
DIVINE AND SECULAR

CASE STUDY OF DIVINE INSPIRATION IN SCIENCE

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Abstract

Science and faith have been intermingled throughout the history, as paradigms of rational and irrational sides of *homo sapiense*. This should not come as a surprise, since they sprang from a common trunk, being inseparable in the phase of prehistoric, traditional societies. Here we consider the impact irrational had, via the construct of *divinity*, on the scientific thought. Our interest will be on the socio-anthropic aspects of scientific activities, rather than on the epistemological ones. The latter provides no space for eventual interference, since rational and imaginary have no common cross section. Never-the-less impact of religious syndrome on the scientific minds cannot be ignored. We shall consider a number of cases in point and analyse psychological and social backgrounds of this kind of interference.

Keywords: Science, faith, divine, inspiration, religion

1. Proem

Humans may be powerful, but they are never match to gods. It is, therefore, no surprise that the former ask for help from the latter, in various situations and forms. Prophets, poets, seers, rulers etc. they all resort occasionally to the divine help. Motivations are not difficult to infer. Men act according to divine inspirations, orders, support, advice etc. Mythology, including that from the Bible, is full of divine interventions, which justify, incite, channel human actions, in particular extraordinary ones, including those not justifiable by the common human ethos. Divinities act in various forms, but the most frequent way has been via dreams. Here is what happened to young Aeschylus, according to Pausania: "*Aischylos said that when he was a boy he was asleep in the country looking after a vineyard, and Dionysos met him and told him to write tragedies. When day broke he wanted not to disobey, so he tried, and composed with the greatest ease.*" [1]

Before we comment the encounter, we notice the term *met him*, where one would expect *appeared in his dream* or something like that. Pausania was not a superstitious man, and his terming surely expresses common attitude towards dreaming, as a different level reality. When Descartes started formulating his

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existential postulate *cogito ergo sum*, it was the confusing the dream and awaked state that he had to overcome first. How one is to interpret this anecdote?

We notice first that it was nobody else but Dionysus, god of vineyards and wine, who made his appearance to the sleeping young guardian. This kind of allegory appears frequently enough to be identified as *mythema*. The content of this particular fable points towards another common mythema – divine justification of a particular action. Dramaturge Aischylos appears here as a prophet, whose task has been assigned to him by the god. In a somewhat milder interpretation the poet has been chosen by god as a medium, who by divine inspiration just transmits divine spirit. This particular kind of mythemae may be dubbed as *syndrom of prophecy*. In the religious practice, it takes the meaning of *justification*, by which a prophet's activities are approved by god(s). In the realm of Christianity both interpretation, inspiration and justification appear intertwined. Dreams are interpreted as orders, and thus taken as an inspiration for particular activities, as the case of Saint Jeanne of Arc illustrates. The famous Paul of Tarsus encounter with Jesus on his way to Damascus is another example of turning dream into hallucination, or possibly mere invention. On the other hand, Saint Peter's encounter with Jesus outside Rome walls was, in all probability, an invention for the political benefit of the (later) Roman Catholic Church. Similarly, Constantine's vision of *Sign* on the sky [2], before the crucial battle at Melvin Bridge, may well be a pure invention, either by the Emperor, or more probably by the Christian 'historians'.

But 'convenient inventions' are not provided by dreams and hallucinations only. Occasionally it is the 'chance' which guides somebody's will, as divine sign. The case of Saint Augustine, as described in his *Confessions*, is too well known to be described here [3]. What is worth mentioning is the role of chance as claimed by many thinkers, like Plato. The latter asserted that choice by dice, as practiced in Athens in electing polis administrators, was not without divine consent. The rationale was simple: government must be obeyed, otherwise the polis collapses. It is the same rationale in the proverbs like "Every government stems from god(s)". The Christian dictum: "Give to God what is God's and to Emperor what is emperor's", aims at the same target.

Pre-Socratic Philosophy provides examples of divine inspirations, as the case with Parmenides' *Poem* is [4]. It should not come as a surprise, for this was a transient phase of turning mythology into rationalized thinking, later to be dubbed Philosophy. In his *Poem* it was a goddess who instructs the thinker and reveals to him the most fundamental secrets of the nature of Nature. It is significant that Parmenides involves an unnamed goddess, the Goddess (θεά), not a god (God), probably making allusion to the goddess Athena, who was in charge of wisdom (Athena sprung from Zeus's head, after all.). It was not an insignificant fact that Parmenides titled his philosophical essay *Poem*, for it was poets of his immediate (pre)historical period who claimed to be inspired by gods. After all, within this period it was difficult to discern what pure poetry was and what was intended to provide wisdom, as the case with Homer illustrates.

