

Ichneumonidae

Darwin's theological dilemma and the rethinking of creation



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Introduction

Ichneumonidae is a parasitic wasp that places its eggs inside a caterpillar. The wasp injects a carefully dosed measure of venom into each ganglion of its victim, so that the caterpillar is paralyzed yet not killed. The larvae feed on its body while still alive.

The scientific exactness by which the wasp operates on its victim is comparable with the most advanced neurosurgery. The thought of design comes to mind naturally. However, the question raises, what kind of mind would have conceived this Mengele-like experiment?

I cannot persuade myself that a beneficent and omnipotent God would have designedly created the Ichneumonidae with the express intention of their feeding within the living bodies of caterpillars (Darwin, Life & Letters, 105).

Darwin was not trying to produce an argument against God. His point was rather that the argument from design could be used both ways. “*Not believing this, I see no necessity in the belief that the eye was expressly designed*” (ibid.). He inclined toward a natural theology which considered “*everything as resulting from designed laws, with the details, whether good or bad, left to the working out of what we may call chance*” (ibid.). Yet he declared himself unsatisfied by it. He was an agnostic, in the sense that he

considered the question on God “*too profound for the human intellect*”, and encouraged that “*each man hope & believe what he can*”. As for himself, “*the more I think the more bewildered I become*” (ibid.), he acknowledged.

Ironically, Darwin’s bewilderment comes from his failure to consider the evolution of faith. His dilemma could not be answered within the context of traditional Christianity. Nevertheless, heterodox developments in Christian thought already had the answer.

Unfortunately, Darwin disregarded them. This is also why he failed to follow through the philosophical/theological significance of his theory. Although a person of deep theological concern, Darwin has been wrongly perceived as the scientist who finds no sense in religious questions.

The essay at hand is an attempt to answer Darwin’s theological dilemma. Unto this purpose, we will explore the theological ideas, disregarded by him, that made possible the concept of a self-generating universe in the context of the Christian profession of faith.

Those theologians who acquiesce to modern biology are usually suspected of accommodationism. As a matter of fact, it is Christian orthodoxy that accommodated Greek science. Modern science is, on the other hand, a brainchild of Christianity. The real conflict is between the Christian dogma, frozen in Greek metaphysics, and an essentially Christian worldview opposed to it.

The historical inception of the concept of God as the liberator of man took place during the early Iron Age and

peaked in the early Christian era. After entering the coalition of power in the fourth century, the Church turned God into a tool for enslavement. As the Christian dogma failed to hold against its own contradictions, the rethinking of God became possible at the beginning of modernity. The Scientific revolution was a product of this theological rethinking and became its most formidable asset.

The French philosopher Michel Foucault notices that there is in the history of science a process external to science itself, “*where truth is formed, where a certain numbers of games are defined... an external, exterior history of truth*” (Foucault, 4). The Scientific Revolution witnessed plenty of such places and games. New theological ideas preceded or completed science in many respects. The evolutionary paradigm is one of them. The struggle for social liberation, and the rethinking of God, man and nature, went together. They were in turn tied to the emancipation of emerging social forces during the industrial revolution.

The divorce between science and faith took place only after the revolutionary class became dominant. Scientific mass production and distribution of goods, along with free money movement and parliamentary politics, became the new foundation for power. Science was incorporated in a new dominant ideology, just as Christian metaphysics had been a constituent of the old one.

From Marx to Heidegger, the secular prophets of modernity told the world that the new order was the root of man’s alienation from his essential being. Ideology, aided by the authority of science, would therefore need first to hide the

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alienation of modern life. In other words, to hide deeper dimensions from scrutiny. Empiricism becomes a smoke screen, obscuring ontological questions. Science passes judgment on theological inquires. Life is reduced to chasing materialistic illusions.

Organized Christianity has been a rather ineffective agent against the new dominant ideology. Socially, it has continued to oscillate between restoration and opportunism, between turning back the clock and lackeying for the powers to be. Christianity has never been able to provide a non-alienating alternative to modernity.

The main encumbrance of Christianity is a set of absolute statements about the universe. Whether arguing that men crossed paths with the dinosaurs, or mixing bioethics with fourth-century anthropology, faith is defined as assent to absurd content. While the essence of modern alienation is materialistic reductionism, Christianity has remained captive to metaphysical reductionism.

The times of Petrus Romanus

“In the final persecution of the Holy Roman Church there will reign Peter the Roman” (St. Malachy, 1139).

In the fall of 2006, the pope gave an address at the University of Regensburg. His purpose was to remind academics about the the forgotten roots of the West:

Christianity must always remember that it is the religion of the “Logos.” It is faith in the “Creator Spiritus,” in the Creator Spirit, from which proceeds everything that exists. Today, this should be precisely its philosophical strength, in so far as the problem is whether the world comes from the irrational, and reason is not, therefore, other than a “sub-product,” on occasion even harmful of its development – or whether the world comes from reason, and is, as a consequence, its criterion and goal (Benedict XVI).

The message fell on apathetic ears. What drew attention was a marginal note on Islam. The pope had quoted Manuel II Palaiologos (1350 – 1425) saying: *“Show me just what Mohamed brought that was new, and there you will find things only evil and inhuman, such as his command to spread by the sword the faith he preached” (ibid.).* The declaration aroused the familiar Muslim street anger, and generated a storm of ‘coexist’ platitudes in the media.

Two years later, the Pope had to cancel a speech at the main university in Rome, because of protests in the campus. This time the grievance was cardinal Ratzinger's position on the handling of Galileo by the Inquisition. In 1990 he had quoted the Austrian scholar Paul Feyerabend to the effect that the Church was more committed to reason than Galileo himself (Harris). Students and faculty raised their voices against what was perceived as adding modern insult to historic injury.

The Jewish mathematician Giorgio Israel held that what the cardinal attempted "*could well be considered, by anyone who read it with a minimum of attention, as a defense of Galilean rationality against the skepticism and relativism of postmodern culture*" (ibid.). Yet the attention deficit was not with the protesters only. The real problem here is that the metaphysical rationalism advocated by Benedict XVI is dead.

Ironically, it was within a frame of events extending from the remark of Palaiologos to the Galileo affair, that metaphysical rationalism became obsolete. History is indeed repeating itself "*first as tragedy, second as farce*" (Marx). Benedict's peripatetics brings to mind a history starting with the challenge of Muhammad, and the Nominalist crisis, in the fourteenth century, and reaching its peak during the seventeenth-century Scientific Revolution. The content of this history is the demise of Christian rationalism.

The French philosopher Jacques Derrida (Specters of Marx) built his concept of *hauntology* on the first sentence

in the Communist Manifesto: “*a specter is haunting Europe; the specter of communism*”. It would be risky to attempt capturing Derrida’s serpentine ideas in only few sentences. As far as we are concerned, the word haunology points to an onto-logy that has lost its metaphysical rationale. The haunting is, on the other hand, a metaphor pointing at a dead idea returning from the graveyard of history.

What concerns us is the haunting of post-modernity by a dead metaphysics that is still recognized as the public voice witnessing to God. The ghostly voice utters that good, beauty, and justice, are more than social constructs. They are ontological dimensions of reality. Nevertheless, because of its spectral nature, the ghost cannot bear the scrutiny of daylight.

Derrida’s favorite illustration is the ghost of Hamlet. The specter returns from the dead to reveal that “*time is out of joints*” and “*something is deeply rotten*” in our world. Yet true communication is made impossible by the gap separating the dead from the living. The last persecution foretold by St. Malachy is the fall of historical Christianity into irrelevance.

Fundamentalism is on the winning side in this game. During his Regensburg address, the pope made a note on “*modern pathologies of faith*”. In the early nineteenth century, American Restorationism merged Bacon’s empiricism (via Thomas Reid’s commonsense philosophy), with the Utopia of returning to primitive Christianity. American fundamentalism is the offspring of this synthesis.

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It merges a common sense biblicism, aka “*receiving the word*” (Pipim), with a sort of uncritical phenomenology of Christian experience, and flat scientific empiricism.

Due to its Baconian roots, American fundamentalism is not against science in itself. Nevertheless, the fundamentalist concept of science never goes beyond Bacon’s empiricism. Bacon’s own rejection of the heliocentric system considered, it is not surprising that more sophisticated models of reality are not accepted. The Bible is considered the only authority to be trusted beyond simply commonsense. As historical criticism is usually ranked with latter-days conspiracies to destroy the Bible, ancient myths are called upon to exorcise the demons of logical-mathematical models of reality and falsifiable predictions.

Neither metaphysical Christianity, nor fundamentalism can answer Darwin’s dilemma: how could a benevolent God have designed the Ichneumonidae. Admitting that God did not design it but simply allowed to evolve, how could an omnipotent God loose control over his creation. And if such sophistication is possible through random mutations, why invoke God’s love regarding what we have found beneficial?

One particular answer is that ‘evil design’ is simply the work of the devil. It is a quasi-gnostic solution lacking the logical clarity of classic gnosticism. The latter drew the line between bad creation and evil Demiurge, on one side, and salvation and God, on the other. Without this line, God becomes an accomplice of the devil, whatever rationale we may find.

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The problem with metaphysical Christianity is an answer that has been historically wasted. The problem with creationists is addressing such questions in a perspective that is extraneous to history. The essence of all fundamentalism is failure to internalize the dialectics of thought.

The aim of this book is to recapture the concept of God as man's liberator. Such a task implies, as pointed by Heidegger, a deconstruction of the Christian concept of God, followed by a rebuilding in accordance with the primary meaning of the word. The blueprint of this process is to be found by following the key moments in the premodern and modern rethinking of God. Darwin's theological dilemma is addressed as a question leading to the completion of this task among postmodern confusions.

The temple and the theater: a tale of two goats

Fortune is a fickle wind, so sail with that wind, turn the prow of this life's ship, and be swamped in the wild waves of grief and disaster" (Euripides). Whether you read Euripides, the Iliad, or the Bible, you will discover a nihilistic universe. People inhabited a cruel world where death didn't count. Their lives were controlled by forces they could not placate. They called these forces gods, demons, or Fortune. God was first invoked to help man defeat these forces.

We are not going to address the sterile question on the existence of God. This is left to the private or public profession of faith, not because the question is unimportant, but because the answer is beyond demonstration. Our interest will be *God as the product of our mind*. The rationale of such an approach is the Cartesian axiom: our power is limited to the world of our own thoughts. We might worship what we do not understand. Yet we better talk about what we do.

Our concept of God comes from a bifurcated origin: the Jewish prophet and the Greek philosopher. You can find both of them in your Bible.

The Hebrew definition of God is tautology: "*I AM THAT I AM*" (Ex 3:14). God cannot be defined as anything else but himself, hence the prohibition of using the name of God in

common talk. A deeper conclusion of the tautological character of the definition of God is that God cannot be subjected to logical analysis.

As for the Greeks, one of their earliest definitions of God belongs to Epimenides of Knossos, a sixth century BC poet-philosopher: “*For in thee we live and move and have our being*” (Acts 17: 23). Epimenides was protesting against the Cretans “*liars*” (Tit 1:12) who held that Zeus was mortal and even prepared a tomb for him. He was quoted by Paul before the Areopagus to the effect that “*we are the offspring of God*” (Acts 17:29). In other words, human experience has an ontological dimension.

This ontological dimension was essential to anchor a fleeting existence and capacitate man’s freedom.

The ancients believed that irrational passions were driven in by gods. It was futile to resist them. Once in a while, everybody had to give in to the dark side. Harvest was the favorite time. It was believed that by yielding to the gods of fertility, rich harvests and offspring would be secured.

The religion of the Semitic tribes consisted in a bipolarity between Yahweh and Baal. Baal was the god of fertility. Yahweh was the god of war, order and justice. Worshipers gave each god what was unto him. Yahweh required justice in peace and holocaust in war. Baal wanted wine and sex.

The cult of Baal offered worshipers various occasions to practice debauchery with impunity. However, as the prophet announced, ruin was on its way. New powers were raising in the east. The Assyrians and the Babylonians

could not be contained without social discipline. “Whoredom and wine and new wine take away the heart” (Hsa 4:11). Yet how could one resist *yetzer hara* – the evil inclination – when a god was possessing his limbs?

The answer was the Creator. To the worshiper of one God, *yetzer hara* was no longer the realm of Baal. It was only another dominion of Yahweh, instrumental to test and train his people. “*I have created the Evil inclination, and I have created the Torah as an antidote against it*” (Kiddushin 30b). We might find unfair that God would have created the same impulses he is asking us to stand up against. To the ancients, it meant just that they no longer owed anything to the gods of the dark side.

Imagination did not wait long before replacing dethroned gods with demons. The difference between the gods of the dark side and demons was similar to the one we make between legitimate governments and terrorists. You do not negotiate with the latter. Gods had to be appeased. Demons were exorcised. Ritual debauchery was replaced by symbolic exorcism. The harvest time ended now with casting out the goat Azazel.

And the goat shall bear upon him all their iniquities unto a land not inhabited; and he shall let go the goat in the wilderness. And Aaron shall lay both his hands upon the head of the live goat, and confess over him all the iniquities of the children of Israel, and all their transgressions in all their sins, putting them upon the head of the goat, and shall send

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[him] away by the hand of a fit man into the wilderness. (Lev 16:21-22).

Goats were universal symbols of hyper-sexuality. The banning of Azazel represented the exorcising of the dark side from human nature.

The repudiation of evil secured the family and religious discipline necessary for the nation to survive in exile. Yet full restoration was dependent on complete and definitive cleansing. Among the unstoppable decadence during the Hellenistic age, the Pharisees came to emphasize individual salvation in the afterlife. Obsession with purity and sin became the mark of Judaism.

Salvation was dependent upon the amputation of the dark side. Circumcision, as the removing of a trigger of gratuitous pleasure, was a fit symbol. The problem with this kind of piety is that of not allowing the entire range of human condition to be experienced. Those raised in strict religious upbringing know what that means. The compensation for religiously truncated life is a full sharing into the life of God.

Whether the experience is real or imaginary concerns us not here. What matters is how such wholeness comes to life. Only when God becomes supreme beauty to the mind, one feels fully alive though human nature be crippled.

The word beauty is usually associated with worship in the Bible. The congregation is summoned to experience “*the beauty of holiness*” (1 Ch 16:29, 20:21, 29:2, and 96:9), and to contemplate “*the beauty of the Lord*” (Psa 27:4 and

90:17). Natural beauty is looked upon with suspicion. Absalom is the only biblical character reminding the Greek ideal of masculine beauty. He is definitively not set as a role model.

Feminine cosmetics and adornments were condemned by the prophets. Jezebel is mentioned to have “*painted her face*” (2 Ki 9:30), as a prerequisite of being thrown through the window. The Book of Enoch mentions Azazel as the fallen angel who taught women the “*beautifying of the eyelids*” (Enoch, 36). The only “*beautiful*” garment mentioned without suspicion by the Hebrew prophets is that of the priest.

On the other shore of the Great Sea, philosophy offered an alternative to Jewish piety. The Greeks did not cast their goat into wilderness. On the contrary, they urbanized him in the theater. The Greeks rationalized and integrated the dark side into tragedy.

Friedrich Nietzsche alienated his academic colleagues by revealing what lay beneath the seeming tranquility of classical art. According to Nietzsche, ancient Greece was oscillating between the hoofed Dionysus, the goat-god of music, fornication, and wine, and Apollo, the god of visual arts, justice, and war.

What does the synthesis of god and goat in the satyr point to?... when the Greek body bloomed and the Greek soul brimmed over with life... the Greeks in the very wealth of their youth had the will to be tragic and were pessimists... and in the time of their

dissolution and weakness, the Greeks became always more optimistic, more superficial, more histrionic, and more ardent for logic and the logicising the world (Nietzsche, Birth of Tragedy, 37).

According to Nietzsche the satyr was “*the archetype of man, the embodiment of his highest and strongest emotions* (ibid. 63). He speculates that the word tragedy comes from the juxtaposition of two Greek words: tragos, meaning goat, and aeidein - to sing. Trag(o)-aoidiā (τραγωδία) would mean the goat song. He infers that the original choir dressed in goat-skins. Thus “... *the illusions of culture were brushed away from the archetype of man*” (ibid.). The spectator recognized himself in the choir “*as the fellow suffering companion in whom the suffering of the god repeats itself... speaking from the very depth of nature*” (ibid.). The Apollonian element was found in the dialogue that rationalized Dionysian music. Tragedy was the rationalization of the dark side.

The most shocking part in Nietzsche’s analysis is the concept that Dionysian madness and nihilism were symptoms of health, while Apollonian rationalism was associated with cultural degeneracy. We do not need to endorse his entire range of thought to see that meaning and rationality are surviving attitudes in a dying culture. The Jews turned to Yahweh under similar conditions. The main difference was that the Jews banned Azazel, while the Greeks domesticated Dionysus.

The antithetic ways of the temple and the theater are still with us. We have an entire tradition from troubadour song, and the Renaissance theater, to modern cinema, that feeds upon the sublimation of irrational passion and crime. And we have of course the puritanical extrication of the dark side, along with the denunciation of stage performance as sinful art.

Socrates moved the Apollonian dialogue into the Agora. His dialectics incorporated primary impulses into the timeless. The Symposium is such an exercise. It is the story of a hangover banquet, with guests already too tired for more wine and sex. A proposal is made that every guest should give an eulogy for love. The modern reader is surprised by the fact that every eulogy is about homosexual love.

