additional specifications already suggested above.

As for the other "half" of the problem, the Yang-Mills existence, being nontrivial only in the case of the zero mass gap, i.e. about the complete equivalence of it with a the latter "half", the solution of Hilbert mathematics is in favor of its existence, i.e. in favor of the existence of "pure" quantum-information field where "pure" is rigorously defined as possessing zero energy rather than only zero mass at rest. Just that "pure" quantum information field is able not only to bridge, but to fulfill the Cartesian abyss by a smooth medium, a newly introduced subject for physics, the substance of "pure" quantum information (in the exact meaning of zero energy), after which the physical world is another particular case of the same quantum-information field featured by any finite nonzero energies. Thus, Hilbert mathematics, resolving the Yang-Mills existence and mass gap problem, suggests simultaneously an absolutely rigorous definition of what "God" is for mathematics inherently linked by ontomathematics to the definition of what "God" is for physics in turn determined a little above (before starting the discussion about what "God" should be for mathematics).

One may notice that Deascartes's own philosophical worldview is quite different from Cartesianism ostensibly originating from him, but in fact being the (usual) misunderstanding of his followers far not so genial as he was: by the way, just as in the case of Newton, in fact being an ontomathematician, maybe the first one (but, on the contrary situated on the "shore" of physics by the followers and adherents of his theory of gravitation), since he suggested "universal gravitation" as the inherent link of the mathematical and physical world. The Yang-Mills existence and mass gap problem can be considered to be the translation into the proper language of mathematics and thus linked to the same problem, but formulated in the

proper language of physics after Descartes's genial philosophical insight needing almost four centuries after him for his too mediocre followers, and particularly misunderstanding him quite wrongly, to fulfill all huge knowledge gaps so that their mental feebleness manages to reach his sudden true mental leap.

"One more thing" about Descartes's worldview versus "Cartesianism"; he rejected God's singular creation of the world in the past in favor of the omnipresent and omnitemporal creation just as the quantum-information solution of the Yang-Mills existence and mass gap problem states therefore analogically rejecting the mythical Big Bang in favor of the omnipresent and omnitemporal "creation from nothing".

IX IS THE IDEA OF "EXPERIMENTAL THEOLOGY" INHERENTLY INCONSISTENT?

One more "ridiculous" (but only at a first glance) idea is the option for quantum theology to be an experimental science (such as physics or geometry before Euclid). Indeed, scientific observations, measurements, or experiments of the objective properties of "God" seem crazy, at least for religion granted for God to be omnipotent and transcendent to any human cognition, far beyond any rational understanding, so that the only way to Him needs belief, to which human reason can be only auxiliary.

One may utilize the metaphor, already mentioned above, about the relation of a baby, child, adolescent, young man or woman to the parents. Initially, they were absolutely "omnipotent", and the little baby was absolutely dependent on them, but gradually, year after year, that dependence decreases, relevant collaborations with the parents become possible in more and more relations, standalone interests and actions appear one by one so that the baby, quite helpless initially, grows stronger and stronger in the final analysis.

Now, if one considers the eventual phylogenetic figurative sense and correspondence of that ontogenetic metaphor, consequently to humankind's advance for a few millennia, even atheism (for example, Nietzsche's "Death of God") can be explained as a kind of the "Oedipus or Electra complex". The developing teenager needs to "kill" symbolically the parents to be able to overcome the dependence on them ultimately. By the way, the young woman or man becomes capable of equal cooperation with the parents only when she or he has managed to overcome that psychological complex harassing the further development and eventual collaboration.

The conjecture in another paper (Penchev 2024 August 5) suggests that humankind is already able to overcome the "Oedipus and Electra" atheism particularly questioning and subjectioning what "God" is just as a teenager starts gradually to understand the parents as human beings similar to him or her rather than as omnipresent creatures adored before, being a little baby, including in virtue of the absolute helplessness. Of course, that already "adult thinking" originates ontogenetically from the previous teenager's thinking, but nonetheless it is qualitatively different, particularly able to decide all appearing problems independently of the parents. The destiny of the young human might turn it to be even awful or tragic sometimes, so that, from the viewpoint of which, the former childhood seems to be wonderful, a "life in Edem" in comparison with the present misfortunes and disasters. Nonetheless, following one's own

destiny, whatever it be, is an absolutely necessary step forthcoming analogically and phylogenetically for humankind, after interpreting the same metaphor.

One may also utilize Hegel's dialectic justification, applied to be considered religion and science as "thesis" and "antithesis" correspondingly, so that quantum theology would be their "synthesis". Indeed, religion suggests that the world inhabited by humankind is also reasonable, even much more than all humans together, and that postulated infinitely superior reasonability of the world is called "God". On the contrary, modern science grants the logical negation of the same axiom, namely that nature, though too superior by its power in comparison with humankind, nonetheless is completely devoid of reason so that all reasonability is concentrated only in humankind as well as in eventual aliens though their existence is yet only a hypothesis:

Then, the synthesis of those opposite viewpoints would consist in the statement that humankind and nature are analogically reasonable, and God, in Whom religion believes, is that omnipresent and omnitemporal reasonability of the being available in both humankind and nature: even much more so that science by quantum mechanics, following its proper method rather than religious belief has already reach to the "free will theorems" (Conway, Specker 2006; 2009) inferring the analogical reasonability (as far as free will and reasonability can be identified) of both humankind and nature in an absolutely rigorous way starting from a few premises belonging to quantum mechanics and special relativity.