Homer and his Iliad used to be revered as Hellenic ‘Bible’, at the Plato’s consternations.

The scene with Krishna and Arjuna in the Bhagavad-Gita is another case of gods helping humans, not only by philosophical insights, but by direct instructions [5]. The rationale for all these divine attestations is obvious – to provide the authors with ‘highest authority’, that is from Heaven. That this concerns not only Philosophy and literature but hard science as well, we illustrate by quoting an example from the same India. Around the turn of New Era and later on Indian Astronomy was flourishing, and a great number of astronomical treatises were published. Out of 26 books, 18 were anonymous, without naming the authors, but claiming they were direct transmissions of their gods [6]. Number 18 was not accidentally chosen, however, since it is the number (or the name) of *Puranas*, *Surya Siddhanta* is the most important of these ‘revelations’, but it has been estimated it was composed within the period (500-1100) AD. We note, in passing, that the number of repetitions of (the only) theme in the famous Ravel’s *Bolero*, is 18 also, but this time it had to match not Indian sacred books, but the number of Jewish morning prayers.

In the fourth quarter of 19th century, Mathematics has undergone a revolution, similar in extent to the somewhat later revolution in Physics, with the Special Relativity and Quantum Mechanics. The principal innovator was George Cantor, whose transfinite and cardinal numbers steered a storm among contemporary mathematicians. His introduction of a number of infinite numbers arose a vigorous opposition of Kronecker, another renowned mathematician, whose dictum: *God gave us natural numbers, all the rest is a mere human invention* became a banner of all those who failed to grasp the importance of the new paradigm in the number theory. Cantor struggled with this opposition to the end of his life, to resort, finally to the claim that he was inspired by God when contriving his $\aleph_0 \aleph_1 \dots$ transfinite numbers. Cantor was Jewish (as Kronecker was too) and it was for the first time Hebrew letters were used in scientific notation. Whether this claim was motivated as a countermeasure to Kronecker’s assertion, or was just the outcome of the psychological pressure he was imposed is difficult to decide. Anyway, this involvement of the divine intervention into scientific domain was the first after Newton’s and Leibniz’s time. We devote now our attention to three great figures of modern European culture, in particular Science and their theological reasoning.

2. Newton

Newton was engaged in many fields of human activities, but here we shall be concerned with three principal ones: Science, Alchemy and Theology. It is now well known that he wrote more on Theology than on Science and Alchemy together. Alchemy did occupy this great mind, so much that one sometimes poses a question if Newton was the last alchemist or the first modern scientist [7]. As for Theology, Newton was much engaged in religious matters, apart from the pure theological speculations. His interest in religion was two-sided. On the

one hand, Newton used to apply scientific analysis of the biblical and other religious texts [8]. On the other hand, he occasionally ventured into resorting to divine inspirations in discovering laws of Nature. We start with the famous Newton's claim of the inspiration for conceiving the construct of the universal gravity.

2.1. Newton's apple

*The more I get old, the better
I remember things that never happened.*
(Mark Twain)

We get to know the story of Newton and his apple via William Stukeley Memoirs, published in 1752, 25 year after Newton's death [*Memoirs of Sir Isaac Newton's Life*]. Presumably Newton used to tell such a story in his advanced age, but never left a written account of this anecdotic event, which allegedly was instrumental in his discovery of the force of the universal gravitation. Why he did not put it on paper? The reason has been, in all probability, because it was an invention, which suited Newton to promote a number of points, as we shall argue in the following. Here is the quotation from Stukeley Memoirs (the original text has been preserved): "*after dinner, the weather being warm, we went into the garden, & drank thea under the shade of some appletrees, only he, & myself. amidst other discourse, he told me, he was just in the same situation, as when formerly, the notion of gravitation came into his mind. 'why should that apple always descend perpendicularly to the ground', thought he to him self: occasion'd by the fall of an apple, as he sat in a comtemplative mood: 'why should it not go sideways, or upwards? but constantly to the earths centre? assuredly, the reason is, that the earth draws it. there must be a drawing power in matter. & the sum of the drawing power in the matter of the earth must be in the earths center, not in any side of the earth. therefore dos this apple fall perpendicularly, or toward the center. if matter thus draws matter; it must be in proportion of its quantity. therefore the apple draws the earth, as well as the earth draws the apple.'*"