At his turn, Socrates defines the concept of what we know today as Platonic love. Quoting a “*priestess of love*” as the expert, he points out the way from erotic love to the contemplation of physical beauty, and from the contemplation of beautiful forms to the eternal idea of beauty.

He who has been instructed thus far in the things of love, and who has learned to see the beautiful in due order and succession, when he comes toward the end will suddenly perceive a nature of wondrous beauty... beauty absolute, separate, simple, and everlasting, which without diminution and without increase, or any change, is imparted to

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the ever-growing and perishing beauties of all other things (Plato, Symposium, 49).

Socrates' aim was the realignment of life with ontological absolutes. Good, beauty and justice were seen as eternal ideas. The problem with human condition was that of wandering among their imperfect shadows. Redemption consisted in grounding human existence into the timeless. The problem was that the process could not stand on the individual only. Salvation needed the polis.

Yahweh and the Republic: a tale of two revolutions

The initial quest of the Republic, Plato's essential work, is to define the meaning and content of just life. The dialogue drifts naturally beyond the individual. It appears clear that just living cannot be separated from political context.

Political legitimacy in the ancient world was based on ruthless power or divine entitlement, which meant practically the same as the former. As Thrasymachus pointed in the first book of the Republic, the *might is right* principle was the natural order with gods and men. The concept that reason should be given priority over power and gods in political arguments, came as something radically new.

Socrates confronts every traditional form of government and political claim. His unforgiving dialectics leaves nothing intact. In the end, it is the eternal idea of justice that has to prevail. Yet unlike the Jewish prophets, Socrates does not expect God to enthrone justice. This should be a human undertaking. And the only humans possessing the ability to discern ideal justice were the philosophers.

On the other hand, Israel claimed the position that Plato attributed to philosophers. Their vindication was based on being the first born among nations. "*And thou shalt say*

unto Pharaoh, Thus saith the LORD, Israel [is] my son, [even] my firstborn” (Ex 4:22). The Genesis genealogies legitimated this position in a way that was perfectly intelligible and according to the customs of the time. Israel had descended from Adam on the male firstborn line. Jewishness was thus tribal identity and universal man-kindness simultaneously.

The Genesis genealogies offered a primitive form of international law. The mutual rights and obligations of the Middle East nations were warranted by patriarchal inheritance. So was the final solution for groups without legitimate lineage.

The first born was entitled to the most substantial heritage among the gentiles. All along, Israel was responsible to them as *“a guide of the blind, a light of them which are in darkness, an instructor of the foolish, a teacher of babes...”* (Rom 2:19-20). Failure in carrying out this mission would result in the collective punishment of Israel. On the other hand, universal salvation would not come unless the patriarchal rights of Israel would have replaced the politics of power.

It was in the name of this world-redeeming tribalism that the Maccabees raised against Hellenistic cosmopolitanism.

In those days lawless men came forth from Israel, and misled many, saying, “Let us go and make a covenant with the Gentiles round about us, for since we separated from them many evils have come upon us.”... So they built a gymnasium in

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Jerusalem, according to Gentile custom, and removed the marks of circumcision, and abandoned the holy covenant. They joined with the Gentiles and sold themselves to do evil.

The rebels were infuriated by Olympic games rather than by misery and oppression. At stake was a rival offer to redemption: the Antichrist.

And the king shall do according to his will; and he shall exalt himself, and magnify himself above every god, and shall speak marvelous things against the God of gods... He will show no regard for the gods of his fathers... nor will he regard any god, but will exalt himself above them all. Instead of them, he will honor a god of fortresses; a god unknown to his fathers... He will attack the mightiest fortresses with the help of a foreign god... (Dan 11:36-39).

There is only one character contemporary to Daniel's portrayal of the Antichrist that matches his description: the Greek philosopher. Philosophers were the first people in history to live without religion. Even when admitting that the gods might be real, they did not consider them worthy of worship. Yet they deified the polis and its rational laws. Socrates, who was indicted and condemned for teaching the youth to disrespect the gods of their parents, refused to escape death at the cost of disobeying the laws. He worshiped the god of fortresses.

Daniel's description also suggests military might. Indeed, philosophy was the secret of at the Greek war machine. This is what Socrates declares in Protagoras. What allowed Spartans to conquer the other Greek cities was not prowess in arms (as mistakenly believed) but rather philosophy. "... *the true Lacedaemonian character has the love of philosophy even stronger than the love of gymnastics*" (Plato, Protagoras, 70). According to Plato, this was because the philosophical language traces its origins to the brevity, precision and emotional discretion of the Spartan military command. Laconic communication enhanced efficiency on the battlefield.

For all their tyranny and abuse, the Hellenistic kings claimed the mantle of the king-philosopher. The secret of Alexander's unprecedented success had consisted greatly in his philosophical cosmopolitanism. The generals who divided his empire followed in his steps.

It was because of this cosmopolitanism and rational universality that the Maccabees saw Daniel's Antichrist in Antioch Epiphanes. Reason as embodied in laws and political institutions, "*the god of fortresses*", was what the Jewish radicals fought against. Not because it was oppressive, but because it pretended to be redemptive.

It was Rome that eventually contained the ambitions of the Seleucid kings. The enthusiasm for the new superpower transpires through the eighth chapter of the First Book of the Maccabees. Yet Rome will also claim world power in the name of the rational Republic. Without being aware, the rebels entered alliance with the god of fortresses.

At first, the Jews did not see the Antichrist in the military superpower that crushed the world under the iron-made sandals of its legions. They will recognize him in the ecumenic commonwealth attempting to save the world under the reign of its iron-made laws. The moderates in the Jewish uprisings might have rebelled against corrupt procurators. The true believer, the radical, fought against the secular Messiah.

Only a movement abolishing Israelite tribalism from within could open an avenue between philosophical and prophetic absolutes. The Jesus movement in the first century offered such an occasion. St. Paul was a skilled surgeon who knew how to remove the mark of circumcision from messianic prophecy. The genealogies of the Gospels claimed that Jesus was the legitimate successor of David, Abraham, and Adam. Paul used these claims to build his case that Jesus has superseded Adam as the generic man (Rom 5:12-19, 1 Cor 15:45), and Israel as the seed of Abraham (Gal 3:16). Israel became thus the prehistory of Christ, just like Adam had been the prehistory of Israel. The Republic will be baptized into this new faith.

Nevertheless, the elitism of the Republic did not fit well with Yahweh. The incentive to unleash the holy war, not the tribal-nationalistic war of the Maccabees, but the world Revolution, is rooted in the prophecies of Yahweh.

Arthur Koestler was familiar with such sentiments. He explores revolutionary Yahwism in a fictional dialogue staged during the third servile war:

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'I have never heard of a God who curses like that Yahweh of yours,' said Spartacus. 'He is so wild at the rich, one might think he was a God of slaves.'

'Yahweh is dead...'

'You see', said Spartacus disappointedly, 'if he is dead his prophecies are no longer worth anything'

'Prophecies are never worth anything', said the Essene... 'Prophecies do not count, he who receives them counts' (Koestler, The Gladiators, 56)

Whether the real Spartacus did or did not know about Yahweh is a matter of speculation. Yet Koestler has a point. He did indeed enforce Essene-like egalitarianism in his camp. Moreover, what could have transformed a nihilistic gladiator, the epitome of ancient amoral heroism, into a prototype of world-Revolution, twenty century before the idea would come into age? Koestler, the ex-Marxist, the anti-fascist combatant, the wandering Jew, knew well.

The rabbi and the philosopher: a tale of two π

Our intellect will never be able to answer two questions. One concerns the ultimate value of π . The other is whether God does or does not exist.

Carl Sagan, in *Contact*, brings the two question into only one. Already in the first chapter we have a hint at the theological ramifications of π . The main character in the novel, Eleanor (Ellie) Arroway, a seventh grade student so far, has just come to learn about π .

It was a decimal that went on and on forever without repeating the patterns of numbers. Forever, Ellie thought... How could anybody know that the decimals go on and on forever... How can you count decimals forever... (Sagan, 10)

Sagan would betray our expectations if he failed to stage a familiar classroom cliché: the flat teacher putting down the inquisitive mind. The question is pronounced stupid and the lesson moves on. Nevertheless, Ellie's question will be vindicated in the story.

Ellie becomes a reputed (if still nonconformist) astrophysicist working with SETI. One day she captures an extraterrestrial radio signal pointing to an intelligent algorithm. Ensuing communications from the same source lead to an international multi-trillion project to build a

wormhole vehicle after indications received from the outer space. The project is followed by Ellie's wormhole trip and alien encounter near the center of the Galaxy.

As the elapsed time is much shorter on earth than in the wormhole, and the video footage has been erased by magnetic fields, the whole story comes to be attributed to a vast international scam. Ellie, an avowed skeptic, finds herself in the ironic situation of summoning humanity to take a leap of faith. Stories of religion founders come to mind.

Religion is otherwise part of her queries to the aliens. Does a super-technological civilization still entertain questions about God? Yes, they do. They have discovered a mysterious sequence of zeros and ones very far from the decimal point in the digits of π . Could this be God's signature in the fabric of space-time? Ellie is astonished.

“It’s even better than that,” he continued. “Let’s assume that only in base-ten arithmetic does the sequence of zeros and ones show up, although you’d recognize that something funny is going on in any other arithmetic. Let’s also assume that the beings who first made this discovery had ten fingers. You see how it looks? It’s as if π has been waiting for billions of years for ten-fingered mathematicians with fast computers to come along. You see, the Message was kind of addressed to us” (ibid. 368)

The story is woven around an old question. If the universe has an author, where is his signature?

Once again, Sagan does not disappoint. He knows that the search for π and the search for the signature of God have a common origin.

The classic historians attribute the discovery of geometry to the so-called rope-stretchers, the Mesopotamians and Egyptians scribe-priests who supervised the division of land.

The river overflows and obliterates the boundary lines between their properties... Thus they would naturally pass from sense-perception to calculation, and from calculation to reason (Proclus, 52)

The three steps in the evolution of geometry correspond to parallel stages in theological thought.

The first stage, that of sense-perception, is well illustrated in the Book of Kings:

Solomon cast a molten sea of ten cubits from brim to brim, round in compass, and five cubits the height thereof; and a line of thirty cubits did compass it round about. (1 Ki 7:23-25)

Stretching a line to measure a circumference was the way of the rope-stretcher. Hearing the voice of God was also a way of relying on sense-perception as the ground of one's theology.

The next step, calculation, is well embodied in the Ahmes papyrus written in 1650 BC. Ahmes was an Egyptian scribe

during the thirteenth dynasty who wrote down all the geometrical knowledge available by that time. He introduced his textbook with a promise that might be considered the first definition of science in the history of thought: “*Accurate reckoning is the entrance into the knowledge of all existing things and all obscure secrets*” (Beckmann, 23). One cannot help notice the contradiction with the biblical promise: “*The fear of the LORD is the beginning of knowledge...*” (Prov 1:7). Different theologies lead to different paths to truth.

The molten sea offers a good example. According to the proportions indicated in the Book of Kings, Solomon’s π would need to be three. How about gentile scribes? A Sumerian clay tablet from the third millennium BC is reveals the oldest method to calculate π (ibid. 22). The ancient scribes starts from the self-evident fact that the perimeter of an inscribed regular hexagon equals six times the radius of the circle. Then he draws a circumscribed hexagon and calculates the circumference as the average of the two perimeters. The resulting value for π is 3.125 in modern notation.

The absence of calculative geometry among the ancient Hebrews is not surprising, given the rationale offered by Proclus for its development in the great rivers valleys. The economy of Palestine was not based on systemic irrigation. Nevertheless, the biblical scribe suggests that Solomon’s truncated π was not the result of just ignorance. “*Solomon’s wisdom excelled the wisdom of all the children of the east country, and all the wisdom of Egypt*” (1 Ki

4:30). The author of Kings knew about priestly-scribe science but thought that Solomon's primitive geometry was superior. What made him think so?

Solomon's π and priestly-scribe geometry were based on two conflicting views about the relationship between God and space. This incompatibility is already suggested in the conflict between Ahmes' knowledge based on accurate reckoning and Solomon's wisdom rooted in the fear of God. Yet the theological ramifications of geometry become obvious only in the third stage according to Proclus: reason.

What is reason? The word comes from the Latin *ratio* meaning measure. This is in turn a translation of the Greek word *logos* (λόγος). Our word logic originates with the latter. Reason, or logical thinking, has its origin in Euclidean geometry. While the priestly-scribe geometry of Egypt and Babylon was a study of the attributes of particular geometrical forms, the Greeks developed geometry as the science of logical relationships between all geometrical attributes in the universe. The Greeks deduced these attributes from a single set of propositions called axioms. Axioms were considered to be timeless and self-evident.

Let us revisit the molten sea. How would Greek science establish its proportions? The answer is Archimedes' π . Archimedes proceeded from the same premises as the ancient priest-scribes: the circumference must be the average between a circumscribed polygon and an inscribed one. He continued with the euclidean proposition that if a line is cutting down the angle and the base of a triangle, the

ratio of the two halves of the base equals the ratio of the remaining sides.

He split the polygon into twelve, twenty-four, and so on, through ninety-six sides. Then he calculated the ratio of its perimeter to the diameter by the above mentioned principle. He did the same for an inscribed hexagon. He concluded that the ratio of a circular perimeter to its diameter is always below $3\frac{1}{7}$ (3.1428), but above $3\frac{10}{71}$ (3.1408). On this basis he established the “*arbitrary*” or “*closely desired*” (ibid. 64) value of 3.14 for π .

Archimedes method was twice revolutionary. First, because he substituted numeric deduction for measuring. And secondly, because using such notions as “*arbitrarily close to*” or “*as closely as desired*” solution, he opened the door for Ellie’s annoying question to her obtuse teacher. The deduction process could be continued ad infinitum, yielding more and more accurate values for π .

We have here two groundbreaking concepts: the rational unity of the world and mathematical infinity. The Greek solution vindicated Ahmes’ promise that “*accurate reckoning*” is the key to knowledge. Nevertheless, until AD 550, the Talmud will continue to declare with magisterial demeanor that: “*Which in circumference is three hands broad is one hand broad*” (ibid. 15). What made the rabbis ignore Euclidean science?

As we have seen, Euclidean geometry was based on set of allegedly timeless statements. This epistemological premise was grounded in the ontological assumption that

geometrical shapes were eternal. Euclidean space is an absolute. Geometry is thus seen as co-eternal with the mind of God. This leads to the conclusion that space is the ultimate reality.

In this respect, Hebrew thought makes a radical difference. The Bible refers to God as *ma'own* (מַעוֹן) - a place. He is the ultimate dwelling place "... *behold, the heaven and heaven of heavens cannot contain thee...*" (1 Ki 8:27). Midrashic texts state explicitly that God is "*the place of the world and His world is not His place*" (Jewish Virtual Library). Wrote Philo (254):

God Himself is called a place, by reason of His containing things, and being contained by nothing whatever... for He is that which He Himself has occurred, and naught encloses Him but Himself. I, mark you, am not a place, but in a place; and each thing likewise that exists... and the Deity, being contained by nothing, is of necessity Itself Its own place.

If deity is its own place, space and time are contained in it, and therefore they cannot be absolute. The relativity of space and time is as essential to Hebrew ontology as absolute space is to Greek metaphysics.

Unlike Egyptians and Mesopotamians, the Greeks turned geometry into a theological/metaphysical premise. At the core of this process lies an epistemological question: how is it that our mind is capable of knowing the axioms as self evident truths? How come we are able to derive logical

certainties from these axioms? Why is the universe intelligible through the propositions of Euclid?

This is the issue addressed in Plato's *Meno*. Cornered by Socrates in a conversation about the nature of virtue, Meno, the sophist, replies asking:

And how will you inquire, Socrates, into that which you know not? What will you put forth as the subject of inquiry? And if you find what you want, how will you ever know that this is what you did not know (Plato, *Dialogues*, 254).

Meno implies that truth cannot be proved unless already known.

Socrates answers by asking an uneducated slave to reckon the area of a square whose sides are twice the sides of a given one. Helped by the familiar Socratic questions, the slave shows himself capable of understanding the problem. He provides the correct answer, because, Socrates claims, "*his soul must have always possessed this knowledge*" (ibid. 261). Knowledge is recollection of innate truth.

We are able to understand the universe because "*the world has been framed in the likeness of that which is apprehended by reason and mind and is unchangeable*" (Timaeus, 15). The cosmos is intelligible because the Demiurge has framed it in accordance with the laws of Euclid, that are both timeless and comprehensible.

If the human mind has innate access to the axioms of geometry, it must also possess the knowledge of the

fundamental moral and existential absolutes as self-evident axioms. We know good and evil, beauty and ugliness, truth and immortality, as innate knowledge. Therefore we must be able to deduce by logic the laws of existence from philosophical axioms.

The Jewish rabbi had a similar burden. Yet he believed that the “*fear of the Lord*” was the beginning of knowledge. Why not reason? Because reason was an extension of Euclidean geometry. This was in turn based on the assumption that space properties were timeless. The rabbi knew that space was not an absolute. Neither could reason be.