Furthermore, one may interpret that alleged experimental quantum theology[12] quite pragmatically rather than speculatively as above, therefore questioning what kind of scientific observations and experiments quantum theology might suggest at least in principle. First of all, they might be those about the notorious "creatio ex nihilo" as a "red" demarcation line between religion and science: of course, entanglement being defined as representable only by non-Hermitian operators immediately implies energy conservation violations therefore both emergence and disappearance of energy (or loosely speaking, "from nothing" and "to nothing", accordingly) where entanglement is available, i.e. everywhere.

Classical quantum mechanics avoids the discussion of that direct, but scandalous corollary from quantum information and here is how it escapes that. Since (ostensibly) all physical quantities are associated with Hermitian operators, entanglement, being inherently non-Hermitian, is no physical quantity, so the problem of its energy and thus its emergence and disappearing is nonsense. In fact, that viewpoint only restores Einstein's sardonic and pejorative metaphor of "spooky actions at a distance". Indeed, "ghosts" would probably be able to create or destroy energy, but "they" are a superstition absolutely and far beyond science, especially physics if one follows his worldview.

However, the 2022 Nobel Prize in physics for entanglement and quantum information rejects Einstein's "sarcasm": his "spooky actions at a distance" are established to be proper scientific statements referring to physical reality itself and by itself. Nonetheless, the immediately next

[12] The rather not commonly accepted idea of experimental or empirical (including observational) theology is "common" enough anyway in theological studies or discussing religion or theology: e.g., Munchin 2011; Hogan 2009; Ward 2009; Roberts 2005; Kay 2003; Helminiak 1996; Long 1992; Schrader 1983.

step turns out to be extraordinary difficult though it is a direct logical corollary: utilizing again Einstein's metaphor, if "spooky actions at a distance" are physical reality, those actions cause energy to appear and disappear permanently; and if "dark matter" and "dark energy" are ascribed to them, they crucially prevail in the universe. The omnipresent and omnitemporal creation from nothing is what creates the universe, therefore, "from nothing" rather than the ridiculous mythical "Big Bang".

On the contrary, if physics, astronomy, cosmology and cosmogony abandon that fairy tail that Santa Claus has gifted us the universe on Christmas, experimental quantum theology observing and experimenting the real phenomena of "creatio ex nihilo" is what follows though rather suddenly and unexpectedly. In fact, quantum information, granted to be an only applied physical discipline but only because its fundamental interpretation scandalously contradicts the scientific picture of the world rather than only classical quantum mechanics and the Standard model, is really already experimental quantum theology needing only a relevant "Gestalt change". Its officially recognized subdomains are briefly notated to be "quantum computer", "quantum cryptography", and "quantum communication and teleportation". Now, they will be demonstrated one by one, but already as belonging to experimental quantum theology therefore gradually elucidating by scientific methods, observations, and experiments what "God" is after human research.

To begin with "quantum computer", even more so that it is blamed to be impracticable and unrealizable, including possibly in principle, nigh a new "perpetuum mobile", the projects of which should be rejected at all and thus prohibited just as the French academy did about two centuries ago in relation to the original. An example about the misunderstanding and originating misuse of the quantum computer has already been given above: about the "traveling salesman problem". Now, it will be discussed again, however, from the viewpoint of the proper subject of the present section, which is experimental quantum theology:

The quantum computer is able to calculate as a Turing machine, as the physicist Richard Feynman (1982; 1985) demonstrated yet in the eighties of the last century, but that "use" (in fact, misuse) is practically nonsense hinting the sardonic and pejorative metaphor for a monkey "utilizing" a microscope to crack nuts. Of course, that will be an intellectual achievement for a monkey or a little baby therefore demonstrating their shared capability for involving tools, but absolutely inadmissible and ridiculous for an average adult human ever only started studying biology, therefore learnt at least one proper use of the microscope.

Google and GESDA herald an essential money prize[13] for how to use a quantum computer therefore (after jokingly developing further the above metaphor) reaching the intellectual level of a teenager not yet started studying biology in school, but already suspecting that a microscope is a too sophisticated tool for cracking nuts, by it, therefore probably designated for something else though still unknown. Yes, Google and GESDA are really right in the insight that the quantum computer should serve for objectives quite other than calculating as a Turing machine, in fact, rather inappropriately, just as the microscope at issue compared with a hammer or with a heavy

[13] In detail: https://www.xprize.org/prizes/qc-apps .

enough stone ever not hardly being an elaborated tool (unlike any hammer) for properly cracking nuts.

So, to “crack nuts” or not to “crack nuts” by the quantum computer: that is not at all the problem, which is what the proper implementation of that “tool” should be and would be further. The answer is that the quantum computer’s solutions are inherently wave functions, i.e. probability (density or not) distributions in the final analysis unlike a normally finished (“halted”) Turing machine indicating only a single and unambiguous result. Yes, a quantum computer hardly would be useful for that, therefore appealing to humans to change their Gestalt, in the frame of which they are able only to misunderstand and misuse the quantum computer’s “utilization”. The wrong Gestalt until now is that of classical science and technique and needing tools to serve unambiguously (but not in the sense of a quantum algorithm), i.e. absolutely deterministically.