Before we consider the veracity of the story, a few words on the Newton's analysis of the event are in order. His insight into the nature of the force lying behind the elementary event (falling of an apple to the ground) was not trivial one, as it might seem *prima facie*. From purely geometrical/kinematical point of view apple might fall as it did, but might have moved upwards, or to the left/right horizontally. Inclined trajectories are to be discarded, since there are infinitely many of them and there is no reasonable way to make a choice among them. Upright motion appears out of question for if possible Earth would soon be deprived of things on its surface. Horizontal trajectories are excluded as well, even if one could make a choice between left and right direction (unlike Buridan's donkey). Newton opting for a dynamical cause was a nontrivial step

towards the natural explanation, instead of relying on the *axiom of choice*, to be formulated later in 19th century, anyway. But did it really happen?

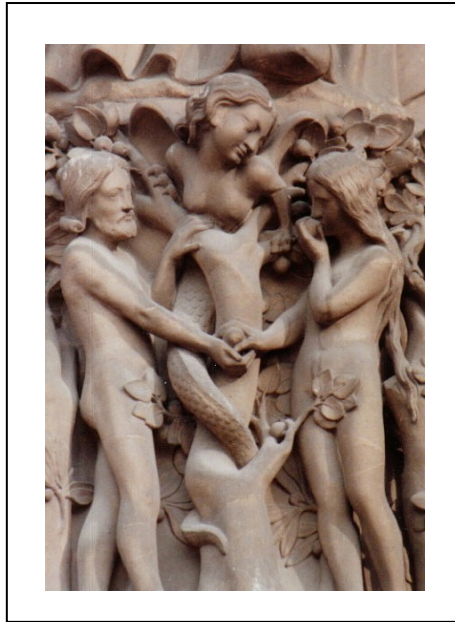


Figure 1. The scene from Eden (Notre Dame de Paris).

It is a traditional wisdom to check, if the story appears suspicious, whether it belongs to the set of *mythema*, mythological constructs which appear in many mythical narratives and which are like building blocks within more versatile description of the past. Why tree and why apple? This appears evidently an allusion to the apple-tree in Eden (see Figure 1). True, the Bible does not specify which kind of tree ‘tree of life’ was, but the tradition of apple-tree was initiated in 16th century, hence not long before Newton’s time. Designation of ‘tree of life’ was a misnomer, considering the narrative of the ‘original sin’. The proper term would have been, obviously ‘tree of knowledge’. Biblical authors wanted to fix up this ‘bifurcation point’, when the rational thinking and faith took different paths, not to merge any longer. Eating an apple was a symbol of acquiring knowledge, what makes human independent and proud, the last thing clergy would allow. Inciting came from a venomous snake, the symbol of evil and danger, an archetype of human enemy [9]. “Fear of snakes is deep and primordial among the Old World primates, the phylogenetic group to which *Homo Sapiens* belongs.” [10] Apple, from its side, has always been considered the most abundant and precious of all fruits, the respect it still holds with humans. On the other side Newton law of the universal gravitation has been considered, at least among broader public, his most important achievement in Physics. By discovering the nature of the force of gravitation Newton surely felt he came near to God’s mind, to Anaxagoras’ *Nous* (Νοῦς). To him and the other

humans it resounded as a sacrilege. It required an explanation, justification for interfering divine matters. Newton surely felt he found an exit from this embarrassing situation, by alluding to very God, who sent to him the resolution of the perennial riddle. It was the same rationale Cantor would make use of later, as we mentioned above.

The biblical narrative of serpent (in visual arts snakes used to be substituted by serpent, which come closer to human stature, as illustrated by Michelangelo's painting in Sistine chapel, for instance) and apple is another mytheme, we meet in the myth on Heracles [11], describing dragon Ladon coiling around the tree, guarding golden apples at the garden at Hesperides. The struggle of Apollo with the Python at Delphi will find its replica in the Saint Georges and dragon duel in the Christian mythology [11, vol. 1, p. 80].