Plato himself admitted the limits of reason when conceding that “*the father and maker of all this universe is past finding out*” (ibid. 15). God had created the world after rational patterns, but he was not himself rational. In other words, he was not open to knowledge by reason. To this the rabbi could agree. He pretended to know God, yet not by reason. He had the Torah.

Unequally yoked: the Christian synthesis

Saint Paul was familiar with the self-confessed limits of philosophy. “*Whom therefore ye ignorantly worship, him declare I unto you*”, said he to the Athenians. However, when the philosopher eventually came to Christ, he did not repent for having ignorantly worshiped. On the contrary, it was the common believer who, in his opinion, worshiped in ignorance. The church needed scientific guidance. Salvation was coming from the Greeks.

The first people to make such an offer were the Gnostics. “*Scientific theological literature has undoubtedly its origin in Gnosticism*” (Harnack, 241). The Gnostics noticed the substantial contradiction between the image of God in the Old and in the New Testament. They also argued that only a cruel God could have created our universe. They solved such contradictions by attributing to an evil Demiurge both the world and the Hebrew Bible. Jesus has come to save us from this creation and its revengeful Demiurge.

The atonement made no sense to the Gnostics. Paul saw in the cross God’s way to deal with his own justice: “*that he might be just, and the justifier of him which believeth in Jesus*” (Rom 3:26). It abolished the law without denying its divinity. To the Gnostics, such barbarous ways were worthy of the Demiurge. The incarnation of the Logos and his death were just illusions. They were myths, necessary

for the common believer to stop worrying about the law. It was by initiation into the gnosis – the secret science – that one could escape from the world of common illusions into the realm of truth.

By the mid-second century Marcion of Sinope produced his Antitheses, contrasting the Demiurge of the Old Testament with the Father of the New Testament. Marcion taught that the Demiurge is a tribal and legalistic deity that punishes sin by death. He accepted the Old Testament as literally true, but rejected its theological relevance to Christians. The true God has sent Jesus to pay the penalty inflicted by the Hebrew god.

Marcion rejected all Jesus stories that ever resembled Judaism. He accepted Paul as the true Apostle of Jesus. He was also the first to propose a New Testament canon. It consisted of only eleven books grouped into two sections: the Evangelikon, a version of the Gospel of Luke, and the Apostolic, a selection of ten letters of Paul cleared of all traces of Judaism. The Church excommunicated him.

It became though clear that Christianity needed a way to reconcile Jesus with the Hebrew Yahweh, and both of them with the Greek Demiurge. A precedent had already been established by the Jewish philosopher Philo of Alexandria (20 BC – 50 AD). He managed to read allegorically Plato's ideas into the laws of Moses. Philo had a strong influence on Titus Flavius Clemens (150 AD – 215 AD), known as Clement of Alexandria. The latter was the first to use Greek philosophy in teaching Christian doctrines. His disciple,

Origen of Alexandria, forged the first functional synthesis of Greek metaphysics and Christian theology.

Like his predecessors, Origen used allegory to rationalize the tribal and barbarian traits of Yahweh. Yet his exegesis was much more scientific and extensive, covering all the Old Testament books and the Christian writings which would become the New Testament. He explained the contradiction between a benevolent God and a bad world by adding a cosmic dimension to the fall. Spirits have fallen away from God into three ontological orders: the celestial realm, this world and the underworld. Each of them was created by a loving God to discipline and turn back to God the straying spirits.

The world was perfect – as a corrective prison. Even Hell was not punitive but disciplinary in nature. Demons were – along with the damned – the lowest fallen spirits. Therefore hell was the worst place to be. It was nevertheless the best discipline to bring the Devil and his followers back to God. The Church saw the usefulness of Origen’s synthesis. Nevertheless, preexisting souls and salvation for the Devil were hard to stomach.

It was Augustine of Hippo who “*established anew the ancient Faith*”. He gave Christianity an expression that was intelligible to the Greek intellectual and orthodox to the believer. Augustine solved the tension between the biblical creation and Platonic cosmology by conceding that time was created along with the world. Like Plato, he believed that time was a psychological Illusion and events were in fact simultaneous. God was timeless and the redeemed will

partake into his timelessness (Confessions Book XI, XII, and XIII).

In his view, man had a rational soul, but it was not preexisting like with Plato and Origen. It was created by God, forty days after conception, with boys, and ninety, with girls. He inferred these numbers from the Biblical time of postpartum uncleanness. Every single human soul was infected by original sin, the latter being transmitted by sexual conception. He believed that man is born guilty, and unbaptized infants go to hell for the sake of eternal justice (Catholic Encyclopedia, 102).

Augustine merged Greek metaphysics with biblical cosmology. This task implied the reconciliation of some deeply antagonistic perspectives. The Hebrew worldview is monist. Old Testament redemption is an experience within history. Man had no soul – he “*was made a living a soul*” (Gen 1:26). To this purpose he made use of allegory. However, Augustin managed to keep literal the most illogical traits of the Hebrew God: his obsession with sin, his cruelty, and his arbitrariness. He did indeed establish the ancient faith.

The synthesis peaked between the fourth and the eighth century. The logical-scientific statements of belief were named dogma. The meaning of the word is “*that which seems to one*”. In verbal form it signifies “*to think, to suppose, to imagine*”. In other words, a dogma is an opinion. Nevertheless, in the fourth century the term acquired a new meaning. It became *articulus constitutivus*

ecclesia and was universally enforced against other opinions.

The change in semantics reflected a deeper change in ecclesiastical philosophy. Dogma as opinion was grounded in Greek dialectics. Dogma as absolute statement was a scion of the Talmud. It entailed the Hebrew belief that the fullness of truth can be contained in verbatim formula. The change reflected a gradual shift toward Old Testament piety, based on fear, and under strict supervision by ecclesiastical and state authority.

Let's take for instance the two constitutive doctrines of Christianity: the Trinity and the Incarnation. It is assumed that God is one in three persons. It is also believed that Jesus possesses the double nature of man and God in one and the same person. Most believers take such articles as a revealed mystery, beyond human comprehension. They would protest against any attempt of exploring them scientifically.

In fact, both doctrines are tentative explanations of the gospel by Greek science (Harnack, 116). The Greeks believed that things were transient manifestations of irreducible substances. It was thought that the relationship between substance and predicate in things reflects the relation between subject and predicate in a sentence. All men were considered to be various manifestations of the substance of man. God must have been the manifestation of his own substance.

How could God be both one and three? The answer was that God is one substance in three persons. How could Jesus be “*vere homo, vere deus*”, true man and true god? Of course, Jesus is two substances in one person.

The fact in the matter is that the concept of substance is only an abstraction. Ontological substances, in the sense used by the Greeks, do not exist. In other words, there’s no such thing as human nature, save as an abstraction of what is like to be human. And there’s no substance of God except as an abstraction of what we imagine him to be like.

The dogma as an intellectual paradigm was implemented in every realm. Already in the fourth century Augustine envisioned the new order and named it The City of God. It was also him who identified the new order with the apocalyptic millennium. “*Therefore, the Church even now is the kingdom of Christ and the kingdom of heaven. Thus, even now His saints reign with Him...*” (Augustine, The City of God, 988). According to the Book of Revelation, at the beginning of this reign the Devil is chained, so that “*he should deceive the nations no more, till the thousand years should be fulfilled: and after that he must be loosed...*” (Rev 20:1-3). And loosed he was. The dogma lost its grip after one thousand years.

Erasmus' dangerous idea

In the fourteenth century, a couple of earthly affairs called the Christian worldview into question. Among them was a continuous string of crisis in Christianity. They reached their climax in the Western Schism (1378 to 1417), when two popes claimed the Ring of the Fisherman simultaneously. Others included the failure of the crusades, unceasing conflict among Christian princes, pestilence, and anarchy. Faith in the rationality of creation was wavering. A good example is Niccolo Machiavelli. He wrote in *The Prince* with a hint at Plato's *Republic*:

But, in being my intention to write a thing which shall be useful to him who apprehends it, it appears to me more appropriate to follow up the real truth of a matter than the imagination of it; for many have pictured republics and principalities which in fact have never been known or seen, because how one lives is so far distant from how one ought to live... (Machiavelli, 121)

Although Machiavelli was not concerned with metaphysics in *The Prince*, his rejection of the *Republic* speaks of itself. The dominating trend in scholastic thought was to disregard immediate reality and look for the substance in things. Now what has “*never been known or seen*” no longer mattered. Even more, it was dangerous to ignore the irrationality of

the world, because one had to be perpetually on guard against it. How one must live is not how one ought to live.

A similar doubt was manifest in metaphysics. William of Ockham (1288 – 1348) demonstrated that the concept of substance was insubstantial itself. He concluded that concepts are just abstractions, and terms are only signs of concepts. Therefore, any unnecessary addition of concepts and terms in human knowledge leads to confusion: “*Plurality must never be posited without necessity*” (Ockham, xxi). This dictum came to be known as Occam’s razor, the principle that the fewer new assumptions we make, the closer we come to truth.

The new philosophical movement was known as Nominalism, or *via moderna* (*the new way*), as opposed to the *via antiqua*, (*the old way*). Modernists did not believe that the ontological structure of the universe reflects sentence syntax. In other words, they did not believe that philosophical-theological verbiage was real knowledge. They encouraged empirical science instead. Nevertheless, the main concern in Nominalism was theology.

Occam’s razor meant to Ockham himself that metaphysical Christianity offered an illusory knowledge of God.

The ways of God are not open to reason, for God has freely chosen to create a world and establish a way of salvation within it, apart from any necessary laws that human logic or rationality can uncover.
(McClintock & Strong, 255)

To the medieval believer, an irrational world was only a danger for this life. That is to say, the threat was relative. The true problem was the irrational God.

So far, the Christian God had been strict but predictable. The Church knew how to deal with him, like a good lawyer knows how to deal with tough justice. Salvation depended on the ability of the Church to match sin with penance on a rational basis. Nominalism shattered this tough assurance.

Via moderna split in two paths: Christian humanism and the Reformation. The two differed “*in their conflicting views of the ontic priority of man and God and the relationship between them*” (Gillespie, 132). Humanism turned from an impenetrable God to the study of his earthly image: man. The Reformation turned toward the impenetrable God in irrational faith.

The theology of the Reformation sought to establish faith on a new basis. As a monk, Luther tried to find solace in Ockham’s concession that God will most likely save those who do everything within their power to save themselves. After futile attempts to do everything he could for ten years, Luther plunged into the Nominalist abyss by faith only.

Wrote Luther: “*Faith must trample underfoot all reason, sense, and understanding, and whatever it sees must be put out of sight and... know nothing but the word of God*” (Kaufman, 75). In fairness to Luther, it should be added that such a rejection of rationality was not a recourse to non-intelligent faith. By reason Luther understood

scholastic rationalism. On the other hand, he waged a relentless war to purge the Reformation from irrationality and fanaticism. He returned to the written word as a true man of letters, schooled in the classes of German humanism. The same path was followed by other reformers as well as by the Counter-Reformation. At the council of Trent, Scriptures exegesis prevailed over scholastic arguments.

However, the abolishing of scholastic rationalism generated unintended results. New contradictions and dead ends emerged as the old answers no more worked. The most telling example is the controversy between Luther and Erasmus.

In 1524, Erasmus published his treatise *On the Freedom of the Will*. He contented, against Augustine and Luther, that man did indeed possess free will, although divine aid was needed to put it into effect. Luther surprised him on the next year with an unexpected display of scholastic skills in *The Bondage of the Will*, his answer to Erasmus.

The conflict between freedom and necessity was solved in classical philosophy by the concept of reason as the common substance of God, soul, and the cosmos. The stoic philosopher was free in his submission to the laws of being, because he followed the dictates of his own rational soul. Now, as both Erasmus and Luther had rejected scholastic rationalism, they implicitly rejected the classic solution.

Erasmus attempted to negotiate a settlement between God and free will. This was also a theological-political

settlement between humanism and the Church. Luther drew the sword. He opposed faith to reason and God to human freedom. If man has free will, he claimed, God is not God. If God is God, freedom is an illusion. Peace could be found only in that faith that abandons reason and self-determination altogether.

The demise of the rational God had resuscitated the basic conflict of Greek tragedy: the individual against an implacable destiny. Luther went literally back to tragedy and quoted Virgil's Hector arguing that: "*Could Troy have stood by human arm, it should have stood by mine.*" Destiny was beyond good and evil. So was God:

Do you believe that He foreknows against His will, or that He wills in ignorance? If then, He foreknows, willing, His will is eternal and immovable, because His nature is so: and, if He wills, foreknowing, His knowledge is eternal and immovable, because His nature is so. From which it follows unalterably, that all things which we do, although they may appear to us to be done mutably and contingently, and even may be done thus contingently by us, are yet, in reality, done necessarily and immutably, with respect to the will of God... For I have shown before, that 'Free-will' cannot be applied to any one but to God only.
(Luther, 27)

Erasmus brought against Luther an argument from the Genesis blessing:

Once God has given to the secondary causes, namely nature, the power to reproduce or act, he does nothing unless for special reasons he suspends the common action of nature. (Erasmus, 622)

Man is free because man is a part of nature, and God transferred to nature some of his creative power. Erasmus thus set the theological basis for a new ontology in which God's freedom is shared by nature, and by man as a part of nature.

Erasmus' idea was hardly noticed at the time. Europe believed that Reformation and Counter-Reformation were the only options. As a matter of fact, many thought that the end of the world was at hand. Nevertheless, he will prevail.

Modernity is based on attributing to man at least some of those qualities that have been traditionally assigned to God. Modern cosmology and evolutionary science assume that nature has self-generating and self-organizing attributes. The modern opposition of Evangelical fundamentalism against evolutionary models is rooted in the historical rejection of Christian humanism by the Reformation, rather than in anti-scientific sentiments.

I will argue that the attempt to read the questions of theology and metaphysics out of modernity has in fact blinded us to the continuing importance of theological issues in modern thought in ways that makes it very difficult to come to terms with our current situation. Unless and until we understand the metaphysical/theological core of modernity, we

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will remain unable to understand religiously motivated anti-modernism and our response to it.
(Gillespie, xiii).

Those who attempt to persuade fundamentalists on the reliability of scientific evidence are fighting the wrong fight. The debate is older than science.

The demise of the unmoved mover

Many technological advances were born from attempts to perfect the killing machines. If so, the question raises, why it took so long before military engineers learned how to calculate the trajectory of a cannon round? The plain answer is that scientific ballistics would have implied the rethinking of Aristotle's cosmological argument that was of the essence of natural theology.

Let's consider an example from Renaissance ballistics:

Where there's greater speed in the canon thrown violently through the air, there's less heaviness in it; and, also, conversely, where its speed is diminished, there is more heaviness in it (Tartaglia, 103).

The argument is based upon the assumption that the round is air-planing on its curved trajectory. Absurd as it seems to us, this was the only explanation available within the conceptual framework of scholastic rationalism.

The bottom line in rationalism is that everything real is also rational. If something is impossible to think or talk logically about, it does not exist. From here, the philosophical school of Elea deduced that change and movement were simply illusions. The argument is devastating in its simplicity: change implicates two

different states coexisting at a single moment. Therefore change must be an illusion (Parmenides, 103).

Another famous argument of the Eleatics is the Zeno paradox. In order to cross a section, any moving object must first reach its half. Yet in order to reach half of the section, the half of the half has to be reached, and so on. The moving object cannot reach an infinity of targets in a limited time.

The paradox was addressed by Aristotle in his physics. He noticed that

The natural behavior of simple bodies is itself simple and consists in the same upward or downward movement... in a way that brings out its substance-expressive unity (Sarah & Sarah, 102).

Rest was substantial and therefore necessary. Movement was only contingent.

The solution proposed by Aristotle was the unmoved mover (Shields, 222). Things are naturally at rest. It requires a cause to move an object. Inanimate things, (things without a soul), are moved by external causes. Animated things, (animals), are moved by their inner soul. There must be a primary cause, an unmoved mover, in whom there is no accident and change, generating the initial momentum.

Accordingly, there are three classes of studies. Physics studies what is subject to change. Mathematics studies what is timeless, though not separate from objects that change and move. Theology is the “*first*” and the “*highest*”

science, because it studies pure necessity, the unmoved mover.

If movement was only an accident, it could not be the object of mathematics. Computable ballistics was thinkable only within an ontology that considered that change was necessary. This would have primarily meant the give up the argument of the unmoved mover and rethink the cosmological argument for the existence of God. The Christian worldview was entangled in the physics of Aristotle.

The metaphysical-epistemological idea underlying the mechanics of Galileo was that movement is not contingent upon rest. The trajectory of the round displays two logical-mathematical necessities. One is inertia. A moving object will continue to move at constant speed unless interfering with an obstacle. The other is gravitational acceleration. All things fall at the same uniformly accelerated speed. He represented the inertial movement of the round on the horizontal axes, and its uniformly accelerated fall on the vertical one. The trajectory was a curve defined by two coordinates.

The theological ramifications were too subtle to come into open. It was Galileo himself who drew attention on them by using his mechanics as an axiom to support the Copernican hypothesis.