The above example of how to use a quantum computer for resolving the traveling salesman problem is rather instructive also in relation to making clear what experimental quantum theology should be. As for any *preliminarily* known finite set of points to be visited by the salesman, a powerful enough Turing machine is thoroughly sufficient merely enumerating all possible routes and then choosing the shortest one among them. Nonetheless, it seems to be fundamentally inappropriate to resolve the general case due to facing the Gödel dichotomy “either incompleteness or contradiction” , e.g., visualizable as the “halting problem” for that Turing machine trying to resolve the traveling salesman problem in general: speaking loosely, even if it would calculate the solution, it would continue work not being able to recognize that just it has been the true and ultimate solution therefore moving away from it again.

On the contrary, quantum computer is able to resolve the general case by virtue of quantum parallelism, due to which it calculates simultaneously all routes even including as for the general case of an infinite set of routes, for which the eventually competing Turing machine would need an infinite period of time, or speaking otherwise, would face the “halting problem”. Of course, that single quantum computer is useless for heralding the ultimate result after resolving the traveling salesman problem in general since that result would be different and fundamentally random in each output by measuring.

Nonetheless, the idea of experimental quantum theology pioneers a way out, in fact, only understanding that lesson permanently taught by nature by any mechanical motion obeying the principle of least action, respectively and particularly, that of “shortest route” for the same “salesman traveling” by the same “vehicle” thus conserving the impetus to be constant. Nature involves a huge number of quantum computers (as which all “elementary particles”, of which the traveling salesman consists, might be considered) thus summarizing the corresponding probability density distribution necessarily tending to the Dirac δ-function therefore proclaiming unambiguously the ultimate solution even in the general case. Speaking quite figuratively, if the traveling salesman listened to his “inner voice” whispering what all “quantum computers” of which he consists summarize totally, he would not be wrong rather than trying to resolve the

problem like a Turing machine, i.e. following the approach only possible for classical physics and science.

One may stare at the way, in which any macroscopic body (e.g., that of the "traveling salesman" supplied by a "vehicle") "calculates in advance" the trajectory obeying the principle of least action in order to follow it as if "knowing it preliminary", "teleologically": here is one possible mechanism. All "quantum computers", of which the macroscopic body consists, resolve approximately the same problem (even literally the same if the body is idealized to be a "material point") so that their microscopic solutions turn out to be coherent amplifying each other after summarizing the relevant "collinear" vectors, which may be visualized by the metaphor below:

Those huge number of "quantum computers", each of which generates one single wave function (or respectively, a probability density distribution) as the correct solution of its own microscopic problem to calculate the quantum state in which it is (by the way, being absolutely impossible for a Turing machine by virtue of the "halting problem" and the Gödel dichotomy in the final analysis) can be likened to be a "calculating laser" (for which, one might coin the name of "caser"), which "radiates" one single, but *nonlocal* "impulse" of that trajectory which is the single one obeying already *locally* the principle of least action in order to follow it just *locally* though being as if in advance *globally* calculated by that coherent medium of a huge number of quantum computers, of which any "material point" (or any real body) consists. In other words, the inexplicable otherwise "teleology" of the principle of least action needs only *nonlocality* to be explicated quite rationally and naturally: the nonlocal initially solution (only seeming to be teleological) is projected locally, (or speaking by the words of Plato's parable, on the *local* "wall" of the "cave", only after which it can be observed as "shadows" by the *locally* "chained" there people), where it is inherently represented to be that obeying just the principle of least action.

The aforementioned metaphor of "caser" can be further continued instructively enough: any real laser consists of atoms in an identical excited state in advance reached artificially by means of that too complicated device which any laser is. Then, it radiates in fact one single "wave function" being the same by virtue of the artificially (technically) achieved identity of the excited quantum state of all atoms constituting the laser at issue. Only on the *local* screen (i.e. on the "wall of Plato's cave") it is *locally* decomposed to be a energetically powerful light impulse for a quite short interval of time, but nonetheless it is a nonlocal probabilistic (respectively, "wave-function") impulse by itself, i.e. behind space-time, which is that local screen wrongly postulated to be the universally necessary condition for any scientific cognition.

Indeed, and exactly analogically (i.e. mathematically said, "isomorphically") the "caser" of any macroscopic body once it is idealized to be a single material point "radiates" the unambiguous solution always obeying the principle of least action, which only on the local screen of spacetime seems to be that unique trajectory observed by the *locally* "chained people", but being a "shadow" of the really, thus inherently nonlocally, happening change beyond spacetime (or out of Plato's "cave").