2.2. Newton's anti-Trinitarianism

Although formally a Christian Newton never accepted Christian faith. He surely was well aware of his racial origin and refused, among other things, to adopt the formal status of a Christian priest, as required by his position at the Trinity College. Finally, he refused to make final confession at the deathbed, making excuses on moral grounds. His scientific interests in new Testaments were purely academic, whereas he adhered strongly to the Jewish Bible. In a sense, Newton was in a position of Spanish *convertos*, who adopted formally/publicly the Christian faith, but continued their Judaist practice at home.

Newton was cautious not to entangle faith and pure science and his *Principia* was practically free from irrational agents (we find a single instance only in *Principia* where God is mentioned) [12]. Nevertheless, he did try to insert a number of theological points into the second edition of *Principia*. One may contemplate as to the motivations for such additional interventions. Firstly, the psychological ones. *Principia* was recognized as an unprecedented achievement in hard science and Newton was considered as a scientific counterpart of ancient lawgivers, like Moses. With such a reputation, it was tempting to make use of his authority and present within the treatise philosophical and theological considerations. In view of his dispute with Leibniz, via Clark, over metaphysical points, as to the nature of space and time and God's role in scientific enquiries and interpretations, inserting non-scientific matters into *Principia* gave Newton another vehicle to convey his philosophical and theological views. Some of the latter were of a general nature, but two aspects appeared distinctly specific to Newton's credo concerning religion. One was the interpretation of the 'nature of God', the other on the 'nature of Christ'. While the first aspect was to relieve Newton's adherence to the Old Testament theology, the second was intended to 'rectify wrong beliefs' of his contemporaries concerning Jesus Christ.

The principal attribute of God, according to Newton, was his *Dominion*, as Lord (muster). One may venture to explain this emphasis with the contemporary concept of monarchy, but we shall not dwell on it here. More interesting is the Old Testament aspect of God as a powerful being expecting everybody to obey. All other attributes stem from this essential feature of the Supreme Being. Though not explicitly stated, such an emphasis delineates The Old And New Testaments theologies, at the epistemological level. From the ontological viewpoint, Newton was eager to distinguish *moral equivalence* of Yahweh and Jesus, from the essential difference of substance, of which both deities were made. Newton followed the line initiate by Arius and continued by Socinius and others. Insisting on God's supremacy over Christ, and emphasizing Jesus essentially human nature, Newton stressed his Unitarian, anti-Trinitarian outlook on the principal division between Jewish and Christian bibles.

But not only was Newton giving preference to the Old Testament tradition, but his adherence to the Jewish inheritance went even further, arguing for the essential priority of the Israelites over Greeks. Here is the testimony of Stukeley:

“in christmas 1725. upon a visit I made him, we had some discourse about Solomons temple; a matter which I had studyed with attention, & made very many drawings about it, which I had communicated to my Lord Thomas, earl of pembroke, to M^r. Martin Folkes, & some more of my friends. I found, Sir Isaac had made some drawings of it, & <13> had consider'd the thing: indeed he had studyed every thing. We did not enter into any very particular detail about it. but we both agreed in this, that the architecture was not like any designs, or descriptions yet publick. no authors have an adequate notion of antient, & original architecture. Sir Isaac rightly judged, that it was older than any other of the great temples mentioned in history; & was indeed the original model which they followed. he added, that Sesostris in Rehoboams time, took the workmen, from Jerusalem, who built his Egyptian temples, in imitation of it; one in every Nomos. & that from thence the greeks borrow'd thir architecture; as they had a good deal of thir religious rites, thir sculpture, & other arts.

Sir Isaac thought, the Greeks, according to thir usual ingenuity, improv'd architecture into a higher delicacy; as they did sculpture and other arts. I confirmed his sentiments by adding, that I could demonstrate (as I apprehended) that the architecture of Solomons temple was what we now call Doric. then, says he, the greeks advanced it into the Ionic, & the Corinthian, as the Latins into the composite.”

Both attitudes, towards New Testament and Ancient Greece deserve comments. It is ironical, indeed, that the holder of the Lucassian chair at the (Holy) Trinity College turns out anti-Trinitarian. But even more ironic must be discerned in his belittling Greeks, concerning what he himself have been inherited and applied from the Hellenic culture. One of famous Newton's dictum was that of 'standing on shoulders of giants'. Which giants? In Mathematics he could refer to Eudoxus and Archimedes, whom he could compare himself only with. In fact, this dictum might be apocryphal itself, since the first to pronounce

it was reverend Bernard of Chartres from 12th century [13]: “*We ourselves are dwarfs, but by standing on the shoulders of giants [who came before us] we can see further than they.*”

In fact one might well speculate that Newton discovery of the calculus, claimed to happen in his youth, but published much later, was simply an acquaintance of Archimedes’ *method of exhaustion*. This would explain why he did not announce his method before Leibniz did it.