The heliocentric universe was not a new idea. It had been proposed in the third century BC by Aristarchus of Samos. The Greeks held two objections against it. The first

objection was the stellar parallax. If the earth goes around the sun, the stars should be moving accordingly for the earthly observer. Aristarchus settled the issue by assuming that the universe was twenty times greater than it was believed. The second objection was the tower argument. If an object is dropped from a tower, the diurnal rotation of the earth should cause it to move westward.

Regarding the first objection, Galileo noticed that unlike planets, the stars were not magnified by the telescope. He also discovered that there were many more stars on the firmament than what could be seen by naked eye. The universe must have been far greater than it was believed.

As for the second objection, Galileo drew on his ballistics. The falling object displays the same circular inertia as the canon round. It moves along with the earth. He went further and stipulated the principle of relativity.

Any two observers moving at constant speed and direction with respect to one another will obtain the same results for all mechanical experiments.
(Galileo, Dialogue, 186.187)

To make his point, Galileo used the ship passenger example. Mechanical experiments, done inside a ship moving at constant speed in a constant direction, would give precisely the same results as similar experiments done on shore. Earth was a ship floating at constant speed. Experiments done on the earth could not indicate whether it was moving or at rest.

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The traditional view in cosmology was that God created the firmament in order to give humans an image of the timeless. Perfect spheres, moving in perfect circles, in perfect cycles of time, forever unchanged, represented the timelessness and unchanging nature of God. Galilean relativity was shaking the foundation of the Christian universe. The idea communicated by heavens was now perpetual change and movement. And they needed no unmoved mover.

The end of *causa finalis*

With most people, the metaphysical implications Galilean ballistics would have passed unnoticed. Yet the theological questions raised by Galilean relativity were unavoidable. First, the cosmological argument, the unmoved mover, becomes superfluous if movement is of the essence of nature. Second, how could the purpose of this strange universe be explained? What was God's rationale for having created unseen stars, moons to Jupiter, mountains on the Moon, spots in the Sun?

The scholastic theologian-philosopher drew on the Aristotelian distinction between efficient and final causes. He would give explanatory priority to the latter.

But the acting cause does not move, except by reason of the intention of an end... it is necessary that it should be determined to something certain as end. (Aquinas 95. 96)

Galileo wrote with disdain to Kepler about philosophers invoking "*logic-chopping arguments as they were magical incantations*" (Beiser, 35), against the existence of Jovian moons, because they could not find any finale cause for them (like that of being a light during the night and a sign to divide the times).

Galileo believed that the universe is fundamentally mathematical. If the universe is mathematical, it has no intrinsic meaning. More exactly, only words can express meaning, and words are extraneous to the universe. The finale cause is a matter of words, not of numbers.

Galileo used the metaphor of the two books to make faith coexist with a science that finds no apparent or intelligible purpose in the universe. God wrote two books: nature and the Bible. The book of nature tells us how heaven goes. The Bible teaches us how to go to heaven. God wrote the former in the language of mathematics. He adapted the latter to human language. Galileo's letter to Benedetto Castelli (1613) indicates his departure from natural theology.

Thus in the Scripture one finds many propositions which look different from the truth if one goes by the literal meaning of the words, but which are expressed in this manner to accommodate the incapacity of common people; likewise, for the few who deserve to be separated from the masses, it is necessary that wise interpreters produce their true meaning and indicate the particular reasons why they have been expressed by means of such words. (Finocchiaro, 50)

What Galileo left unsaid was that the deeper meaning found by the wise might also be an accommodation to their own limits. If God found appropriate to tell children stories to common people, why should he make any difference with those who are relatively smarter?

He continues:

... moreover, in order to adapt itself to the understanding of all people, it was appropriate for the Scripture to say many things which are different from absolute truth, in appearance and in regard to the meaning of the words; on the other hand, nature is inexorable and immutable, and she does not care at all whether or not her recondite reasons and modes of operations are revealed to human understanding, and so she never transgresses the terms of the laws imposed on her. (ibid.)

Galileo implies that the Scriptures do not tell the truth about the universe. Nonetheless, unscientific statements in the Bible are not intended to deceive. They are intrinsic to “*the meaning of the words*”. Moreover: “*nature... does not care at all whether or not her recondite reasons and modes of operations are revealed to human understanding*”. In plain words, nature does not care about meaning. Galileo concludes in passion: “*Who wants to fix a limit for the human mind? Who wants to assert that everything which is knowable in the world is already known?*” (ibid.). He has already answered. What limited scientific knowledge was the search for meaning in things.

When Galileo introduced mathematics in the study of movement, he implicitly attributed to nature an ontological quality that Greek and scholastic metaphysics reserved for the uncreated. Kepler went even further. His laws of planetary movement, which Galileo unfortunately ignored, were based on the radical premise that the planets floated

freely in space (the accepted view being that they were fixed on crystal spheres), and were moved by the Sun.

This suggested his second law to him: orbital movements decrease and increase with distance from the sun. The so called first law came in fact as a conclusion of the second. An ellipsis was more suitable than a circle for a pendulum like movement.

Kepler confesses to having attempted over and over again to define the orbit of Mars, but every time the planet was off by few minutes. He went on by trial and error seventy times before he found the mathematical expressions of the two laws. His brilliant third law (the square of the orbit is proportional with the cube of the semi-axis) came to him as a part of his concept of harmony of spheres. At the time, the theological-cosmological significance of the music of spheres, (of absent scientific worth), was more important to him and the public than his third law, used today by the Kepler mission to establish the distance at which an exoplanet orbits its star.

“I wanted to become a theologian”, wrote Kepler. *“For a long time I was restless. Now, however, behold how through my effort God is being celebrated in astronomy”* (Holton, 70). What is the theology behind Kepler’s laws? First, he transferred to the Sun the power to keep the planets moving. In other words, he transferred to nature what used to be attributed to God only. Secondly, he believed in the existence of a cosmic harmony of theological significance. And last, he believed that this harmony was mathematical.

Kepler's lifework is the transition from medieval to modern science. He was searching for meaning and finale cause and every time bumped into mathematical laws. His music of spheres is almost forgotten. His laws were instrumental for Herman Oberth to calculate the trajectory of the Apollo missions. Kepler himself wrote a fiction about a trip to the Moon, but his science played no role. He dream-walked there by magic.

The concept that nature was mathematical was threatening the traditional role of the Bible in natural theology.

Another way at looking at this question of the evolution of religious thought is to note that any verbal form of statement which has been before the world for sometime discloses ambiguities; and that often such ambiguities strike at the very heart of the meaning... You have to take into account the whole reaction of human nature to the scheme of thought. This reaction is of mixed character, including elements of emotion derived from our lower natures. It is here that the impersonal criticism of science and of philosophy comes to the aid of religious evolution. (Whitehead, 190)

The founders of modern science did not doubt that the Bible was the word of God. It was words in themselves they did not trust. They followed Ahmes rather than Solomon. The difference between the two is that Solomon's wisdom is personal. And so is the meaning of words.

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They never intended to strip life of meaning, words and emotions. Yet like the builders of Babel, they found words confusing and inadequate to reach heaven through them, and turned to mathematics.

In other words, they gave up looking for *causa finalis*. Nature reveals itself to human mind meaningless. When meaning is found, science ceases. The cosmic feeling of nakedness of Adam and Eve after eating from the tree of knowledge is the price of scientific knowledge. The universe is indeed looked through a serpent's eyes.

Rebels

During his Galileo address delivered in In 1990, Cardinal Ratzinger vindicated the Inquisition for having been more faithful to reason and socially responsible than Galileo. The Cardinal quoted from Paul Feyerabend's book *Against Method*:

The Church at the time of Galileo not only kept closer to reason as defined then, and, in part, even now. It also considered the ethical and social consequences of Galileo's views. Its indictment of Galileo was rational. (Feyerabend,125)

What he overlooked was Feyerabend's own conclusion regarding the reactionary character of dominant rationality.

Reason is the luxury of the powerful. The Church and the Empire summoned the most distinguished scholars for a few centuries to frame the theological/metaphysical statement of faith. The system was so well-elaborated, so logic-proved, that the common mind could not stand it. Any definitive system of truth leads to an inquisition. And even without it, the definitive, non-negotiable truth becomes itself inquisitorial to the weaker minds.

Christianity has emerged as a religion of the weak. The slaves and illiterates that constituted the majority of the early church members could not amount the necessary

brain power for an alternative explanation of the world. They did not challenge the mythological-metaphysical picture handed to them. They only reinterpreted its meaning.

The core of Christianity is faith. According to St. Paul, faith is the opposite of beholding. The word *theory* comes from the Greek for beholding. Faith is not another theory of reality. It is rather a new hermeneutics of existing theories and facts. Just as the Jewish prisoners in Babylon reinterpreted the Sumero-Akkadian creation myth, so did the poor in the spirit in the Empire give a new meaning to Jewish apocalyptic and Greek metaphysics.

The promulgation of a perfect system of metaphysics by the Imperial Church, and its subsequent development in scholastic thought, was the end of faith. Faith is an inner motive acting in the absence of a comprehensive theory. The definitive rationale for belief made faith dangerous. Confronted with the elaborated rationalism of the Church, the obstinate dissident appeared malicious, rebellious, or even possessed. There was no valid argument against Christianity during the Middle Ages.

It was the seventeenth-century Scientific Revolution that administered the lethal blow to Christian metaphysics. This was by no means a simply intellectual development. The emerging social forces needed to demolish the dominant ideology. Science was the only effective instrument to attack the metaphysical/theological foundation of medieval power. On the other hand, Church and State clung to old

metaphysics for the same reason. Philosophical demands for rationality were indented to undermine science.

Such ‘irrational’ methods of support are needed because of the ‘uneven development’ (Marx/Lenin) of different parts of science. Copernicanism and other essential ingredients of modern science survived only because reason was frequently overruled in their past. (ibid. 105)

The rationalization of the existing order is, according to Marx, a tool of the ‘dominant classes’. The inquisition was itself the most rational justice system during the Middle Ages. The Church was “*closer to reason as defined then*” because the Church sided with the old order.

Feyerabend (1) opens his work on Galileo quoting from Lenin:

History as a whole, and the history of revolutions in particular, is always richer in content, more varied, more multiform, more lively and ingenious than is imagined... in order to accomplish its task the revolutionary class must be able to master all forms or aspects of social activity without exception...

Narrowing on science fails to account for the Revolution part in the Scientific Revolution. What caused the radical rethinking of the world in the seventeenth century? Who were the ‘revolutionary class’. What was their agenda. What ‘forms or aspects of social activity’ did they employ?

The common prejudice is that the Scientific Revolution was a historical necessity, a natural result in the evolution of knowledge. Such an explanation ignores that the most learned scholar at the beginning of the seventeenth century did not know more about the universe than a Greek philosopher at the beginning of the Christian era.

The pursuit of scientific truth is only a part of the story. Emerging new forces were plotting to reverse the social order. They recognized in science a formidable asset to challenge the theological foundation of the status quo. Science was to them a conspiratorial activity.

The epitome of such activities was the Rosicrucian society, a secret order promoting the “*Universal Reformation of Mankind*”. Rosicrucianism taught that God intended to transfer his power over nature to mankind. It was his will that man should acquire the ability to heal, extend life, and ultimately discover the secret of immortality. This was to be done by “*torturing*” nature to make her divulge its secrets. In other words, it was experiment rather than philosophy that held the key to power by knowledge.

What had discouraged the classics from pursuing scientific knowledge was the shortness of life. One individual could accumulate the whole range of liberal arts. Yet he could barely learn few things if any about nature after a life of research. In answer to this, the Rosicrucian society inspired the scientist to practice the humility and selflessness of an apostle. He did not work for own his glory, but for the general good. If life was too short, the society transcended

it. The accumulated results of many generations will ultimately lead to full surrender of nature.

What think you, loving people, and how seem you affected, seeing that you now understand and know, that we acknowledge ourselves truly and sincerely to profess Christ, condemn the Pope, addict ourselves to the true Philosophy, lead a Christian life, and daily call, entreat and invite many more unto our Fraternity, unto whom the same Light of God likewise appeareth. (Confessio)

This concept led to the establishment of the Invisible College and the *Respublica Literaria* (Republic of Letters). Philosophers on both sides of the Religious Wars created an European community through letter exchange. New ideas and discoveries were subjected to scrutiny by every citizen of the virtual republic. This was the origin of modern peer review. The Invisible College was a forerunner to the Royal Society of London.

The Rosicrucian society and its branches was not the only secret society that cradled the Scientific Revolution. Freemasonry is probably the best known.

*For what we do presage is not in grosse,
For we are brethren of the Rosie Crosse;
We have the Mason Word and second sight,
Things for to come we can foretell aright.
— Henry Adamson, *The Muses' Threnodie* (1638).*

The association of natural philosophers with secret societies was exploited by the representatives of the old

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order to reinforce prejudice against science. The members of such societies were allegedly conversing with fallen spirits in their lodges. It was believed that science had demonic origins. Similar sentiments are still entertained among conservative Christians.

Heresy

At the the core of the modern-scientific rethinking of the world lies the belief that God has transferred “*his attributes, essential powers, and capacities to other entities or realms of being*” (Gillespie 274). This revolutionary concept was grounded in the uniquely Christian “*notion of divine incarnation that bridged the gap between God and man*” (ibid. 132, 133). The same is the reason why the Scientific Revolution occurred only in Christianity, even if Islam, China or India were ahead in science at some point. Modern science is a Christian heresy.

To legitimate this belief, the new philosophy had to answer a basic question: by what means did God effectuate such transfer of power. Two opposite answers were proposed in the seventeenth century by Rene Descartes and Thomas Hobbes.

The lifework of Rene Descartes is generally associated with the nascence of modern secularism. Nevertheless, Descartes’ acknowledged aim was a new Christian rationalism that could heal the Nominalist crisis. He acquired his education in a Jesuit school, and made several attempts to have his system replace Aristotle in Jesuit education. He continued to profess Catholic faith through the end of his life, though he lived mostly among

Protestants, just as Kepler remained faithful to Protestantism at the court of a Catholic monarch.

The psychological cause underlying Descartes' quest was his war experience. He was a soldier fighting on either side of the War of Religions. This gave him a first hand understanding on the lethal nature of blind faith and creedal allegiance. Old time religion had become a historical liability in Europe. He concluded that neither Luther's faith nor the cultural illusions of humanism were the way to go. The Old World needed another kind of Reformation, and Descartes was eager to make his offer.

The inception of Descartes' system was generated by his contacts with the Rosicrucian society. In 1613 the king and elector Frederick of Bohemia married Elisabeth Stuart, the daughter of King James of England and Scotland. Many representatives of the English secret societies accompanied the queen and became part of the intellectual life in Germany. Descartes was then in Bohemia as a soldier, and acquainted some of them.

Although never becoming a member of the Rosicrucian society, Descartes adopted their beliefs. He embraced Francis Bacon's maxim that knowledge is power. He did also allow that God intended to transfer to mankind his power over nature. Like the Rosicrucians, Descartes believed that the ills of his time were to be solved by science rather than piety. Yet he found unsatisfactory their poetical approach. He rejected also the flat empiricism of Bacon.

In the introduction his Discourse on Method with, Descartes urges his reader to consider the difference between the typical medieval city and an imperial metropolis. The former unwraps a disorderly accumulation of architectural features. The latter displays the work of rational planning. One is the impersonal product of random minds. The other is the work of one single individual. The message is clear. Stop trusting traditions or the opinion of majority. The path to truth is open only to the individual mind.

What individual? Who is to be entrusted with power to demolish and rebuild our inner world? The old answer was implicit faith, trusting an authority extraneous to the self. This authority could be the collective reasoning of scholastic theologians, the voice of the Church, the Bible, even private revelations. Descartes turned the table. He asked his readers to doubt every external source of truth. Doubt any authority, doubt God, doubt your own assumptions and senses. Yet his purpose was not skepticism. Doubting everything was a method to discover what could not be doubted.

Doubtless is only the fact that one doubts. In other words, doubt ascertains the doubting self, hence the key statement “*cogito ergo sum*”, originally “*dubito ergo sum*” (Descartes, Discourse, 30). The thinking self discovers himself as the only certitude. Therefore it is the thinking self that should be given final authority to reconstruct the shattered world of traditional Christianity, on no other basis than the thinking self himself. In the hindsight, it is not

difficult to read the French Revolution between the lines of this cogitative individualism, though Descartes never acknowledged revolutionary intent.

Descartes will later define the substance of the thinking self as infinite will (Descartes, *Meditations*, 58). Our knowledge might be limited, but our subjectivity is qualitatively the same as God's own.

It was a daring profession of faith. Hegel saw in it the seafarer crying land. Others thought it was the ultimate shipwreck. To Descartes himself, it was instrumental to frame his own ontological argument. God must exist, because he is by definition infinite subjectivity, and infinite subjectivity is the substance of existence.

Once the thinking self ascertained, Descartes proceeds to rebuild knowledge on this foundation. The world is defined as the ontological opposite to the thinking self. If self is will, the world is extension. The self perceives extensions as representations in the brain. They are not to be trusted, as they are not under the power of self. "*Except our own thoughts, there is nothing absolutely in our power*" (Descartes, *Discourse*, 26). It is by reducing extension to thought that the world comes under the power of the thinking self.

Cartesian geometry is extension brought under the laws of the thinking-self. Geometry is no longer the Platonic contemplation of the uncreated. It becomes the assertion of God-like subjectivity over creation. Accordingly, necessity becomes the subjugation of contingency by subjectivity.