Any macroscopic body idealizable as a material point would correspond to that technical device forced all atoms of the laser to be in the same excited quantum state so that they are

forced to radiate the same wave function (in fact the same coherent *probabilistic* impulse which any laser really radiates though seeming for us, the chained *locally* people to be an energetically powerful light impulse utilizable for various human objectives). One may notice that even the idealization of a material point as for any macroscopic body is repeated in the theoretical model of any real laser since it radiates its impulse for a finite nonzero interval of time, though extremely short, so that the sudden jump from the excited to the normal state as for each separate atom takes place fundamentally random in turn constituting another real probability density distribution, only in relation to which that finite nonzero interval of time makes sense, e.g. conventionally defined to be that within which 99,99999% of all atoms of the laser have passed into their normal energetic state (being initially in the same coherent excited state forced artificially by that technical device which any laser is). The shorter is that interval, the more powerful energetically is the laser, therefore visually illustrating the option for the direct transformation of quantum information (as the "width" of the probability density distribution at issue) into energy, or speaking in terms of classical thermodynamics, adiabatically heating the laser.

The option for an analogical adiabatic heating of the "caser" is also available therefore decreasing the necessary number of "quantum computers", of which that "caser" should consist, in order for its solution to be macroscopically recognizable. Then, one can return to the solution of the traveling salesman problem by a "caser quantum computer" though nobody knows how to implement such a "caser" and to compare its solution with that of a Turing machine, which would be possible only in relation of any finite number of points to be visited, i.e. as preliminarily given data in the definition of the problem, since the general case is fundamentally insoluble by the latter: i.e. in the final analysis, to observe its transformation into the general solution (just as into the "P" vs "NP" problem in general, also discussed in the previous section):

Since that general solution is impossible as for any Turing machine and thus, it cannot be applied as a general method to any particular case of a preliminary given set of points for visiting, the only way for it consists in the enumeration of all routes in advance to constitute their set, in order to be chosen the shortest one among them after that. So, that set of all routes depends as a factorial from the points for visiting, therefore increasing as a non-polynomial function of their number "N", for example, as "(N-2)!" if both starting and ending points are granted to be the same. The following choice of the shortest one among that factorial of all routes depends already polynomially on the number of all routes therefore not complicating additionally the solution (respectively, not qualitatively increasing the necessary time for its solution as by any Turing machine).

However, the competing "caser" quantum computer having the key of the general solution would resolve any given case of data for the same time this for a "P" time eventually depending only on that how the "caser" impulse lasts, but being able to be decreased by the relevant "adiabatic heating" (as above). It would resolve the problem for the same time by virtue of the "principle of quantum parallelism" in turn originating from the Dedekind definition of "infinite set": to contain true subsets of the cardinal number as the set itself.

So, one is able to generalize in terms of set theory the class of all problems in which the quantum computer as an "Achilles" would run over the "Tortoise" of the Turing machine: for any problem implying to be enumerated a set of all subsets of the input data though being definitively a finite set. Indeed, "Achilles" is able to overtake the "Tortoise" only in a "continuum track" rather than in any "countable track". In other words, the solution of the "P" vs "NP" problem depends crucially on what "calculation" is defined to be. Thus, if it is predetermined to be always only "countable", this implies the equivalence solution, "P" = "NP". On the contrary, once one has admitted for the quantum computer to calculate "uncountably", this implies its "NP" capability.

Practically, the option for any quantum computer to calculate "uncountably" depends on its "output" since, if that is postulated to be only by measurement, its uncountable speed of calculation is necessarily reduced to a countable one just as Zenon demonstrated more than two millennia ago involving the notorious paradoxical parable of "Achilles and the Tortoise". However, if his famous aporia is reinterpreted after set theory as "reductio ad absurdum" that Achilles and the Tortoise compete in an "uncountable track" (such as the real continuum) as far as he really will always run over it, one may conjecture and then justify the option of a "caser output" of the quantum computer able to conserve its inherent capability to calculate "uncountably" in the output as well (and unlike any output by measurement).

Another illustration of a problem implying an "uncountably fast track", on which the "quantum computer Achilles" is able to run over the "Turing machine Tortoise" is the calculation of the exact number of prime numbers less than any great enough natural number "N", established in advance. A preliminary condition to be able "the quantum computer Achilles to demonstrate how fast he sprints" is the proof that any finite formula depending on "N" does not exist at all so that the "Turing machine Tortoise" cannot calculate that exact number of prime numbers only utilizing the ancient method of the "Sieve of Eratosthenes" applied "$\sqrt{N}$" times one by one. However, the competing "Achilles" will be able again to use quantum parallelism for testing *simultaneously* all natural numbers less than (or eventually equal to) "$\sqrt{N}$". Furthermore, one would need to show in advance that the check of all possible numbers one by one following Eratosthenes's method implies a certain set of all subsets of prime numbers, which can be reduced to the set itself at issue if one has somehow involved the quantum parallelism therefore needing only a "P" time depending on "N". Indeed, any single use of the Sieve as that of the Turing machine able to utilize it only "one by one" corresponds to a certain subset, the next use, to another subset, etc., i.e. necessarily testing the set of all subsets.