An excuse for Newton’s *retrospective optimism* concerning comparing Athens and *Jerusalem*, would be a poor knowledge Europe had about ancient Egypt, before Champolion ‘discovered’ the latter. The same holds for the relationship Egypt-Israel, which even now has not been yet deciphered to a satisfactory extent [14].

Planning to enlarge his *General Scholium* in the new edition of *Principia*, Newton was, of course, aware of the benefits from one side, and danger from the other from meddling in to religious matters. After all Galileo’s case was too fresh to be ignored, in particular by someone born in the very year of Galileo’s death. One can follow now five stages of preparing material for the new Scholium.[12] Newton was gradually strengthening his assertions about nature of God and at the same time increasingly discerning Christ and Lord of Lords, as he designated biblical Yahweh. His approaching the final stage of the theological exegesis was like climbing a deep well. The closer to the top, the greater danger of falling back. Finally, in the latest E-version Newton gave up ,degrading Jesus’ and dropped all references from the New Testament supporting his subordinationist evidence concerning Christ in his Scholium.

What was the rationale of introducing Theology into *Principia*? One possible interpretation would be taking advantage of the *Principia* authority to promote his own theological viewpoints. On the other hand, referring to God Newton might have hoped to provide his scientific results a divine status, and to himself the status of ,divine lawgiver’. But another interpretation comes to mind too: he might have felt his inference into the ,essence of Nature’ as not pious enough and sought a kind of forgiveness from divinity for intruding his competence. This interpretation comes to mind when reading Kant’s preface addressed to his king [15]. But whatever interpretation one adopts, mixing religion and Science appears futile to modern rational mind anyway.

2.3. Newton and Alchemy

If Newton’s purely scientific work, like mathematical one, was a paradigm of rational thinking, theological (either intrusions as into *Principia* or separate treatises) studies indulging into irrationalities, his occupation with Alchemy testifies his affinity towards mysticism [7]. In a sense Newton’s alchemy corresponds to Jewish Kabbala, which stands somewhere between orthodox biblical teachings and ,rational fictions’, disguised in a ,scientific methodology’. The rationale for his alchemical research could be found in his ambition to decipher divine design and find out the essence of physical matter. The entire

Alchemy is based on the belief there is a deep universal unifying principle beneath the empirical evidence. In a sense alchemists did the same what did Charles Darwin concerning the origin of species. Finding out the 'origin of chemical elements' would provide, according to this rationale, the way to transform one 'species' of chemical matter into another. Whether Newton 'was after gold' or was driven by purely scientific curiosity, is of little importance to us here. The fact that he spent the rest of his life as the head of the Royal mint might be interpreted as his interest in 'earthly wealth' but we have no material support for such an interpretation.

Alchemy, seen as late as in Newton's time was Middle Age counterpart of the modern Nuclear physics and the work on the transmutation of nuclei. More modern counterpart is the quest for the Unified Theory of the fundamental interactions. The underlying principles used in modern Quantum Field Theory are various types of symmetries, as guiding principles. Newton's principle in his (al)chemical research was *hierarchical principle* [7], which could be traced back to Anaxagoras' *homeomerias* [4, p. 352].

Whether Alchemy could be understood as perennial 'golden fever' disguised into metaphysical clothes or just another aspect of human inclination towards charlatanism, as a shortcut to 'ultimate knowledge', is the matter of choice. One can not escape, however, the feeling of something diabolic in trying of believers to 'cheat gods' by making essential changes in the world which divinities designed.

3. Leibniz

The great Newton's contemporary rival was equally a pious believer. Though not an Orthodox Christian, he was surely not as heretic as his English counterpart. His theological views were more dictated by his opposition to his great scientific rival across the Channel, than by different insights into the matters of faith, as his famous epistolary exchange with Clark testifies [16]. One of the principal outcomes of this 'teleguided dispute' was the demonstration how much Metaphysics, this time disguised in the theological clothes, is a futile business. Both great minds referred to the same divinity in claiming their (opposite) conclusions concerning the ideological background of their corresponding scientific (rational) achievements. The reverberations of this 18th century 'gigantomachia' are still felt in the contemporary scientific and epistemological realms, as we shall see when discussing some Einstein's views on the epistemological issues. Here we confine ourselves to Leibniz's quasi-scientific activities, linked with theological and metaphysical issues.