There's no true necessity outside the self, only the limitation imposed by the yet unknown and unconquered.

The bottom line is that science is not possible unless extension is reduced to mathematical expression. Descartes built on this epistemology his own research in optics, anatomy and mechanics. The concept that science is the mathematical reconstruction of world is of the essence of modern science. Yet as his mathematics was limited to analytical geometry, Cartesian science was mere mechanistic.

Descartes intended to develop his own Copernican system, but the Galileo affair made him step back. He proposed though that in order to understand creation, we must start from the premises that God created the primordial elements in an empty space, and allowed them to self-organize by the laws of physics. The next step is recreating the world in our mind from primordial elements (Descartes, Discourse, 39-40). Once the elements pieced back together, we have comprehended the laws of nature.

It was an idea well ahead of its time. Every aspect of reality from atom to stars, and from viruses to complex organisms, are intelligible in modern science only within an evolutionary paradigm.

It is an unnoticed irony of modernity that the Cartesian project stands or falls with faith in God. Who warrants the universal validity of mathematics and logic? Descartes considered three scenarios.

In the first case, he accepts the atheist hypothesis. If the world is an accident, there's no reason for it to be intelligible. In the second, God exists but he is a deceiver. In this situation we are the unknowing victims of cosmic delusion. The third hypothesis stipulates that God exists and cannot lie to us. Only in this case, apodeictic science is possible.

Consistency required an apodeictic (should we say Cartesian?) argument for the existence of God. Descartes appealed to the ontological argument: God must be perfect because we are able to think perfection. He sounds unconvincing.

The first to notice this weakness was an English scholar committed to the same ideals. Just like Descartes, Thomas Hobbes believed in the project of a comprehensive science that would make man able to conquer nature and better his life (Hobbes). Like Descartes, he believed that Euclidean geometry was the key to such science, and Galilean mechanics was its best model. He even went further than him in daring to propose the rational rearrangement of society, becoming the first political scientist.

Yet Hobbes found the system proposed by Descartes fatally flawed (Blumenau, 226). One serious problem was his epistemology. How could a non-corporeal mind perceive and imagine corporeal entities? Hobbes contented that mind was not substantial. Only corporeal entities possessed ontological status. The nature of corporeality is movement and change. Corporeal objects interact, generating change and movement by the laws of physics.

It is by the same laws that the motion of objects generate impressions on our senses and representations in our brains. Yet unlike animals, human mind operates with a set of signs, like words, concepts and numbers, that stand for representations in thinking. Thought is not a substance in itself, but a rearrangement of representations through secondary signs. It is by such symbolic reflection that the memory of the past and anticipation of future events is made possible, consciousness being a byproduct.

Science consists in models of reality with mental signs as the building blocks. Science is not, and cannot be apodeictic. Such models are only relative and probabilistic. They do not reveal unto us the thing in itself. Neither do we need God as a guarantor of truth. Knowledge is power, not absolute truth. The scientific model is validated by its efficiency in the conquest of nature.

Hobbes' system entails two heterodox ideas. First, if mind is corporeal, there's no such thing as an immortal soul. Second, if corporeality is substantial, God is corporeal too. Yet trinity is unthinkable without an non-corporeal substance.

Such ideas lead to the suspicion of atheism. Yet Hobbes found strong arguments in the Bible. The Apocalyptic prophecies speak about bodily resurrection and the annihilation of the lost. The elected will spend eternal life in new bodies, on a new earth, in the physical kingdom of Jesus.

Natural theology is another chapter in Hobbes' heterodoxy. He accepted that God was the first mover, but not the unmoved mover. A corporeal God has a history and experiences change. Yet as prime mover, his purpose and intentions are beyond human scrutiny. We have to accept what the Bible says of him, although Hobbes contends that we have no logical argument to demonstrate the divine origin of the Scriptures.

Hobbes rejected the concept of final cause. In other words, what happens, happens because it has a cause, yet it does not happen for a purpose. God is the initial cause, yet he does not interfere in the natural chain of cause and effect. Even the miracles recorded in the Bible had natural causes inscrutable to the human witness. Human freedom is an illusion. God has predestined us through an unbreakable chain of causes and effects.

In the nineteenth century, the Christian-humanist concept that God has transferred to man or/and to nature his self-defining power was reversed. It was man who projected his latent potential on an imaginary God. "*The consciousness of the infinite is nothing else but the consciousness of infinity of the consciousness*" (Feuerbach, 21). To this Max Stirner replied that not only religion, but every ideology that claims to transcend the individual, is an alienation of man from his ontological essence (Stirner). The purpose of the new humanism was to return man to himself. The question was how.

Descartes had affirmed the ontological priority of subjectivity. Hobbes had upheld the precedence of nature

mirroring itself into the subjective mind. The nineteenth century walked this bifurcated path to both ends. Nietzsche believed that ‘the will to power’ was the substance of all existence. The Marxist faith (as expressed by Engels and Lenin) was “*the consciousness of necessity*”. It was a replay of the Descartes/Hobbes controversy, absent God.

Unlike later epigones, the nineteenth-century atheist was a person of deep faith. The Hegelian/Marxist “*consciousness of necessity*”, and Nietzsche’s will to power, were absolutes. The avowed aim of nineteenth-century atheists was the full empowering of humanity.

Nietzsche understood well Luther’s dictum that only God has free will. He thought that modern science has empowered man to kill God. This was Nietzsche’s way to man’s liberation. Nevertheless, the nemesis of his liberation was not to be the Christian God, but the rival atheism of Marx.

Marx echoes Hobbes:

Natural science will in time incorporate into itself the science of man, just as the science of man will incorporate into itself natural science: there will be one science. (Jessop 304)

And there will be of course nothing left to subjectivity and free will. Ensuing history will witness various ideologies, propped by science, attempting to kill the individual. This might explain the paradox of twentieth-century Christians who fell in love with Nietzsche. He inspired them to resist.

Relativity

But you must note this: if God exists and if He really did create the world, then, as we all know, He created it according to the geometry of Euclid and the human mind with the conception of only three dimensions in space. Yet there have been and still are geometricians and philosophers, and even some of the most distinguished, who doubt whether the whole universe, or to speak more widely, the whole of being, was only created in Euclid's geometry; they even dare to dream that two parallel lines, which according to Euclid can never meet on earth, may meet somewhere in infinity. I have come to the conclusion that, since I can't understand even that, I can't expect to understand about God. I acknowledge humbly that I have no faculty for settling such questions, I have a Euclidean earthly mind, and how could I solve problems that are not of this world? And I advise you never to think about it either, my dear Alyosha, especially about God, whether He exists or not. All such questions are utterly inappropriate for a mind created with an idea of only three dimensions. (Dostoevsky, 295)

Why should Alyosha never call into question the absoluteness of Euclid? How could such questioning

endanger his faith? What frightening revelation awaits at the door? Ivan knows the answer because he is already walking the line.

When Meno dared Socrates to answer how he could know he found the truth, as long as he did not know the truth beforehand, the latter relied on geometry. The propositions of Euclid proved that absolute truth was innate with the intellect. And absolute truth must have originated in an absolute mind. It implied the existence of God.

Nevertheless, it is absolute truth that impels Ivan to doubt God. He has judged God by the absolute standards of good and justice and found him wanting. Yet how could good and justice be absolute if God was not their source? This is Ivan's Euclidean dilemma. Deep in his mind he knows the answer and is afraid of it. And here enters the Devil.

The visit occurs during a nightmare. Ivan knows that the Devil is only an apparition. The Devil answers by urging Ivan to radicalize his Cartesian philosophy. Descartes infers in his *Meditations* that representations are willed by the self. Yet to avoid the pit of relativism, Descartes places God above the thinking self. Truth is possible because God wills that one plus one equals two. Geometry represents the will of God. Moral absolutes are the will of God.

All Ivan has to do is to take the place of God, and abandon the preconceived notion of objective truth. The Devil has a scientific fact to draw on. The universe is mathematically indeterminate. Euclid is relative to the earth. Hence there's no such thing as geometrical truth. Descartes' ontological

argument is thus rendered superfluous. The only thing left is the ontology of self.

You see, like you, I suffer from the fantasy and so I love the realism of earth. Here, with you, everything is circumscribed, here all is formulated and geometrical, while we have nothing but indeterminate equations! I wander about here dreaming... Well, if you like, I have the same philosophy as you, that would be true. Je pense, donc je suis, I know that for a fact; all the rest, all these worlds...(ibid.)

The Devil invites Ivan to follow him on the forbidden territory where parallel lines meet. The only condition required is what Ivan had warned his brother against: think out of your earthly, Euclidean mind. Ivan will never return from the uncharted beyond.

Dostoevsky obviously believed that geometrical relativity would conduct to outright relativism. He did also anticipate the dialectics of Cartesian rationalism, modernity turning into postmodern relativism. Yet the only alternative he was able to offer was a Slavonic utopia with barefoot saints exorcising the demons of modernity.

The Nazi documentary *Der Ewige Jude* (The Eternal Jew) denounced relativistic physics as “*Jewish science*” (a label ignored by their own scientists when testing Einstein’s predictions regarding atomic energy). The politically correct euphemism for *Jewish science* is now *liberal science*. A good example is the article *Theory of relativity*,

on Conservapedia. The author holds that: “*Some liberal politicians have extrapolated the theory of relativity... to apply the relativistic concept of ‘curvature of space’ to promote a broad legal right to abortion*”. The article referred at uses space curvature as a metaphor for state legislatures bending constitutional law (though the relativistic bending is actually effectuated by local conservatives on the constitutional right to abortion).

The statement has been ridiculed at the other end of ideological divide, but the author has a point. According to Bertrand Russell (44), the statement “*we hold these truths to be self-evident*” in the Declaration of independence reveals the Euclidean core of our laws. Our Eternal Verities are also an extrapolation of Euclid. *The whole conception of an eternal world, revealed to the intellect but not the senses, is derived from him* (ibid., 37). Christian metaphysics was built on an ontological/epistemological paradigm inherited from Pythagoras through Plato. Both believed that the Demiurge fashioned the world after geometrical patterns, these patterns being apprehended as innate knowledge by the rational soul. From here, Plato inferred that the concepts of good, beauty, and justice, must also be ontologically self-standing and epistemologically self-evident.

The seventeenth-century Scientific Revolution drew on Plato’s idea too. Galileo reiterated Timaeus when saying that God wrote the book of nature “*in mathematical language, and the symbols are triangles, circles and other geometrical figures*” (Burt, 75). Descartes relied on

geometry as a model of apodeictic truth. Hobbes was inspired by the Propositions of Euclid. Christian theology and the Scientific Revolution shared common Euclidean ground. The only exception was Galilean relativity.

What is relativity? In plain words, is the prediction that the laws of nature will manifest in the same way in every referential frame. Imagine you are on a subsonic plane. The flight attendant is walking briskly along the aisle. If watched from the ground, she would be found breaking the sound barrier. Nevertheless, you will not hear the familiar sonic boom, because her referential frame is the plane, not the ground observer.

Galileo used the principle of relativity to refute the tower argument. Yet Newton found absolute relativity questionable. Rotating the water in a bucket is different from rotating a bucket against stationary water. There are mechanical forces like the centrifugal force that show which object is really moving. The relation between acceleration, mass and energy required an absolute benchmark for movement. This benchmark should be absolute space and time.

Newton was unable to find any physical evidence for absolute space and time. He did not hesitate to offer a theological rationale instead. Always on guard against scholastic metaphysics, Newton turned to those Jewish theologians that defined God as the ultimate place.

*He endures forever, and is everywhere present;
and, by existing always and everywhere, he*

constitutes duration and space. Since every particle of space is always, and every indivisible moment of duration is everywhere, certainly the Maker and Lord of all things cannot be never and nowhere.
(Newton, 545)

It is often suggested that Newton's natural theology purports a sort of God of gaps. Indeed, he left room for God's intervention where his equations did not suffice. Laplace would proudly declare a century later that he needed not "*this hypothesis*", after he filled Newton's holes. Nevertheless, Newton's God was not an epistemological trump card. He realized that cosmology could not dispense with ontology.

Yet if God constitutes infinite duration and space, how could he be a definite being? Newton distinguishes between absolute and relative truth about God, just as his physics differentiates absolute and relative movement. He takes such expressions as "*God of Israel*" or "*my God*" as relatively true. Yet God in absolute sense is the Pantocrator, the absolute ruler of the universe. One thing was certain: the concept of absolute space and time did not fare well with a trinitarian God.

The problem with Newton's concept of God is its scientific liability. If God is con-substantial with absolute space and time, and the concept of absolute good and evil is contingent upon Euclidean geometry, relativity is indeed atheistic and conducive to moral relativism.

Nevertheless, as we have seen, Solomon's π is a statement about the relativity of space. General Relativity shows that, indeed, the value of π is not constant throughout the universe (Einstein, 96). Relativity, as the ultimate demolition of the Euclidean metaphysics and theology, opens the way for the Hebrew concept of God as his own place and the place of the world.

The same applies to the concept of truth. Wrote Einstein:

The concept "true" does not tally with the assertions of pure geometry, because by the word "true" we are eventually in the habit of designating always the correspondence with a "real" object; geometry, however, is not concerned with the relation of the ideas involved in it to objects of experience, but only with the logical connection of these ideas among themselves. (ibid., 2)

Socrates' argument in Meno is put to rest. Yet victory does not go to the sophist. The demise of Euclidean truth leaves us with two more options. One is Descartes' argument of God as direct source of apodeictic truth. The other is Hobbes argument of efficiency as source of probabilistic truth. Modern thought is by and large on the side of Hobbes. Nevertheless, the cosmic scope of Einstein's theory calls for Descartes.

Rethinking Timaeus in a relativistic universe

In 1887 Albert Michelson and Edward Morley published in the *American Journal of Science* a scientific report headlined *On the Relative Motion of the Earth and the Luminiferous Ether*. The report is known today as the Michelson-Morley experiment. The purpose of the experiment was to detect the aether wind.

It had already been established that light was an electromagnetic wave. According to Maxwell's laws, electromagnetic waves travel at the constant speed of 186,000 miles per second in a vacuum. It was also known for a fact that the earth orbits the sun at a speed of around 18.75 miles per second. The sun itself moves through the galaxy at 486,000 miles per hour.

According to the principle of relativity, Maxwell's laws should be the same in every referential system. Which means that regardless of whether the earth moves toward, or away from a source of light, the beams should hit the earth with the same 186,000 miles per second. Yet this would contradict Galilean relativity as it stipulates that the speed of the earth should be added to, or respectively subtracted from, the speed of light.

In order to solve this paradox, nineteenth-century scientists invented aether. It was hypothesized that electromagnetic waves pulsate through an immobile subtle medium.

Consequently, the speed of the earth relative to the hypothetical aether would have been the same as the speed of the earth relative to absolute space. Michelson and Morley attempted to measure it.

Using a half-silvered mirror, they split a beam of light at right angle. The two beams were reflected back from two mirrors set at the end of two long arms. It made sense to expect the beam of light traveling across the aether wind to face the problem of a swimmer getting in straight line across a river. According to the Galilean transformations, he has to swim an extra distance equal with the speed of the river multiplied by time. In other words, the beam of light perpendicular on the earth orbit should travel a longer distance than the other because of the would-be aether wind.

The experiment yielded a paradoxical result. It looked like the earth hung immobile in space. The two beams traveled equal distances in equal times disregarding earth motion and classical mechanics. As predicted by the principle of relativity, Maxwell's laws were the same regardless of movement. What didn't work was the Galilean transformations. To save the day, Hendrik Anton Lorentz complemented them with the so-called Lorentz transformations.

Lorentz based his transformations on the axiom that any moving object becomes shorter in the direction of its movement, to the effect that the speed of light looks always constant. Yet the equations derived from this new principle imply other paradoxes. The moving object's length

becomes zero when it reaches the speed of light. Even more, it is expressed by a radical from a negative number (an imaginary number), when the speed exceeds the speed of light. To make the matter worse, time is indefinite when space is zero.

In 1905 Albert Einstein decided that it was time for physics to claim the no man's land between theology and science previously occupied by metaphysics. Newton was right to enter the ontological debate about the nature of space and time as part of his natural philosophy. He was only wrong in his assumption that absolute space and time exists. Einstein's solution was incredibly simple: forget your self-evident Euclidean axioms and take the Lorentz transformations for what they imply. Space is zero and time is indefinite at the speed of light. Any particle that exceeds the speed of light moves through an imaginary space.

As Newton rightly inferred, the relation between acceleration, mass, and energy implies an absolute benchmark. His mistake was the idea that this absolute referential frame is absolute space and time. The only absolute in the universe is the speed of light. Accelerating an object requires application of energy proportional to its mass. This makes the difference between absolute movement and relative movement. Yet acceleration is not relative to absolute rest but to the speed of light. The speed of light means infinite mass. Accelerating toward the speed of light means an increase in mass toward infinite. Reaching the speed of light would imply the application of infinite energy and is therefore impossible.

There are two fundamental transformations that define movement relative to the speed of light as an absolute crest. The first one is the mutual transformation of space and time. As we all know, speed is space multiplied by time. As the speed of light is the absolute threshold, time must increase and space must decrease as the moving object approaches it, so that the ratio remains constant. The other transformation is that of mass and energy, expressed in the famous equation $e=mc^2$.