However, if any finite formula depending on "N" existed, that would imply a "countable track" so "slow" that "Achilles" would never overtake the "Tortoise" both running on it. The proof of that not-existing is rather complicated, even the serial problem unresolvable in the standard mathematics obeying Gödel dichotomy (being mentioned many times above), but rather easily provable by Hilbert arithmetic. What is sufficient is to be proved only that the dual anti-isometric Peano arithmetic can be equivalently substituted by a multiplicative semigroup corresponding to the single use of the "Sieve" and then repeated as many times as it is necessary

for the unambiguous determination of the number of all prime numbers less than “N”, consequently a finite number of copies of Hilbert arithmetic is to be involved, therefore equivalent to single one, for which the relation of its two dual counterparts of Peano arithmetic is fundamentally random thus excluding any finite formula to describe exactly their relation. Anyway, the above consideration is only a loose idea needing a future publication for being really and rigorously proved in detail.

Summarizing, the conclusion is the conjecture that the quantum computer is able to resolve for a “P” time problems, for which the Turing machine needs a “NP” time, only about ones not allowing for any general solution in the framework in the standard mathematics: and this is illustrated by two examples a little above. On the contrary, if whatever problem is provable in Gödel mathematics, both quantum computer and Turing machine would resolve it for comparable “P” times as if interpreting literally Zenon’s aporia that the quantum computer “Achilles” will never overtake the Turing machine “Tortoise”. In fact, “Achilles” needs an “uncountable track” which can be supplied *only* by those problems not allowing any general solution in the framework of the standard mathematics, *only* competing on which he is really able to sprint and thus, to run over the “Tortoise”. As far as any runner such as “Achilles” would always run over any tortoise such as the “Tortoise”, just the case of the uncountable track is the real one and meant by Hilbert mathematics in fact.

As for any real problem of calculating, thus necessarily predetermining a certain finite “N” of all possible case, the above distinction between an uncountable versus a countable set (therefore both infinite) is to be interpreted as the distinction of the set of all subsets of a preliminary given finite set running one by one as for the “Tortoise” of the Turing machine versus that preliminary given finite set directly running by that “Achilles” of the quantum computer by virtue of quantum parallelism. The absence of any general finite algorithm is what forces the “Tortoise” of the Turing machine to check all cases one by one, while the quantum computer Achilles is able to overtake it needing only a “P” (rather than “NP”) time for them to be simultaneously checked.

So, the quantum computer subarea of “experimental quantum theology” can be featured by those problems resolvable by it for a “P” time unlike any real contemporary computer being always a Turing machine thus needing a “NP” time for the same problem due to the fact that the latter is forced to check all cases one by one.

The next possible subdomain of experimental quantum theology is quantum communication and teleportation, thus needing preliminary to distinguish “communication” from “teleportation”, and then, one is to explain their unification as for the quantum case as well. The meaning of communication including in Norbert Wiener's “cybernetics” or Claude Shannon's theory of information consists in the transmission of classical information by means of classical information channels, i.e. always locally and within the imaginary light cone of Minkowski space, where information is “nonmaterial”, situated on the shore of “mind” or “mathematics” as “conditio sine qua non”, thus divided by the “Cartesian abyss” from its inherently material carrier (including the case of photons with zero mass at rest) on the opposite “shore” together with “body” or “physics”.

“Teleportation” is a term borrowed from sci-fi literature by physicists in area of quantum information in order to notate the option (or respectively, the corresponding conjecture) for transmitting whether energy or mass at rest “instantaneously” or faster than the speed of light therefore violating locality or the postulate of special or general relativity or those of classical quantum mechanics, but being consistent with quantum mechanics by itself, i.e. as a more general conception including the former as a particular case.

The scientific term of “teleportation” as it is really used in papers of today’s theory of quantum information is essentially restricted not to “annoy” those physicists confessing too dogmatically the paradigm of classical quantum mechanics. It means rather “quantum communication” to be a synonym of “teleportation”, i.e. the transmission of quantum information through quantum channels, or figuratively speaking, politely bypassing the question whether the “King is nude or not” (since he is really nude), but anyway, at least “without praising his (non-existent) garments”. According to classical quantum mechanics, quantum information should be also on the same “shore” where classical information, “mind” or mathematics inhabit since quantum information is to be understood only as probability (density or not) distributions or their characteristic “wave” functions transformable only unitarily, i.e. only by means of Hermitian operators, which in turn exhausts all possible physical quantities (though time is a strange even ridiculous anomaly not being directly supplied by any Hermitian operator: which Pauli especially emphasized to justify his “particle paradigm”).

However, staring at the just repeated and very well known statement of classical quantum mechanics, one can notice to be internally inconsistent due to the following contradiction: physical quantities being strictly limited to be Hermitian operators, in fact transforming only unitarily probability (density or not) distributions are also nonmaterial, i.e, emphasizing the contradiction, non-physical thus also divided by the Cartesian abyss from any physical entities, to which they should correspond: or reflecting philosophically, the changes of any quantum entities are physical quantities, but nonetheless they are “ideal” unlike the quantum entities to which they refer: and which seems to be nonsense.

Indeed, classical physics and mechanics does not share that ridiculous worldview due to the following reason: the physical changes can be only within time, furthermore always being able to be described by smooth infinitesimal equations traditionally and conventionally represented to be only differential. So, any physical changes are as material as those changeable entities to which they are related, and only the equations to be described are mental, nonmaterial. The physical changes are also always material due to the fact that a certain amount of energy can be attached to any physical change being absolutely reliably distinguishable from the equations describing them being deprived of any energy, not to speak of mass at rest.