3.1. Leibniz and esoteric teachings

Leibniz was interested in Alchemy, but unlike Newton never engaged practically in the chemical experiments. On the other hand, again unlike Newton, who never claimed to be a philosopher, Leibniz spent much of his

research time in considering philosophical questions. He did not construct a rounded philosophical system, but his contributions to the European Metaphysics can not be overlooked. Two principal areas may be distinguished concerning his philosophical contributions: (i) the role of unconscious in human activities and (ii) the concept of *monads* [17].

While Leibniz ideas of unconscious have been regarded by modern scholars as a genuine contribution to European Philosophy, as a modern continuation of ancient concepts, primarily those by Hippocrates [13, p. 214], Leibniz much acclaimed concept of *monad* remains as more obscure idea than a clear construct even within the realm of Metaphysics [18]. Part of this vagueness is due to the fact that Leibniz never wrote down a reasonable detailed account of his mysterious entity he called monad, apart from the brief compendium written for the private use of one of his royal benefactors [16, p. 190]. Formally monad is a structural unit which contains all information of the entire reality, what makes all monads equivalent. It appears a sort of Anaxagoras' *homeomeria*, which in its turn is a part of the *fractal* universe, whose every part resembles the whole [19]. But unlike Anaxagoras who ascribed to his *Nous* only to some of *homeomeria*, Leibniz's *monads* are conceived as units endowed with consciousness of the totality, like an intelligent being [16, p. 133]. It all looks just as another metaphysical construct, but a closer look at Leibniz's personal engagements reveals a more trivial, if somewhat curious explanation.

Leibniz presumably was not an adept of the esoteric society of Rosicrucians, allegedly founded by Rosenkreutz though it was believed he was even a secretary in one of their loges [20]. Nevertheless one can not overlook the influence which Rosicrucian ideas had on Leibniz, concerning his concept of *monad*, in particular in view he was a secretary of one of alchemic local societies. One of etymologies of the term Rosenkreutz is *ros crux*, dew cross. It is indicative that dew was regarded by alchemists as the most powerful solvent of gold, whereas cross was a symbol of light. The principal idea of the society was the equivalence of *microcosm* and *macrocosm* [20, p. 319], the idea which was the conceptual pattern of Anaxagoras' fractal universe and one of central concepts in Antiquity too. Rosicrucians imagined that the Universe reposes on *Trinosophia*, a set of triads. The central construct is *The Eternal Monad*, which possesses three dimensions: point, quadric and cube, according the scheme: 1, 1x1, 1x1x1 = 1, thus preserving the Unite. What the triple might mean is explicitly explained by the *Divine Unit: Yahweh-Holy Ghost-Jesus Son*. Further elaboration introduces Virgin Mary and her descend to the World in the form of *Sophia*, what was required by the Original Fall, forming the primordial quartet in the microcosm. Further proliferations of the triples follow, but to us here is sufficient to note that he concept of *monad* was the central construct with Rosicrucians. It is interesting to notice, also the way *Sophia* arrives to our *microcosm* – by the original sin, the Fall. Was Newton's apple and its fall an allegory on the same biblical mythema, that is of The Fall? Was the universal gravitation, as manifested by everything 'falling to the centre', manifestation of

the force opposing the divine part of humans, tightening them to the sinful, material earth?

Rosicrucian emblem was rose (or wreath of roses) on the Cross. Whether the emblem was designed after the name of the alleged founder of the society Rosenkreutz or *vice versa* is of no importance to us here. One of the possible explanations would be the linguistic link between rose and Christ. Rose in modern Greek is called τριανταφυλλιά (thirty-leaf flower). The number of leaves coincides with the 30 shekels, which Judah received for betraying Jesus. This number, further, was not chosen by accident, for it was the common price for a slave at the time. It was another mean to humiliate Jesus, and impose the feeling of guilt to his followers, and *via* them to the rest of mankind. In fact, it was just another realization of the Old Testament construct of the Original Sin, which obliges everybody to feel guilty and seek mercy from Yahweh. One of emblems of Rosicrucians was a (thorny) wreath of roses hanging on the Cross, symbolizing, presumably the wreath of thorn on the Jesus' head (with inscription INRI), as another sign of the utmost humiliation, alluding to his claim to be from Davidic house (Incidentally, (*e*)*spinoza* means *thorn* in Spanish).