There is no longer time and space, mass and energy. There's time/space and mass/energy now. The two paired entities will merge in General Relativity one decade later. Einstein radicalized relativity to the ultimate conclusion. If the laws of the universe are the same in any referential frame, then gravitation and acceleration manifest the same laws. We all know this from our experience of driving on curves or taking off in a plane.

To Einstein it meant that acceleration and gravitation are both space/time curvature. Mass/energy becomes thus just another manifestation of space/time. Relativity is science tackling with ontology. In this respect, some fears are not without reason.

The universe was not fashioned after Euclidean forms. The Propositions of Euclid do not contain eternal truth. The sum of a triangle's angles do not always equal 180 degrees. Parallel lines meet somewhere in the universe. The value of π is different on earth then it is in the vicinity of a black hole. Space and time bent, contract, and extend, in relation with speed, mass and energy. The fabric of space-time has

grown from point zero, is pierced and teared up in black holes, and will most likely vanish along with the universe in the ultimate singularity.

This is the epistemological trespass that Ivan warned his brother against and the Devil lured him into. For if our self-evident truths about the nature of space and time are simple prejudices reflecting the limited span of our evolutionary experience, would we not say the same about the Eternal Verities that undergird our moral and social values? The Greek God that has been incorporated in the Christian dogma is incumbent upon Euclidean rationalism.

On the other hand, Relativity is a lethal argument against the common concept of God. If the philosophical God is outside time (along with absolute space), the popular God is in space and time. As Moody (1887) stated in his tract, he inhabits an eternal dwelling-place. He might not be material but he is still corporeal. He radiates uncreated light. Yet none of this are eternal according to Relativity. Where was God before space and time came into existence?

Another problem with folksy theology is the weekly Sabbath. Although Jesus declared that “*the Sabbath was made for man*” (Mark 2:27), the shadow of ancient superstition still casts itself on the Lord’s Day liturgy:

Before the world was created, there was none to praise God and know Him. Therefore He created the angels and the holy Hayyoth, the heavens and their host, and Adam as well. They all were to

praise and glorify their Creator. During the week of creation, however, there was no suitable time to proclaim the splendor and praise of the Lord. Only on the Sabbath, when all creation rested, the beings on earth and in heaven, all together, broke into song and adoration when God ascended His throne and sate upon it. (Ginzberg, 83)

The Sabbath is absolute, universal time. Moreover, the concept of one single pulse throughout the universe, angels and Church, is of the essence in all Judeo-Christian liturgy. If heaven and earth are distant in space, we would like to imagine that they at least experience worship simultaneously. Eschatology is also understood as one universal event. Relativity separates the clocks in the universe.

And yet, Albert Einstein put his physics in one theological metaphor as brief and elegant as $e=mc^2$: *God plays no dice*. What did he understand by God? Before anything else, Einstein's God is the closest thing to the Hebrew ultimate *ma'own* – *dwelling place*. As Philo put it, God is “*containing things, and being contained by nothing whatever*”. Newton's God was con-substantial with absolute time and space. The relative and transient nature of Einstein's space-time raises the question of an absolute locus in which relative space-time is contained.

It is, of course, intellectually legitimate to think that everything is just relative and existence is nothingness. God is a matter of faith. The point here is that Einstein's God is closer to the Hebrew ultimate dwelling place than to the

Greek Demiurge. It is therefore not by accident that Relativity vindicates Solomon's non-Euclidean π . Space curvature may change the ratio of the circumference to the radius in different places in the universe.

Nevertheless, Einstein is in a certain way closer to Pythagoras and Plato than to Galileo and Newton. Every scientific theory of the universe before him was built on mechanical force. Einstein returned to geometry. True, his geometry is not about timeless shapes. It is the geometry of space-time. Yet every varying propriety of the relativistic space-time is as deductible from non-Euclidean axioms as the Propositions of Euclid are from their own. This new non-Euclidean rationality of the universe helps us revisit two theological issues that have fallen into decrepitude with the demise of metaphysics.

One issue is the dogma of Trinity. Newton found the Trinity incompatible with absolute space and time. Yet relative space-time and non-Euclidean geometry suggests the ontological relativity of arithmetics. One and three are only abstractions of spatio-temporal succession in our universe. Arithmetics does not count before the Big-Bang.

The other issue is the Augustinian definition of time. Augustine believed that the succession of events in our life is a psychological illusion. All events coexist simultaneously in relation to God. Therefore, he claimed, it is inappropriate to ask why He did not create the world sooner than six thousand years ago. There's no sooner and later with God. Eternity means simultaneity. Time means

succession. We are prisoners of time, prisoners of our perception of events.

The Augustinian concept of simultaneity was an able metaphysical solution for such theological difficulties as the fore-knowledge of God, predestination or the problem of evil. It was undergirded by an Euclidean ontology of absolute space and illusory time and movement. The Scientific Revolution brought in the rationality of time and the substantiality of movement. Ontological simultaneity had no place in Newton's universe. It makes sense though in the relativistic universe where time is just another dimension of space. The clearest explanation of this concept was given (before Einstein) by H. G. Wells in *The Time Machine*:

*There are really four dimensions, three which we call the three planes of Space, and a fourth, Time. There is, however, a tendency to draw an unreal distinction between the former three dimensions and the latter, because it happens that our consciousness moves intermittently in one direction along the latter from the beginning to the end of our lives... There is no difference between Time and any of the three dimensions of Space except that our consciousness moves along it. (Wells, *Time Machine*, 196)*

Not surprisingly, Einstein was on the side of Augustine as regards the feasibility of free will. Even his statement that God plays no dice is a profession of faith in a kind

geometrical predestination in a quadric-dimensional life plane, just like in Wells' novel.

The most important theological implication of Einstein's theory is though what he called the greatest mystery of the universe: intelligibility. The non-Euclidean intelligibility of the universe is much beyond what could be expected from simian brain adaptation. "*There is no logical way to the discovery of elemental laws. There is only the way of intuition, which is helped by a feeling for the order lying behind the appearance*" (Gaither, 1076). To Einstein, this intuition is essentially religious. "*Every one who is seriously involved in the pursuit of science becomes convinced that a spirit is manifest in the laws of the Universe—a spirit vastly superior to that of man*" (Isaacson, 338). What we have here is a geometrically defined universe. A rational-geometrical universe led to rational metaphysics with the Greeks. Non-euclidean rationality leads to non-Euclidean metaphysical questions. Einstein himself touched on some of them, but they have remained largely unexplored.

Darwin and the collapse of metaphysics into biology

Daniel Dennet called the concept of natural selection “*dangerous*” because, he holds, natural selection explains everything, from the fine-tuned universe to the world of ideas. The argument is questionable. You don’t have to be a believer to doubt that natural selection is able to explain everything. T. H. Huxley and Stephen Jay Gould are just two examples of agnostic evolutionists who found natural selection insufficient to explain the complexity of life.

Darwin’s truly dangerous idea was revealed In 1872. On that year he published *The Expression of the Emotions in Man and Animals*. The book used, for the first time in the history of science, photographs to produce evidence. This made it very expensive, but also very efficient to demonstrate Darwin’s point: animals and humans share a common set of facial muscles to express similar emotions.

It was believed that humans possessed an unique set of facial muscles for the purpose of expressing their eternal souls. In other words, our facial expressions must be as God-like as our souls. It is habitual to imagine angels smiling or crying. Or to visualize the eternal countenance of God radiating with kindness (or frowning at sin). We smile, frown, express our adoration, joy, sadness, after an

eternal pattern that is common to every rational being made in the image of God.

‘Not exactly’ – says Darwin. ‘Just look at those monkeys’. We understand better than Darwin did the chemistry of emotions. It is essentially the same across all mammalian orders and species. Even more, it is an evolved version of the most primitive chemistry of life. An irritated insect is buzzing the familiar pitch of a grumble. Could this be because both insect wings and vocal strings have evolved from the same Cambrian gills? We landed on the Moon prompted by the same brain reactions that pushed the Devonian fish to land on the shore about 400 million years ago. We still have the Devonian fish inside us (Shubin). This is perhaps why there’s something fishy in our loftiest ideals.

Darwin knew little about these. He only demonstrated the common anatomy of emotions among superior mammals. He concluded in his notebook:

Plato says in Phaedro that our ‘imaginary ideas’ arise from the preexistence of the soul, and are not derivable from experience—read monkeys for preexistence.

If certain truths seem self-evident to us, it is not because we have a rational soul of divine substance. It is because we have a simian brain. Evolution is imperfect, and so are our “*imaginary ideas*” evolved in the Pleistocene caves. “*Metaphysics is instantly collapsed into biology*” (Gopnik,

87). So, here we are, naked in a blizzard, no mammalian fur or metaphysical illusions to protect us.

We will turn to a sci-fi classic that explores this condition in depth. H. G. Wells was a man of many questions. He interviewed great social experimenters like Lenin, Stalin and Roosevelt. In *The Island of Doctor Moreau*, Wells interviewed God on human evolution. Actually, his character interviews Doctor Moreau, yet it is not hard to see through the fictional scientist.

The narrator is trapped on a remote Island where a notorious vivisectionist named Doctor Moreau is attempting to reshape animals into humans. As one experiment fails after another, the island has become populated by a bizarre tribe of half-human creatures.

Their leader is “*a gray thing*” named the *Sayer of the Law*. He leads the rest of the beasts in a sort of religion consisting in the worship of Doctor Moreau and his assistant, Montgomery, along with the liturgical reciting of the Law. The narrator will complete the trinity, (suggestively, as “*the one who walked in the sea*”), not without Aryan doubts on the part of some beasts.

The Law is a series of taboos like not walking on all four, or not clawing the bark. The narrator learns that the beast “*were ever repeating... and ever breaking*” the law (sounds familiar). However, some special prohibitions were strictly enforced, like that against tasting blood (this sounds familiar too). The aim of the Law was to keep the half-human beasts from returning into full animality.

The only reason for a beast to act human is fear. All beasts have vivid recollections from “*the House of Pain*”, which is how they name the laboratory where Moreau had created them (an oblique remark at hell, and a hint at the ordeal of human evolution). Any severe law-breaking is followed by another internment for remedial vivisection. Yet the narrator learns that “*the Law, especially among the feline Beast People, became oddly weakened about nightfall when they would dare things they never seemed to dream about by day*” (Wells, *The Island*, 82). It is not hard to read another innuendo in this.

The narrator pities the animals that:

... *stumbled in the shackles of humanity, lived in a fear that never died, fretted by a law they could not understand; their mock-human existence, begun in an agony, was one long internal struggle, one long dread of Moreau—and for what.* (ibid., 96)

This is the question he would like to ask the allegorical Doctor Moreau.

How can animals act like people? The doctor answers by explaining the animal origin of the human nature.

Very much indeed of what we call moral education, he said, is such an artificial modification and perversion of instinct; pugnacity is trained into courageous self-sacrifice, and suppressed sexuality into religious emotion. (ibid., 74)

Was manlike his purpose? *“He confessed that he had chosen that form by chance... Once or twice”* (ibid.). Was this aimless experiment worthy of the terrible cost in pain? Doctor Moreau does not care about pain. Neither does God.

Although Wells interviews God metaphorically, the answers come through a scientist whose portrait may be recognized in the grim mask of Doctor Moreau. Between 1884 and 1887 Wells had studied biological evolution with Thomas Henry Huxley at the Normal School of Science in London. A pioneer in the field of human evolution, Huxley insisted that our ethics had no evolutionary footing in nature. This was also the reason why the avowed agnostic (it was Huxley that coined the term) was skeptical about the prospect of a humanity without God.

The killing of Moreau and Montgomery by Beast People brings the experiment to an end. The faithful Dog-man denounces in preachy language the new God-is-dead philosophy of the Beast People.

“They are mad; they are fools,” said the Dog-man. “Even now they talk together beyond there. They say, ‘The Master is dead. The Other with the Whip is dead. That Other who walked in the Sea is as we are. We have no Master, no Whips, no House of Pain, any more. There is an end. We love the Law, and will keep it; but there is no Pain, no Master, no Whips for ever again.’ So they say. But I know, Master, I know”. (ibid., 119)

However, mammals without master and whip have no incentive to stay human. They revert to full animality and vanish without trace.

Man has killed God. Will man outlive him for long?

Wells believes that reason is a survival adaptation acquired in exceedingly difficult circumstances. Once survival made easy by civilization, reason becomes an withering atavism. The philosophical death of God has removed the barriers of fears and will accelerate its demise.

Could there be another route between a God who denies animal life and a life that is essentially animal? Wells will attempt to answer this question in 1916 in an essay headed *God the Invisible King*. The problem with Doctor Moreau is the concept of the infinite God. The infinite God “*is an impenetrable curtain; the ultimate of existence is a Veiled Being, which seems to know nothing of life or death or good or ill*” (Wells, *Invisible King*, 14). A personal-infinite God is a contradiction of terms. The infinite God “*is no more than the limit of understanding, the unknown beyond. It may be of practically limitless intricacy and possibility*” (ibid.). One might recognize here Einstein’s God.

Yet unlike Einstein, Wells feels no compelling thrill before a Great Beyond that is indifferent to our pain and values. In a way that parallels the gnostic doctrines, he turns to a limited personal God, that has nothing to do with the creation of the universe. On the contrary, he is the “*son of man*” (ibid., 86), a creation of our collective self.

To Wells, God is neither the dreadful ruler nor the sentimentalized redeemer of the weak. He is the captain of human adventure, a tough lover of his soldiers (ibid.). And although opening a large door to any kind of personal God, or, in William James' language, any religious experience, he is careful to stay on the ground of logical-positivism.

Wells quotes the "*hard-shell Darwinian evolutionist*" (ibid.) Dr. Chalmers Mitchell as the latter is discussing Kant's famous passage: "*Two things fill my mind with ever-renewed wonder and awe the more often and deeper I dwell on them—the starry vault above me, and the moral law within me*" (ibid., 85). Mitchell accepts Kant's statement as a biological fact. He accepts the transcendently of the moral law as "*the work of the blood and tears of long generations of men*" (ibid., 86). The law is not rooted in the metaphysical realm. Neither is it innate in the individual. It has its seat in:

... *his traditions, in his customs, in his literature and his religion. Its creation and sustenance are the crowning glory of man, and his consciousness of it puts him in a high place above the animal world.*
(ibid.)

Wells is adding to this concept only the statement that "*GOD RESPONDS, that he GIVES courage and the power of self-suppression to our weakness*" (ibid. 87). This is the true God worthy of worship, not the dreadful Doctor Moreau, the amoral and indifferent Beyond.

As already mentioned, it is not hard to notice the parallel between Doctor Moreau and the gnostic Demiurge. Man is the prisoner of God in an unfriendly universe. In both cases salvation comes through a limited God. The only difference is that Wells is decoding religion in the language of logical-positivism. Absent metaphysics, God becomes a psychosocial construct, necessary to keep humanity afloat.

And yet, like the faithful Dog-man in Wells' dystopia, man continues to hope against hope that his cultural illusions have an ontological basis. Darwin himself gave voice to this concept in his conclusion at the end of the *Origin of Species*: "... *as natural selection works solely by and for the good of each being, all corporeal and mental endowments will tend to progress towards perfection*" (Darwin, *Origins*, 305). Such teleological undertones became more explicit with other champions or popularizers of his theory like Haeckel and Spencer.

This biological faith is well represented in the iconic march of progress, sporting a knuckle-walking ape that evolves through staggering intermediary links, and brutish caveman, into modern humanity. One would have only expected nineteenth-century progressive theology to piggyback on such sentiments.

The problem with Wells' biological gnosticism is that a sociocultural God cannot save. When humanity itself is a cultural illusion, salvation becomes only the ultimate illusion. Siddhārtha Gautama was right:

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*Were there is not the unborn, unoriginated, unmade
and unconditioned, there would be no escape for
the born, originated, made and conditioned.*

We must turn to the Veiled Being for our salvation.

Nietzsche and the ascent of biology into the metaphysics of presence

On 22 May 1860, Charles Darwin wrote to the renowned botanist Asa Gray:

I cannot persuade myself that a beneficent and omnipotent God would have designedly created the Ichneumonidae with the express intention of their feeding within the living bodies of caterpillars.
(Darwin, Life & Letters, 105)

Darwin, a theologian by training, and a Christian by temper and education, preferred random evolution to a God who would have created the Ichneumonidae. It was a defensive mechanism. Ivan Karamazov's image of the tortured who loves the torturer, or, should we say, a caterpillar's love for the wasp, as an analogy for loving God, is brought to our mind. One becomes agnostic as an alternative to becoming insane.

In 1862 Darwin wrote about another example of reproductive success. The gruesome cunningness of Ichneumonidae, providing fresh meat for its larvae, is replaced with the charming sophistication of flowers, trading nectar for reproductive advantage. In a pioneering work called *The Various Contrivances by which Orchids*

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Are Fertilized by Insects, he showed how flowers and pollinating insects have co-evolved.

There's hardly a pulpit argument for creation by design that omits flowers. What is their purpose, if not to lift up our souls from the valley of tears? The beauty of flowers is gratuitous and timeless, seasonal fading notwithstanding. In heaven "*they'll never fade*" (White, 18). We see here the legacy of the Symposium, with a Puritan note opposing the selfless exhibition of flowers to sexy fashions.