Unfortunately, that quite consistent and even elegant solution of classical mechanics and physics does not work in the quantum world because of the following: quantum changes are just quantum: i.e. discrete. If one would like to conserve the smooth differential equations of classical mechanics (as Schrodinger did unlike Heisenberg), what should change are probabilities inherently nonmaterial and even non-physical at least in classical physics excluding

thermodynamics involving physically dimensionless quantity of entropy and eventually other quantities derivative from it.

So, one more “ridiculous” peculiarity of classical quantum mechanics, though very rarely articulated, can be observed: it cuts the physical entities inherently possessing mass at rest of at least energy to be on the “shore” of the Cartesian “abyss”, and their changes, accordingly, on the other, opposite shore allowing for the crazy enough conclusion that all physical changes are only mental illusion, even delusion or hallucination. Of course, that statement is to be considered to be a logical tenet by the method of reduction to nonsense (“reductio ad absurdum”) thus implying for the starting premise of classical quantum mechanics to be wrong, more exactly said, inconsistent, internally contradictory.

The way out consists in abandoning the prejudice of classical quantum mechanics trying to keep the worldview elaborated by classical physics and science in the quantum world where it is already absolutely irrelevant since the transition between the two opposite “shores” of the Cartesian “abyss” is inherently smooth, including that between physics and mathematics fundamentally merging into ontomathematics, still in their foundations, in Hilbert mathematics, and particularly implying the scandalous “creatio ex nihilo” to be a proper ontomathematical phenomenon.

As for the distinction of communication and teleportation in the proper quantum case, the above consideration suggests a smooth transition between them particularly implied by the eventual ontomathematical solution of the Yang-Mills existence and mass gap problem also described above and thus realizable (namely, by the introduction of the quantum-information field in the final analysis). Then, the absolutely clear distinction between non-material information and its necessarily material carrier (featured at least by a certain finite nonzero energy) in classical science and physics is to be erased just by virtue of the smooth transition at ussie, for example allowing for the transmitted information to be transformed into its carrier as an exemplification of the already physically admitted “creatio ex nihilo”.

The classical distinction of information versus its carrier relies on the prejudice that all the physical world can be only local and nothing else, thus unconditionally obeying the postulate of non-exceeding the speed of light in a vacuum underlying special and general relativity. On the contrary, once “instantaneous” quantum motions have been admitted in advance if quantum teleportation has been accordingly granted to be a real physical phenomenon, that option for a smooth transformation of information in its carrier (as well vice versa) has been also, though implicitly suggested. In order not to contradict classical quantum mechanics, absolutely prohibiting the mutual transformation of “mental” information and its “bodily” carrier just as classical physics and science do, the research of quantum communication and teleportation introduces the inherently local observers “Alice” and “Bob”, so that the essential nonlocality of them to be thoroughly described in terms of their observation(s) particularly clearly distinguishing successive moments in time so that Alice is first sending qubits, and Bob is then receiving her qubits however *instantaneously*, i.e. in the same moment of time, when Alice is sending them. Obviously, the just mentioned observation is internally contradictory allowing for

one to doubt whether quantum communication and teleportation can be at all described as physical phenomena:

Indeed, the zero time for transmitting quantum information between them implies for Allice and Bob to be in a coherent superposition, jokingly speaking, in a state of virtual "sexual merging" though remote from each other arbitrarily in spacetime, i.e. just locally alone. Hegel or Marx if they were alive, would presumably see here a dialectic contradiction for Alice and Bob being simultaneously in a coherent state, but nonetheless locally arbitrarily remote from each other, i.e. just entangled by virtue of the qubits, which they are correspondingly sending and receiving at the same time. In other words, the quantity of those both sent and received qubits compared with the absolutely decorent quantum information of both separately can be considered as the physical variable of the degree of entanglement between them.

There exists a fundamental "teleportation theorem", according to which information transmitted between them is not absolutely determined only by transmitted instantaneously qubits, but it needs furthermore two oppositions (frequently notated as "two bits"), i.e. needing one more bit of classical information to be completely certain. However, one might now interpret the bit at issue just as Hegel's or Marx's "dialectical contradiction", or speaking physically rather than philosophically, that the bit which is to be transmitted through a classical-information channel specifies the experiment itself, loosely and jokingly speaking, "who Alice is", and "who Bob is" once both are merged in a coherent superposition, being definitive for the experiment.

This means: just that one single bit of information is what is to be additionally transmitted through any classical-information channel thus obeying the limit of the speed of light in a vacuum, on the one hand, and the absolute distinction of the informational carrier and information itself, on the other hand. So, the essence of that additional bit after quantum teleportation is: the instantaneous transmitted information is to be reinterpreted locally just by Bob rather than by Alice, in fact a tautology since just that "state of affairs" is presupposed by the experiment, which as if has been erased as well as the physical quantity of time itself by virtue of the principle of quantum superposition. Otherwise said, there exists the same quantum state, which is possible to be interpreted by two complementary ways, namely: either as Alice's measurement "who is *sending* qubits" or as Bob's measurement "who is *receiving* qubits". So rather jokingly explaining. Alice sends the bit "I am Alice (rather than Bob): so, you are Bob (rather than Alice)": indeed a bit or two oppositions: (1) the coherent state versus their local distinguishability; (2) if the latter is the case, then: "who Alice is, and who Bob is".