Rosicrucian Monad was an explicit representation of the Christian (Holy) Trinity (Rosenkreutz's first name was, after all, Christian), thus exposing Leibniz as Newton's opponent in the realm of faith. Since the primary meaning of *monad* is *unit*, an *atom* in the original Greek sense (*individuum*), 'parts' of the *Trinity* are thus conceived as inseparable, making this Christian dogma even more ontologically compact. Accounting for its formal internal inconsistency, even contradictory structure, as noted by Hartmann, *monads* appear *epistemological units* (a complete, rounded off entity), which resist further dissolution (as the case with *oxymoron* is). Another point to be made concerning Rosicrucian ideal is their demands that a perfect adept should be an excellent musician, gifted painter and an universal scientist. Leibniz was neither of the former two, but has been arguably considered the most universal scientific mind of the last millennium.

Rosicrucianism was arguably in the tradition of *Gnosticism*, which on its part was a kind of Pythagoreanism and even earlier Orphism. These esoteric teachings and societies run through the entire European history, descending occasionally underground, but then emerging on the surface like lost rivers. Mystical teachings appear like human subconsciousness, or Jungian *archetypes*, illustrating the traditional equivalence *microcosm – macrocosm*.

4. Einstein – a pious atheist

Though he never wrote a comprehensive text concerning his religious commitments, Einstein was deeply occupied by religious matters. His overall attitude towards religious as a paradigm of an irrational worldview has been oscillating and many well known sentences have been quoted as illustrating his relationship with faith, may be summarized by his recently published letter to a rabbi author of a book of religious content [21]. We argue that the breakthrough

in Einstein understanding of the relationship between religious and rational occurred after reading a book on Euclid's *Elements*. It was the turning point of the young Albert of the age of 13, when he made a U-turn and abandoned his previous zealous religious enthusiasm for the hard logical structure of the pure mathematics. In a sense, Albert experienced the dilemma faced by young Heracles in choosing between two paths, one of easy comfortable life and the other of heavy labour and benefits for the mankind.

4.1. Faith versus ratio

4.1.1. To believe or not to believe

*Dirac's religion is that there is no God
and Dirac is his prophet.*

(Wolfgang Pauli)

The U-turn which young Einstein experienced in his 12ieths, when a Polish student gave him a popular version of Euclid's *Elements* could be described as an exchange of Jewish Bible for Hellenic Bible, fairy tales for the iron logic of mathematical science. During his long and impressive scientific career he used to make numerous comments on the Science and religion and their interplay, but here we shall confine ourselves to one particular aspect of religious influence on Einstein – divine versus rational. His scientific achievements, particularly General Relativity (GR) planted a feeling, albeit subconsciously, of a divine lawgiver, just as it was the case with his great predecessor, Newton [22]. What made him feel a bit closer to God, whatever the latter may be imagined?

According to Schrödinger's account, by 'freeing humans' from the 'rigid tyrant' of time, Einstein made this assertion "It is quite possible that we can do greater things than Jesus", referring to the possibilities his GR offers [23]. In this particular instance, Einstein alluded to the possibility of 'tunnelling' though the space-time barrier, as 'exemplified' by Jesus 'tunnelling' from Crucifixion to Resurrection. Hence, if mortals can do the same things as Jesus, the latter need not be God, hence a part of the Holy Trinity. What brings us back to Sir Isaac Newton.

4.1.2 Einstein and pantheism

Einstein did not give up biblical ideology, but tried to dress it in more digestible form. In this he followed the steps of Plato, who strongly opposed the Homeric tradition, with gods resembling humans, deprived of the divine exaltation. Einstein felt almost offended by the naïve biblical narrative, as many other thinkers felt before, like Philo of Alexandria, Saint Thomas Aquinas, Baruch Spinoza etc. Einstein was particularly attracted by Spinoza's essentially pantheistic concept of divinity, for a number of

reasons. One of principal assertions of pantheists was that the God is equal to Nature and to become divine one has to understand the essence of Nature. And nobody else would be more eligible to this status than the author of GR. When Einstein says he would like to infer how God conceived the World, that is what the most fundamental laws of Nature are, he almost openly reveals his pretensions to become a sort of divine partner. Though he never mentions it explicitly, but one is left with feeling, after reading assertions of this sort, that Einstein thought he was inspired by the Divinity in discovering fundamental properties of Creation. His pantheism may be considered as a particular kind of Gnosticism ('scientific Gnosis'), without eschatology, of course. In the literature one encounters frequently allusions on 'divine source' of the fundamental equations, including those of GR [24].