The problem with this concept is that floral beauty is all about fads and sexy fashion. Flowers have not evolved to please our eternal soul, but to attract bees. They change their forms and colors in geological time, for the same reason that women change their appearance and style: to catch the eye of the pollinator. Some orchids even emit a sort of drug that matches the chemistry of the females of certain species of bee or wasp, to decoy the male (Attenborough, 174).

Flowers are not more altruistic than the Ichneumonidae. Both are examples of evolutionary success. Flowers and Ichneumonidae, symbiosis and parasitism, are only examples of using another species to enhance reproductive success. Whether the chosen method is exploitation or cooperation, it matters not to evolution. Nature is blind to our values.

And yet, even the cold eye of Darwin turned in horror from the Ichneumonidae. On the other hand, he spared not the unscientific epithet *beautiful* (Darwin, *Contrivances*, 1, 2,

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12, 43, 215, 225, 224, 282) in his work on pollination. Was Darwin tempted to judge evolution by standards external to biology? Or is nature more than natural selection and survival of the fittest?

Why are we charmed by bees and flowers, but disgusted by parasites? One might argue here that beauty is in the eye of the beholder. We might have evolved to like flowers because of our fructivorous nature. Why would we then abhor the sophisticated Ichneumonidae and empathize with the caterpillar? After all, we do have an evolved taste for cruelty and cunningness. Just look at the best rated shows.

The usual answer is that we simply project our social values on nature. And yet, is nature really blind to excellency and beauty? Darwin himself argued that it is not. He realized that natural selection alone cannot explain evolution. Flowers are only an example. He credited sexual selection for such evolutionary bonuses as birds song or the peacock tail. He found it even more important in human evolution. Darwin quotes Schopenhauer to make his point:

The final aim of all love intrigues, be they comic or tragic, is really of more importance than all other ends in human life. What it all turns upon is nothing less than the composition of the next generation... It is not the weal or woe of any one individual, but that of the human race to come, which is here at stake. (Darwin, Descend, 599)

The engine driving evolution might be indifferent to good and evil, yet it has a sharp eye for beauty. Gratuitous

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activities such as romance and poetry appear to be more important than the improperly called social Darwinism in the evolution of human nature.

Flowers are the ultimate symbol of such evolutionary forces. They have been unstoppable for the last 130 million years by a mechanism that involves sexual selection at its base, and builds on it an intricate web not tied to direct survival or battle for resources. The best example of such a mechanism in the animal world is man. It is not therefore by accident that flowers have been our companion through the valley of tears. They are so much like us.

If Socrates, in the Symposium, took up his disciples from passing sexual charms to eternal beauty, Darwin is leading us back to sex and fading beauty. Nonetheless, his beauty is no less ontological. The ontology of Darwinism is implied in the fact that change and movement, not timelessness, is of the substance in excellency of any kind.

“Consider the lilies” (Luke 12:27). Unlike Plato, the Messiah was not interested in timeless beauty. On the contrary, the lilies had to be considered exactly because their transient character. The glory of God is fully present in *“which is to day in the field, and to morrow is cast into the oven”* (28). The full power of life is recognized in every fading flower and every passing moment.

How about considering the Ichneumonidae? If we see God in the lilies, should we reinvent the devil to explain parasites? Is there another criterion intrinsic to nature except struggle and survival? Friedrich Nietzsche was

frustrated at what he saw as the failure of Darwin to follow through the metaphysical implications of his own theory.

The error of the Darwinian school became a problem to me: how can one be so blind as to make this mistake? That will to power, in which I perceive the ultimate reason and character of all change, explains why it is that selection is never in favour of the exceptions, and of the lucky cases: the strongest and happiest natures are weak when they are confronted with a majority ruled by gregarious instincts and the fear which possesses the weak. My general view of the world of values shows that in the highest values which now sway the destiny of man, the happy cases among men, the select specimens, do not prevail: but rather the decadent specimens – perhaps there is nothing more interesting in the whole world than this unpleasant spectacle. (Nietzsche, Will to Power, 159)

What Nietzsche meant was that excellency and surviving success were different things. The evolutionary success of parasites is a telling example. The scientific torture of its victim by the Ichneumonidae has monstrous parallels among our own species. Not few will exonerate them in the name of Darwin and, yes, Nietzsche. Yet what drives evolution up and on is, according to Nietzsche, an inner instinct of life to expand, to explore, to conquer, to grow, to experience, to create and recreate itself: flower power.

It is indeed reproductive success that pushes forward the co-evolution of flowers and bees. Yet it is the reproduction

of the happy creature rather than the Malthusian starving selection. This is why we love flowers and yet loath parasites. And this is also why some people love flower power (in political sense) rather than social Darwinism (in Spencerian sense).

The concept that natural selection does not necessarily lead to progress and excellency was held in modern evolutionary science by Stephen Jay Gould. He argues that the inherent tendency of evolution is not toward complexity but diversification. Because minimum complexity hits a wall beyond which life is no longer possible, diversification extends toward the open field of complexity. This generates the false impression that evolution is bent toward complexity.

Yet adaptation can move an organism toward simplification, parasites being the example again. Gould reminds us that the greatest story of evolutionary success is bacteria, while the epitome of demise in the history of life is the super-built dinosaur. The distribution of complexity in the history of life has remained constant, but as life continues to diversify, its short tail of complex organisms grows to the same extent.

Although Gould builds his argument on statistics and paleontology rather than metaphysics, his leaves open room for speculation. A lucky accident and a miracle are phenomenologically identical. Gould himself recounts his unlikely healing of cancer as a telling example of how statistical distribution generates winners and losers in the game of life. Whether or not a cancer healing or the

evolution of the human brain are miracles is a matter of speculation. Gould only shows that both are highly unlikely and not inherent.

Nietzsche's intuition was not unfounded. Nonetheless, his intention was not to criticize the scientific theory but to clarify its existential implications. In brief, that the struggle between the element of fear and the herd instinct on one hand, and courage, individualism and creativity, on the other, has ontological roots much deeper than the social expression of good and evil.

When Darwin first read "*read monkeys for preexistence*" in Plato, he attributed to instinct what the latter had attributed to the immortal soul. How can instinct be converted into knowledge? The solution proposed by Nietzsche was that knowledge is not something innate in human nature, but rather a compromise of conflicting instincts.

What does Knowing Mean? "Non ridere, non lugere, neque detestari, sed intelligere!" says Spinoza, so simply and sublimely, as is his wont. Nevertheless, what else is this "intelligere" ultimately, but just the form in which the three other things become perceptible to us all at once? A result of the diverging and opposite impulses of desiring to deride, lament and execrate? Before knowledge is possible each of these impulses must first have brought forward its one-sided view of the object or event. The struggle of these one-sided views occurs afterwards, and out of it there occasionally arises a compromise, a pacification, a

recognition of rights on all three sides, a sort of justice and agreement: for in virtue of the justice and agreement all those impulses can maintain themselves in existence and retain their mutual rights. (Nietzsche, Gay Science, 261)

The biological genesis of knowledge does not make thought superfluous. On the contrary, it places the Cartesian dictum in a deeper perspective that paves the way for Freud.

For a very long time conscious thinking was regarded as the only thinking: it is now only that the truth dawns upon us that the greater part of our intellectual activity goes on unconsciously and unfelt by us; I believe, however, that the impulses which are here in mutual conflict understand rightly how to make themselves felt by one another, and how to cause pain: – the violent sudden exhaustion which overtakes all thinkers may have its origin here (it is the exhaustion of the battlefield). Aye, perhaps in our struggling interior there is much concealed heroism but certainly nothing divine, or eternally-reposing-in itself, as Spinoza supposed. (ibid.)

Thinking is the result of a deep unconscious conflict. This is why the mind is a battlefield and the thinker a bleeding warrior. Reason is no longer the metaphysical substance of things. It becomes a reprogramming of animal instincts, an instrument to navigate the irrational universe. At the deep end of thought, science entails repulsion and hate for

Ichneumonidae and enthrallment with flowers. Even more, conflicting impulses are in themselves expressions of a cosmic struggle of the will to power against impeding obstructions.

The intrinsic relativism of Nietzsche's thought was recognized by many postmodernists as their own. Nietzsche's criticism of the Darwinian school is indeed part of a broader uncovering of the illusions of the Enlightenment. He anticipated the crisis of modernity and the eruption of nihilism. Nevertheless, his agenda was in radical opposition to the postmodernist goals.

Before anything else, just like Descartes and Hobbes, Nietzsche believed that true knowledge is scientific. He had a good instinct for soundness in the new theories of his time. His eternal return philosophy was grounded in breakthrough scientific ideas on the relativity of time (Babich & Cohen, 189). The will to power concept is built on an atomistic theory inspired by Democritus. Nietzsche infers that atoms are "*only moments of the will to power*" (ibid. 28) determined in relation to anthropological will, in a way that sounds almost as a metaphor of modern quantum physics.

In other words, Nietzsche embraced what Heidegger will denounce at him as a metaphysics of presence, "*knowledge and inquiry that posit being as physis... that rise and come to presence under their own power and those that derive from the arts and crafts*" (Heidegger, 189). Postmodern attitudes on science are reflections of Heidegger's stand

against the metaphysics of presence, rather than its appropriation by Nietzsche.

Above all, it is Nietzsche's primary rejection of the gregarious that makes him incompatible with post-modernism. He would reject ethnocentrism and multiculturalism alike, just as he ranted against both the Jews and antisemitism in the same breath.

Nietzsche's epistemology was indeed perspectivist. He believed that truth is relative in the sense that perspectives are mapped by the interaction between the self and "*each atomic quantum event and every molecular society*" (Babich & Cohen, 41). Yet unlike postmodern thinkers he believed in the superman. The superman involves not only the surpassing of socio-cultural perspectives, but also that of biology. He answers Darwin's "*read monkeys for preexistence*" in prophetic idiom:

Man is something that is to be surpassed. All beings hitherto have created something beyond themselves. And ye want to be the ebb of that great tide and rather go back to the beast than surpass man? What is the ape to man? A laughing stock, a thing of shame. And just the same shall man be to the Superman: a laughing stock, a thing of shame (Nietzsche, Zarathustra, 4).

Though truth is relative, the human (and inherently ape) perspective on truth can and should be surpassed.

What impedes this surpassing is a divinity that makes the individual an object of "*absolute knowledge and absolute*

control” (Tillich, 185). The dead of God opens the way to knowledge because it opens the way to exceed socio-cultural or evolutionary conditioned perspectives.

Indeed, we philosophers and “free spirits” feel, when we hear the news that “the old god is dead,” as if a new dawn shone on us; our heart overflows with gratitude, amazement, premonitions, expectation. At long last the horizon appears free to us again, even if it should not be bright; at long last our ships may venture out again, venture out to face any danger; all the daring of the lover of knowledge is permitted again; the sea, our sea, lies open again; perhaps there has never yet been such an “open sea”. (Gay Science, 279)

The open sea metaphor originates with Francis Bacon. Its taking up is not accidental. The outset of the Scientific Revolution was a change in perspective, illustrated by the ship navigating into open sea. The dead of God is another change in perspective.

For all his anti-Christian rants, Nietzsche saw the seventeenth-century rethinking of Christian metaphysics through its end, in an age when the rules of the games prohibited science from adventuring on the ground of theology. He managed to do it while staying in the tide of history, by bringing prophetic language at his command. During the next century, his thought will enable a few intellectuals to untangle Christianity from its obsolete metaphysics.

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One of them was Paul Tillich. He saw the Christian origin of the concept of will as ultimate being in the writings of Augustine, Duns Scotus and Leibniz (Tillich, 26). According to Tillich, Nietzsche's will to power is "*neither will in psychological sense, nor power in sociological sense. It designates the self-affirmation of life, including self preservation and growth*" (ibid.). Tillich used the more sensitive *courage to be* within a framework intended to be scientifically contemporary and Christian at the same time.

Concluding the Erasmus-Luther controversy

Darwin's dilemma was implicit in the Erasmus-Luther controversy. Luther grounded his argument that only God had free will in the Creator/creature dichotomy. "*A cause and reason are assigned for the will of the creature, but not for the will of the Creator; unless you set up over him another Creator*" (Luther, 215). Consequently, man could possess free will only to the extent that he were his own creator. Moreover, as a part of nature, man cannot have any power that is extrinsic to nature. In order for man to be his creator, nature must have created itself too.

As we have already seen, Erasmus resorted to the Genesis blessing, "*be fruitful, and multiply*", as an argument that God had imparted to secondary causes the power to act and reproduce. Free will was based on God's act of imparting to nature his creative power.

For what is worth to our topic, the question whether nature and man were made by God or have made themselves is an issue that has defined Christianity since the inception of modernity. The theological concept has preceded scientific evolution by three centuries. Creationism should therefore be interpreted theologically.

It is not just misunderstanding of science that makes conservative Christians cling to a premodern worldview. Actually, the brain-power spent in futile attempts to build a

scientific model of short earth history, or to counter evolution, is truly impressive. The divide is theological. Conservative Christians have sided with Luther in the controversy on free will and have accordingly refused to pass the threshold of modernity. They are not done yet with the Religious Wars.

On the modern side of the theological divide, we may affirm (with full scientific support) that God has chosen evolution in order to allow us freedom. Yet freedom is not free, so that painful growth, struggle for existence, parasites and predation, are part of the cost. Infantile faith, with its vision of a place with unfading flowers and silly happiness, is a trade off. We give up freedom to spare its cost. Fiat creation and cultist eschatology are the two ends of a theology of defection.

Clinical studies suggest that disabling the amygdala leads to lack of self-control or impaired capacity to make decisions. What makes the difference is that amygdala has evolved long before consciousness. An experiment showing that patterns of brain activity predicting a decision were present few seconds before the subjects became aware of making a choice (Nature, 2011), has been quoted as an argument to trump the reality of free will. However, what the experiment showed was that the power to choose is rooted in our deeper instincts, rather than in the thin cortical shell where more recent and imperfectly evolved brain activities are located. The most advanced artificial intelligence performs in simple tasks much lesser than the insect brain. The difference between artificial intelligence

and bugs is that computers are made, while bugs have evolved. There's is no free will without evolution.

We do not possess a transcendental mind. Our psyche is part of nature. In a mechanistic universe, we would have no freedom at all, as Hobbes rightly inferred. The basis of freedom lies in the evolutionary fact that life is a game, and that this game has grown complex to the point of mathematical chaos. Remember Malcolm explaining chaos theory in Jurassic Park? "*Life will find a way*". Deep within each choice we make are condensed 3.5 billions years of innumerable instances when life found a way.

In order to understand the theology of this game, we will have to revisit the mathematics of Pascal's wager. On August 24, 1654, Blaise Pascal wrote a brief letter to his friend Pierre de Fermat. The topic was how to compute the probability of winning a game. The two had gambled in a cafe in Paris, but the game was interrupted by a call. They decided that the winner was that player who mathematically had the best chance to win the game. Yet how could one calculate chance? Pascal proposed that all they had to do was to divide the number of the equally probable combinations to the number of the possible outcomes of the game.

The letter set the basis for the probability theory in mathematics. It turned gambling into a science and, out of the gambling room, a science of assessing the future. In time, it will provide the tool to investigate non-linear events from weather to stock-market, and from quantum physics to risk-assessment.

To Pascal himself it was a way to rethink the ontological argument.

Probability mathematics opens the realm of chance to human scrutiny. On the same time, God himself becomes a matter of probability. Pascal's faith is calculated gambling. It goes like this: If one bets on God (call it faith if you like) and he does exist, one wins. If he does not exist, one has nothing to lose. If he exists and one does not bet on him, one loses everything.

Our purpose in this chapter is to rethink Pascal's wager in reverse. To consider God to be the player and man to be the bet.

Of course, this raises the question if God is a gambler. It seems that both the Bible and the book of nature support this view.

The Bible has a lot of instances where the will of God is accomplished by casting lots before God. The gentile seafarers who cast Jonah into the sea first consulted the gods by casting lots. The disciples "*gave forth their lots*" (Acts 1:26) to determine who would succeed Judas. Rain and weather, the outcome of war and business, everything that we know to be a matter of probabilities, is defined in the Bible as the way of God.

Theologically, St. Paul spoke of incarnation as a dangerous gamble for God. The Christ was born under "*the law*" (Gal 4:4) with all the risk involved. Those who find the word *gambling* inappropriate might consider that the only alternative is that of *faking* the risk.

From the angle of natural theology, it is a matter of fact that the universe is governed by probabilistic laws at both ends. At the bottom of things, quantum physics describes a nondetermined world. At the higher end of complexity, life is governed by the laws of mathematical chaos. Modern philosophers and theologians agree that the nondetermination of the universe is essential for the reality of free will.

The issue of freedom involves collateral questions. Did God resort to gambling like money-laundrymen do, to erase his fingerprints in creation? Atheism was made thus possible in order for faith to be intellectually uncompelled.

We are here because the universe hit the lucky numbers a couple of times. The first instance is the fine tuning of the fundamental forces. The second is the 1/1 million matter/antimatter asymmetry. The third is the asymmetric distribution of matter-energy. The fourth is the energy level of the carbon atom that makes carbon, the element of life, so abundant in the universe. The fifth is the apparition of life. The sixth is the evolution of life. The seventh is man.