One can also interpret teleportation after the "caser" thought experiment introduced already above as for the alternative macroscopic output of any quantum calculation needing a relevant generalization. Any proper "laser" obeys unitarity and energy conservation inherent for classical quantum mechanics. The framework of that "laser" option can initially be conjectured and then experimentally confirmed and technically implemented in various real devices. The suggested above "caser" output of a quantum computer also obeys the conventional restriction of classical quantum mechanics, and this is even absolutely necessary in order not to "curve" or disturb the result of the corresponding quantum calculation.

The state or experiments of teleportation definitively breaks that restriction, in fact, implicitly violating the dogmas of classical quantum mechanics, but politely bypassing that circumstance, not articulating it. The "caser" output generalized as for the teleportation case would radiate a powerful "entanglement impulse" thus necessarily violating both unitarity and energy conservation far beyond the bounds of classical quantum mechanics, particularly able to create energy (matter), figuratively speaking, "from nothing" or to destroy it absolutely, i.e. transforming it "into nothing". That might be the physical basis of a weapon more monstrous even than nuclear bombs since the latter obey energy conservation not being able to destroy energy. On the contrary, that generalized "caser" would "teleport energy", figuratively speaking, but not less literally, would destroy it absolutely transforming it into "pure quantum information": i.e. into the "zero-energetic Yang-Mills field", an option already discussed above as for the ontomathematical solution of the Yang-Mills existence and mass gap problem particularly establishing at least the theoretical option of the "quantum-information bomb"[14] existence as well.

However, if humankind manages anyway to overcome the human dark side tending to destroy rather than to create, the same theoretical option would reveal immense horizons for fundamentally new technical devices, for example, those described in the sci-fi novel "The trigger" by Arthur Clark and Michael Kube-Mcdowell or similar to them and relevant to the here outlined domain of experimental quantum theology, therefore elucidating how suitable the notation of "experimental quantum theology" for it would be. Since the intention is only cursorily to outline that already scientific rather than religious domain, what is sufficient is to be mentioned three ideas, which are elaborated in detail in the plot of the novel:

(1) The "trigger" itself is able to transform a chemical substance into another by a newly revealed physical interaction, which can be identified to be the "generalized caser radiation" in the present context, a controlled teleportation of quantum information, which is what causes the instantaneous chemical changes at issue. Of course, that change would violate energy conservation (even mass at rest conservation) though this is not mentioned expressly in the novel since the transformation of a certain chemical substance into another implies that. One can compare with the analogical change of a chemical element into another due to any radioactive decay (respectively synthesis) strictly obeying energy conservation, therefore radiating (absorbing) a flow of elementary particles exactly correspond to the energetic change between the initial substance and the resultative one.

However, the alleged "trigger change" would not be accomplished conserving unitarity or respectively, the corresponding operator in the separable complex Hilbert space would not be Hermitian so that the two substance can be granted to be entangled, and that trigger interaction should be the "entanglement interaction" itself or the direct teleportation of quantum information from the "Alice" trigger device into the "Bob" initial chemical substance instantaneously

[14] It can be figuratively called "the devil's bomb" unlike all nuclear weapons being "human, too human" following the same metaphor. In other words, experimental quantum theology implies the relevant (and extremely terrible) option of the devil's counterpart of "experimental quantum demonology" allowing for destruction into nothing being the devil's "reading" and counterpart of "creatio ex nihilo".

transforming the latter into another. In other words, the trigger should "radiate" a powerful enough coherent impulse exactly corresponding to the non-Hermitian operator in turn implying the direct change of the initial chemical substance into the resultative one. That coherent "trigger ray" can be considered to be the non-Hermitian generalization of any usual laser ray (always described by a certain Hermitian operator) and therefore, as a directed entanglement or respectively the directed teleportation of the exactly corresponding quantum information (i.e. exactly corresponding to the difference of the wave functions of both substance, initial and resultative). Of course, no trigger devices exist now, that is only a sci-fi idea in fact immediately contradicting the contemporary paradigm of classical quantum mechanics.

(2) The necessity of a relevant scientific revolution also is embodied in the plot of the novel where a character, being already once a Nobel prize winner withdraws and becomes lonely in Princeton to be able to create a revolutionary theory synthesizing quantum chemistry and quantum physics. Indeed, they are absolutely separate in the framework of the Standard model, which in turn is absolutely consistent to classical quantum mechanics and its paradigm so that all substances whether physical or chemical might mutually transform under the necessary condition of energy conservation therefore observing the clear boundary between physics and chemistry, respectively that between any chemical reactions, on the one side of the boundary, and any physical interactions, inherently situated on the other side.