Another author made the statement: "God gave us only two equations – Newton's and Schrödinger's". It is true that GR and Schrödinger's equation is almost impossible to derive, even for the top rank theoreticians. One of the greatest 20th century theoretician, Richard Feynman said, after examining Einstein's GR fundamental equation: "I still do not see how he got it". Of course, such statements are part of the scientific folklore. Schrödinger's equation can be derived, for instance, from Feynman's formulation of Quantum Mechanics, whereas David Hilbert, leading mathematician of the first half of the last century derived 'Einstein's equation' independently and even a fortnight before Einstein.

4.1.3. Got würfelt nicht (God does not play dice)

How is one to understand this famous Einstein comment about the statistical interpretation of the laws of Quantum Mechanics? As witty response to his opponent, Niels Bohr, or as a deep remark on the essential dichotomy *necessity versus chance*? The latter bears a considerable epistemological significance, which can not be overestimated. For how one is to perceive God's presence, even existence?

Random processes, like throwing dice, are considered uncontrollable in principle that is the possible outcomes are unpredictable. But if God is omnipotent, can He predict at which instant the atomic nucleus will decay? Though they did not exist at the time of Einstein-Bohr polemic, Bell's inequalities may serve as a definite answer to the question. If God knows the outcome of an *EPR* experiment, than He plays the role of *hidden parameters*, which the experience shows do not exist. Hence, the aleatory character of the quantum processes is assured, even in God's presence. What means the latter can not be omnipotent.

This conclusion appears an interesting twist in interpreting aleatory processes. Many socially relevant choices are made by throwing dice (in a metaphorical sense). Some Athenian officials used to be elected by throwing dice. Does it mean they were less entitled to govern state affairs? No, answers Plato. Their choice is not random, but guided by divine hand. It was, in fact, a philosophical way to repeat the traditional wisdom that every rule stems from God (whatever the latter means). When Caesar declares *alea iacta est*, he conveys the responsibility for breaking the strict Roman law to gods. The latter do not play dice, but just reveal their will by dice.

4.1.4. *Atheism and Zionism*

In his testamental message to the world Jewry, expressed in a letter to Jewish philosopher Eric Gutkind, having read his book *Choose Life: The Biblical Call to Revolt*, in the letter, written by hand in 1954 in German, Einstein writes [22]: *"The word god is for me nothing more than te expression and product of human weakness, the Bible a collection of honourable, but still primitive legends which are nevertheless pretty childish."*

Why such harsh words? Einstein was sufficiently honoured by the world community (scientific and otherwise) to fear the fate of his religious idol, Spinoza, who was not only excommunicated from the Amsterdam Jewish community, but cursed as a satanic nonbeliever. In a sense, Einstein felt ashamed for those of his akin who failed to emancipate themselves and remained tied to the ancestral faith.

On the other hand, Einstein remained strong supporter of Zionism as a Jewish movement and the very state of Israel, which was founded on the same Biblical dogmas of *Chosen People* and *Promised Land*.

5. Epilogue

*Who are you to tell God
what is he supposed to do?
(Niels Bohr to Einstein)*

Resorting to divine inspiration, or even support, appears a process reverse to that described by Euchemeros, who claimed that gods are devised according to memory of prominent individuals, powerful rulers etc. In the case of rational minds referring to divine inspiration gods are supposed to 'pay back' for human favours. As it usually happens, eminent minds, mostly subconsciously, join divinities in their roles as demiurges, not at the ontological, but epistemological level. They *fathom* divine design, unlike other mortal humans, being thus enlightened, able to communicate with gods, albeit in the one-way manner.

Though divine inspiration or support is met frequently in other sectors of human activities, like arts, politics, belle lettre, etc, where it takes on an allegorical flavour, hard science is supposed to be free from irrational agencies. We have shown that far from being ‘more rational’ than the ordinary humans, great scientific minds often did not resist temptations to rely on irrational sources. As if they did not rely on the posterity to appreciate their greatness, as Euechemeros described, and offered themselves their help in promoting mortals into (semi)gods. After all, do we not call the scientific sector of the human society *Temple of Science*?

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