Given the age and the size of the universe, all these are possible combinations. What is impossible is the game without a player. To push things further, if the universe is a vast casino, the protocol was set for the house to be the ultimate winner. The bet is man.

Man is the heresy of evolution. Our big brain is an expensive liability in the wild. It involves a waste of metabolic resources with little surviving benefit. It also

implies a trade off between digestive and brain tissue, that makes us dependent on cooking. Abstract thinking is conditioned by a large and complex brain, and that in turn involves a big skull. On the other hand, bipedal walking necessitates a narrow pelvis. Big skull plus narrow pelvis equals dangerous and painful birth. Human nature is counter-adaptive.

Darwin himself was aware of the paradox. He remarked that humans display the unparalleled ability “*to keep with an unchanged body in harmony with the changing universe*” (Darwin, *Descend*, 152). Natural selection, that checks the development of non-adaptive or harmful features in other species, is overruled by our ability to adjust the environment to our peculiarities.

A disproportionate cortex allows us to overwrite the behavioral script written in the mammalian DNA. This is why we are able of such gratuitous activities as art and science, or of sacrificing ourselves for causes having nothing to do with the selfish gene. On the other hand, we turned our big brain into an instrument of gambling with endogenous and exogenous chemicals. Reproduction was hijacked by sexual fantasy. We kill and die for sport.

Darwin knew that natural selection cannot explain such counter-adaptive features. He resolutely rejected Wallace supposition that the brain paradox was evidence of a “*higher power*” (Browne, 318), and credited sexual selection for its evolution. Yet biology is only part of the puzzle. Big brain considered, human nature remains hard to explain.

Man spent most of his evolutionary history crawling at the bottom of the food chain in Africa. His mind was shaped in fear. He awed the lion as a top predator and the main source of big kill to scavenge. During the day he looked up in fear to the sky whence predatory birds ambushed. During the night he shivered at every noise and feared the serpent sneaking into the arboreal refuge. And he crept in the submission position before the more powerful in the shrewdness.

The primeval terror can be traced in the religious symbolism of eagles, serpents and lions. Humans continue to feel watched by a terrifying eye in the sky. Darkness and the serpent are archetypal symbols of occult danger. The human primate still prays to his gods in the submission position imprinted in the mammalian DNA. This basic relationship to divinity as the alpha-male was further elaborated into symbolic castration, like circumcision, pious emasculation or asceticism.

About 40,000 years ago the scavenger moved suddenly to the top of the food chain in Eurasia. The Pleistocene man, also known as Cro-Magnon after the site of his first unearthing in 1868, makes his apparition fully modern, taller and larger-brained than we are, agile, creative, and endowed with artistic skills never to be surpassed by subsequent generations. Man evolved new techniques in hunting and shaping stones, and invented more sophisticated weapons that along with good coordination enabled him to take on the largest mammals. It is from the

same time that the first archaeological evidence of symbolic thought and artistic endeavors are preserved.

We don't know what triggered the Pleistocene revolution. Human nature is not the result of progressive accumulation of adaptive features. Everything we associate with being human emerged abruptly in the Pleistocene and we are still looking for clues as why such a thing like us exists in the universe.

Because it coincides with man's arrival in Eurasia, some people think that the impulse came from the man of Neanderthal through imitation or/and interbreeding. Changing weather patterns during the latest ice age might have also played an important role in the evolution of our behavior. Learning became more and more important than genetic memory. We do witness an increase in brain size during the Pleistocene among a few other mammals that traded genetic memory for learning by exploration and imitation. Yet they are far less dramatic than the human leap forward.

The single most important event generating the Pleistocene revolution was not part of biological evolution. It was the invention of symbolic thought. Our brain already had the biological capacity to do it for the last two hundred thousand years. The Neanderthal man had bigger brain. Yet it was the Pleistocene man that invented thought.

Every revolution creates its own art. The Pleistocene revolution has left its mark in enduring cave paintings of extinguished animals and mysterious abstract signs. "*For*

more than 800 generations artists have inherited the same concerns and the same techniques. It was by far the longest lived tradition known to humankind...” (Mithen, 148). This equals six times the span of civilization. Consequently, the Pleistocene revolution must have been the most defining event in shaping humanity. *“There’s a human nature... and the main contours of that nature emerged in Pleistocene”* (Guthrie, 12). Modern man is an alienated cave artist. So, who was the cave artist?

The blending of art and scientific observation reminds us of the Renaissance art. The difference consists in the fact that the Renaissance artist was interested in the study of human nature. The cave artist was interested in animal nature. Death and sex, hunting and cuddling, courtship and submission rituals, are observed and represented in strict detail.

Contrary to popular literature, many Paleolithic works do not seem to bear any obvious imprint of ritual and magic but, rather, express more casual and earthy themes... Forensic work with fossil handprints of the artists greatly changed the way I looked at this art: I found that all ages and both sexes were making art, not just senior male shamans. My main conclusion is that preserved Paleolithic art, unlike most “tribal art,” is a graphic expression whose articulation we can largely comprehend, and that the perspective of natural history offers an essential dimension to that appreciation; it is the code-breaker. “Paleolithic

artist-hunters were keen students of natural history —they had to be. Their art is not an obtusely symbolic language but something very deep and very dear”. (Guthier, VIII-IX)

The idea that the palaeolithic revolution was an adolescent phenomenon at its core rather than the creation of old shamans is essential in understanding what we really are. Adolescence, with all its unbounded life-force, scientific curiosity, adventuress, gratuitous risk, interest in nature, science, and sex, is what transpires in paleolithic art. We know all these from experience.

And what else was adolescence than the breaking point in our growth? It is the change in biological and social perspectives, that brings along the existential struggle manifest in artistic creation and naturalist interest.

One could point at Nietzsche’s unconsummated adolescence as the source of his preoccupation with the superman, but here lays the point. The Pleistocene man is not so much a leap in biological evolution as it is a leap in biological perspective. A second change, in social perspective, was the invention of civilization. And a third one, in ontological perspective, was the realization of God.

Nietzsche was right that the engine of this evolution was not the struggle for survival, just as the onset of adolescence is rather hindered than stimulated by a life at the edge of starvation. It is the will to conserve life, grow and expand, will as ontological reality that, according to Tillich, is where Christianity differed from classical

philosophy. It is God's attribute imparted to nature and man.

The scavenger returned about 20,000 ago after the revolution met its defeat by natural disasters and environmental poverty at the end of the ice-age. The new unpredictability of nature and scarcity of food generated a feeling of insecurity and determined man to cave into ancestral fears. It checked exploring curiosity that so often leads body and mind on dangerous grounds. It secured survival by the ancestral instinct of crawling and creeping. Man bowed in the mammalian submission position before the vast unknown.

Preoccupation with death replaced the naturalistic enthusiasm of the cave artist. In an unpredictable world, death is the realm of certainty. Closeness to the ancestors was reassuring. Man gave up the conquest of the universe to stay by the graves of his parents. The modern cult of patriotism comes from terra patris – the earth of the fathers – and is rooted in that early practice that chained the living to the skeletons of the dead.

The first cities were necropolis (Mithen, 569). Cave art was superseded by grave art, naturalism by abstraction, scientific curiosity by superstitious petition. It was the great negation of life in the dialectics of prehistory.

History began as a negation of the negation. The necropolis became urban-agricultural centers of collective production. The city created the citizen, the second great leap in human nature, this time shaped by social rather than natural forces.

Art returned to life, with an emphasis on the social rather than nature. Abstraction became writing, geometry and algebra, the new tools for conquering nature.

Yet civilization unleashed unprecedented new destructive forces. It is in his context that man first turned to God.

To make a brief point: if God had intended for man to be a worshiping puppet, fiat creation would have been the deal. Yet if God is after cosmic partnership, a painful history of tears, sweat and blood would be necessary. Wells' 'captain' of the adventure of man with 'tough love' for his soldiers is an attractive metaphor.

Christianity might have began as a religion of slaves, but it led trough a liberation and empowering much more radical than just removing the chains. It was a religion of the collective self, but not gregarious. Unfortunately, Christianity has become a religion of the slavish, eager to trade their freedom for eternal security. It reinvented God as a benevolent tyrant, and Christ as a sentimentalized redeemer. This is why the daring of asking and looking for true answers, has removed itself outside organized Christianity. The time is coming for the free spirits, for the courageous and the inquisitive, to claim their place in the church.

The commissar and the preacher

In 1961 Nikita Khrushchev made a notorious statement about the futility of heaven-talk in the space-age.

As to paradise, we have heard a lot about it from the priests. So we decided to find out for ourselves. First we sent up our explorer, Yuri Gagarin. He circled the globe and found nothing in outer space. It's pitch dark there, he said; no Garden of Eden, nothing like heaven. So we decided to send another. We sent Gherman Titov and told him to fly for a whole day. After all, Gagarin was up there only an hour and a half. So he might have missed paradise. We told him to take a good look. Well, he took off, came back and confirmed Gagarin's conclusion. He reported there was nothing there (Time, 1961).

Less than half a century later, Sheik Muszaphar flew to space from the same launchpad that had blasted Yuri. He became the first Muslim to observe the Ramadan on the International Space Station. The gates of the Paradise are said to be open during the holy feast. Yet unlike his predecessor, Muszaphar did not look for the Garden. He faced the earth as the default location of Mecca and said his prayers.

In the meanwhile, the Garden story was pulpit-read from the Moon orbit. Space technology has replaced bronze

swords in the oldest religious war. The proletariat that sent Yuri is turning disappointed eyes toward the heaven he found missing. Satellite communication is in the business of miraculous healing. Forty percent of the nation that went to the Moon believe that dinosaurs crossed paths with men. How was it that triumphant materialism gave way to religious fundamentalism?

The transition was natural. Flat materialism is a form of religious fundamentalism. They cohabit and dispute the same territory extraneous to the historical core of modernity. They are contingent upon the demise of metaphysical Christianity.

“You have of course read Dostoevsky? Do you see what a complicated thing is man’s soul?” When the Yugoslav partisan Milovan Djilas objected against Stalin’s acquiescence in Red Army’s rapes, the latter appealed to Dostoevsky. Stalin’s point was that one cannot expect a human being to remain rational under prolonged stress. Dostoevsky’s characters unmask the essential irrationality of human nature.

Dostoevsky went his own way through Gagarin’s experience. He broke in his youth the painted glass of the Orthodox Church to look into darkness. The iconoclastic act was followed by a finding out similar to Gagarin’s alleged *“pitch dark there; no Garden of Eden, nothing like heaven”*. Dostoevsky learned that man cannot stand the empty night of the universe alone. He needs to believe in the Garden, however irrational that would be.

This is why Stalin had the relics of Lenin laid at the center of national worship in Kremlin. The Soviet-Marxist experiment was essentially religious rather than materialistic in proper sense. Marxist hagiography and dogmatism, the quasi-liturgical mass choreography on red letter days, revolution-eschatology and great leaders worship, provide the most notable evidence. Even the socialist project was, according to Dostoevsky, a misguided search for the Paradise. The Vostok missions were indeed looking for a Garden. Their failure to find it was symbolic for the failure of the whole project.

Peculiar to such faith is the absence of transcendence. This is what the disappointed ex-Marxist Arthur Koestler reveals in his essay *The Yogi and the Commissar*. He explains that the commissar stands for the modern attempt to change the world without transcendental absolutes. He is worshiped as a hero, in the Hegelian sense of the individual who “reaches out over the world and dominates it”. The commissar becomes an object of faith, as the impersonation of the the dialectics of historical materialism.

It is critical for the commissar to sever history from any transcendence. He has to be an anti-meta-physician. The best example is Lenin as a philosopher. In 1908 he spent the entire year at the British Museum Library, writing a book against the physics of Ernst Mach. According to Lenin (306), Mach “denies the existence of an objective reality independent of our mind... (and holds an) idealist and agnostic theory of knowledge”. Mach was neither idealist nor agnostic (in sense of philosophical skepticism).

He was a new-positivist who had abandoned crude materialism for a sophisticated epistemology, in which physical phenomena are redefined at the intersection of objective events and mental activities.

So, what was wrong with this? Mach's materialism was too nuanced. All fundamentalism is contingent upon a world picture in black and white. The flat materialism of Marx encouraged blind faith. The elaborated inquiry of Mach elicited even more questions. The danger consists in the deconstruction of what is assumed. The instrument of absolute power is the inquisition, and the basis of any inquisition is an absolute statement of truth.

Lenin's suspicion against nuanced materialism is similar to the suspicion of fundamentalists against more nuanced theology. The common ground of religious fundamentalism and flat materialism is their disjunction from history. Marxism is an attempt to radicalize the modern project. Fundamentalism is the rejection of modernity. Yet both attitudes imply belief in definitive statements beyond historical perspective. It is an ideological requirement. Absolute statements constitute the foundation of absolute power. Fundamentalism is a power game.

A good example is the following complain against the teaching of evolution at a Christian conservative University:

Evolution should be taught at our denominational universities. But it should be taught as a competing and inimical worldview to the biblical worldview.

We need our young people to know what it is they are up against, yes, but when naturalistic evolution is taught as fact or as the preferred and normative worldview, then we can be sure that the enemy has breached our lines.

What strikes in this statement is not the rejection of science as such. This might be wrong but is hardly unexpected. Yet what one finds truly surprising is the militarization of language. Scientific debate is approached in terms of warfare. The dissenting scientist is brought to military court. Facts are discussed ideologically. It is the language of the commissar. Why should the preacher speak like the commissar? Because both have to defend a definitive worldview as the foundation of their power.

Religious fundamentalism is dependent on gaps in the knowledge of reality. It is within such gaps that modernity collapses back into the bronze-age worldview. Nature is restored to magic. Heaven itself is seen as the ultimate bronze-age enclave. God is imagined as an eastern monarch, court accessories, like crown, throne, and slavish entertainment, never missing. Life is reduced to pristine happiness: no tragic dilemma, no more conflicts, no intellectual struggle.

If history and the laws of nature are parenthetical, and genuine reality is mythological, how one lives should be defined by it. Back are the taboos, the fear, the ignorance and, above all, submission. The fundamentalist Church is a bronze-age enclave too. What defines primitive religion is absence of speculative thought. Religious leaders were

seers, not abstract thinkers. Faith was based on what the seer has seen or heard.

Gagarin was a seer. He was lifted up just like an apocalyptic prophet to see things and tell other people what he saw. Prophets, said Machiavelli, are agents of power. The Soviet seer returns from heaven and tells people that the worker's paradise is the only Garden in heaven and on earth. Then an American Evangelist comes along telling them that another prophet saw the Garden in heaven two thousand or may be one-hundred-fifty years ago. What is forbidden in both cases is the deconstruction of what has been seen or heard.

Moody's tract Heaven is a fit illustration of what might be labeled as materialistic in the fundamentalist representation of heaven:

There are some people who depend so much upon their reason that they reason away God... Scripture tells us very plainly that God has a dwelling-place. There is no doubt whatever about that. A place indicates personality. God's dwelling-place is in heaven. He has a dwelling-place, and we are going to be inmates of it. Therefore we shall see Him... We believe this is just as much a place and just as much a city as is New York, London or Paris (Moody, 61-64).

The heaven over which Khrushchev trumpeted his triumph was Moody's heaven. Of course, Moody would have not expected it to be found at orbital altitude. Yet the difference

was only in distance. Voyager might get there in a couple of trillions years and find nothing. Transcendence is absent in both cases.

Lion Feuchtwanger recounts the story of a Roman soldier who made a discovery similar to that attributed to Gagarin. When the Romans broke into the Jewish temple during the siege of Jerusalem, a legionnaire looked into the Most Holy. To his dismay, there was only a barren rock where the god of the Jews would have been. Yahweh was absent from his Temple. The soldiers were taken over by the frenzy of destruction and killing.

Science is a deconstruction of the temple of nature. The eye meets barren rocks where we have been taught to expect the supernatural. We have taken to pieces the puzzle of reality to put it back together. In this process we have come to reassemble man without soul, the mind without divine spark, the universe without architect, life without the breath of God.

Like the Jewish defenders of the temple, fundamentalism is fighting to keep science away from the last inner sanctum, some irreducible complexity, some missing link, some ultimate gap in the laws of nature. All along, stone after stone is removed, chamber after chamber is open to human scrutiny. *“There shall not be left here one stone upon another, that shall not be thrown down”* (Mat 24:2). Materialism is like the Roman soldier. It points at the barren rocks as evidence of the absent God. The fundamentalist hopes against hope that his God is hiding in the last inner sanctum.

There's yet another side of the story of the empty shrine. Feuchtwanger explains the astonishment of Romans by their inability to grasp the abstract nature of the Jewish God. Or rather the failure of the Jews to understand their God. Feuchtwanger, a cosmopolitan Jew who ranked Zionism along with Nazism, believed that the destruction of the temple was a historical chance for Judaism to reclaim its cosmopolitan core.

Is this history repeating itself within Christianity? In other words, did science find God missing because Christianity failed to grasp and communicate his true nature?

Fundamentalism and flat materialism are modern versions of Jewish zealotry and Roman paganism. One is fighting to defend the gaps where his god is hidden. The other gloats at their scrutiny.

Could this be our chance to find God?

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