On the contrary, the elaborated theory merges both absolutely distinguished fundamental sciences, and meaning the context of the present study, that might be realized only considering non-Hermitian operators being a conservative generalization of Hermitian operators, what all physical quantities should be according classical quantum mechanics, on the one hand, and the quantum description of any chemical reaction always totally describable by a relevant non-Hermitian operator, on the other hand. Furthermore, the latter non-Hermitian operator can be represented as a relevant entanglement, respectively quantum teleportation able to be "radiated" by the hypothetical fundamentally innovative device, a generalized laser, called the "trigger" suitably enough as far as its impulse, whether "teleporting" or "entangling", is really instantaneous being necessarily superluminal.

(3) The impressive idea suggested by the plot of the novel, the "trigger effect" is occasionally and absolutely unexpectedly revealed after experiments for controlled gravitation or creating "gravitational laser" following the plot of the novel. Indeed, one can consider Einstein's gravitation in general relativity, thus exhaustively described by the Einstein field equation (following today's term), as the local and Fourier (more precisely, "anti-Fourier") mapping of entanglement (for example, after a relevant entanglement theory of "quantum gravitation" suggested in other papers: e.g. Penchev 2023 November 3: 2021 June 8) by virtue of which the "trigger effect" though initially investigated for realizing the supposed "controlled gravitation" by an alleged "gravitational laser" as what the "trigger" has been projected in a sci-fi way, turns out to be simultaneously an entanglement and teleportation "laser" shocking (even literally, by explosions) its discovers.

One can impress how exactly a sci-fi novel manages to guess future theories, innovations, and devices, at that, absolutely and even scandalously contradicting the dominating physical and generally scientific paradigm excluding non-Hermitian operators to be physical quantities as ridiculous and nonsense, contradicting not only the Standard model or the Big Bang theory but also all the modern scientific worldview obeying the Cartesian dogma of the "abyss" between its two "shores". Indeed, the revolutionarily new physical theory fictionally suggested in the novel is to be situated within the "abyss" itself therefore merging its "shores" rather than only to build a more or less reliable bridge between them.

In conclusion, the teleportation domain of "experimental quantum theology" should explain and justified the chosen notation (in quotation marks) at least because it would mean for humankind to approach those capabilities ascribed by religion to God, already not rejected by science any more, but understood in a thoroughly new, even revolutionary way as "God" studyable by "quantum theology" really and experimentally in a proper sense.

The third subarea of experimental quantum theology (in fact, inseparable from "experimental quantum demonology") corresponding the now existent "quantum cryptography" will be considered in a future study since it implies a special philosophical sense consisting in the (whether) encryption or decryption relevant to transcendence, philosophically, or respectively, to God Himself, theologically.

X INSTEAD OF CONCLUSION: "GOD" FOR SCIENCE VERSUS GOD FOR RELIGION: THE OPPOSITION OF SCIENCE AND RELIGION RESURRECTS

Especially the last section, about "experimental quantum theology", demonstrating the relevant scientific conception of "God" being quite different from the usual religious understanding of God for the Church including as a rather social organization able to unite, rally and unify the society, to which it belongs, in other words, God for billions of people all over the world, regardless of which religion they confess. So, quantum theology approaches God of the Church and God of all the believers from the side of science as an extremely sophisticated theory and metaphysical (or in its proper terms, ontomathematical) doctrine, really inaccessible and incomprehensible for that prevailing part of humankind, those billions people who only believe and can only believe in God, and that belief is absolutely sufficient for them.

One may figuratively say that both quantum theology, though a human enterprise, and God Himself and by Himself are equally transcendent for those billions of believing people therefore conditioning the serial division of humankind into two parts: God's humankind versus humankind's "God". The latter, though being an insignificant minority according its number, dare hope to collaborate with God and even to overtake God in the uncertain future just as many siblings do in relation to their parents, though being initially absolutely helpless and dependent on them as babies, but gradually transforming into children, teenagers, young people therefore becoming more and more standalone.

Unfortunately, one might not predict whether and how far that division would gap and eventually oppose humankind into two parts: people who can only believe in God just as a baby does in relation to the parents, and the same baby's older enough siblings being already adults and possibly even more successful than the parents. Of course, the adult siblings are almost always like second parents, sometimes helping and assisting the baby more than the real parents.

Practically, no normal young adult thinks of himself or herself as a superman or supergirl in relation to the younger brothers and sisters though possessing huge capabilities even often exceeding those of the parents. So, Nietzsche's doctrine of "Übermensch" is "a teenager's idea", thus not yet being a real adult usually responsible to the younger siblings, analogically to the parents' love and care to them. Meaning that observation, the monstrous practice of Nazisme would correspond to some pathological, absolutely crazy teenager able to torment and even to kill the siblings regardless of being younger or older and who must be committed under psychiatric control and care.

So, that division of humankind is a normal process of becoming adult, similar to a numerous family with many siblings, some of whom are still babies, others are children, third ones are already teenagers, but the oldest ones are real adults, thus normally all being rallied by love and care rather than divided by rivalry and hatred. Of course, the younger siblings are often boring and annoying, being incapable of understanding what the adult brothers and sisters do (and that state of affairs is absolutely normal).

So, quantum theology does not threaten any part of humankind in any way. On the contrary, it is a promise for an additional portion of love and care once the oldest siblings are already adults and able to collaborate with their parents.

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