

ВЕРА В РАЗУМ И ЕГО КУЛЬТ



Алексей Буров
У Андрея, 31 мая 2014

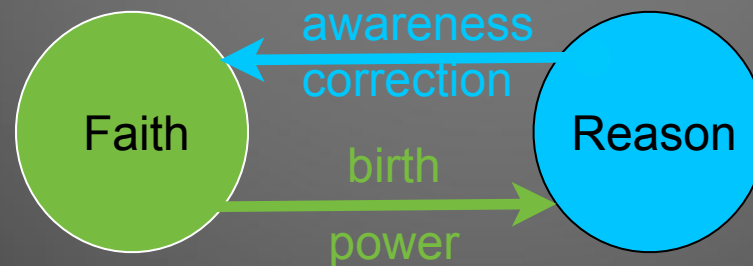
Вера фундаментальной науки



Faith and Reason

- Three approaches to the problem:
 - Reason => Faith ? (Platonism, Natural Theology, Scientific Atheism)
 - Reason || Faith (Complete separation)
 - Reason and faith are vital for each other. Einstein: Faith without reason is blind; reason without faith is lame.

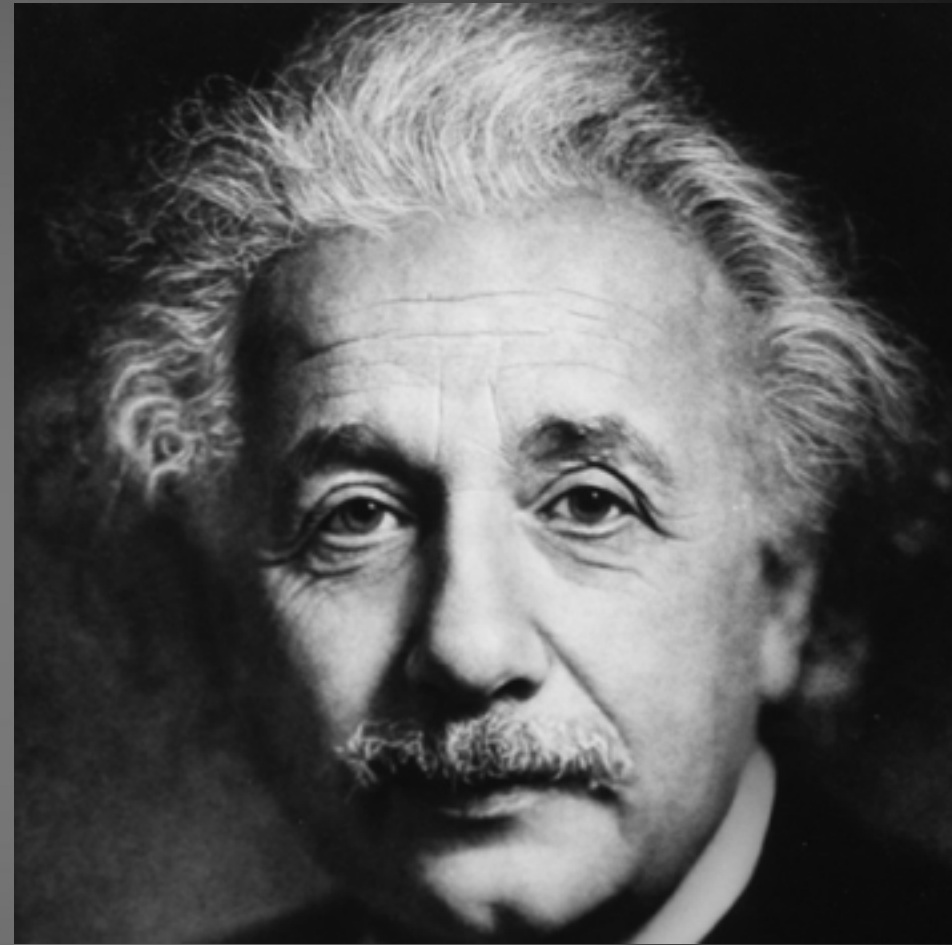
- Thus, according to Einstein, reason is empowered by faith, while faith has to be seen and tested by reason:



- Let's see how does it work for fundamental science. What faith empowered it? Is anything to be corrected in that faith?

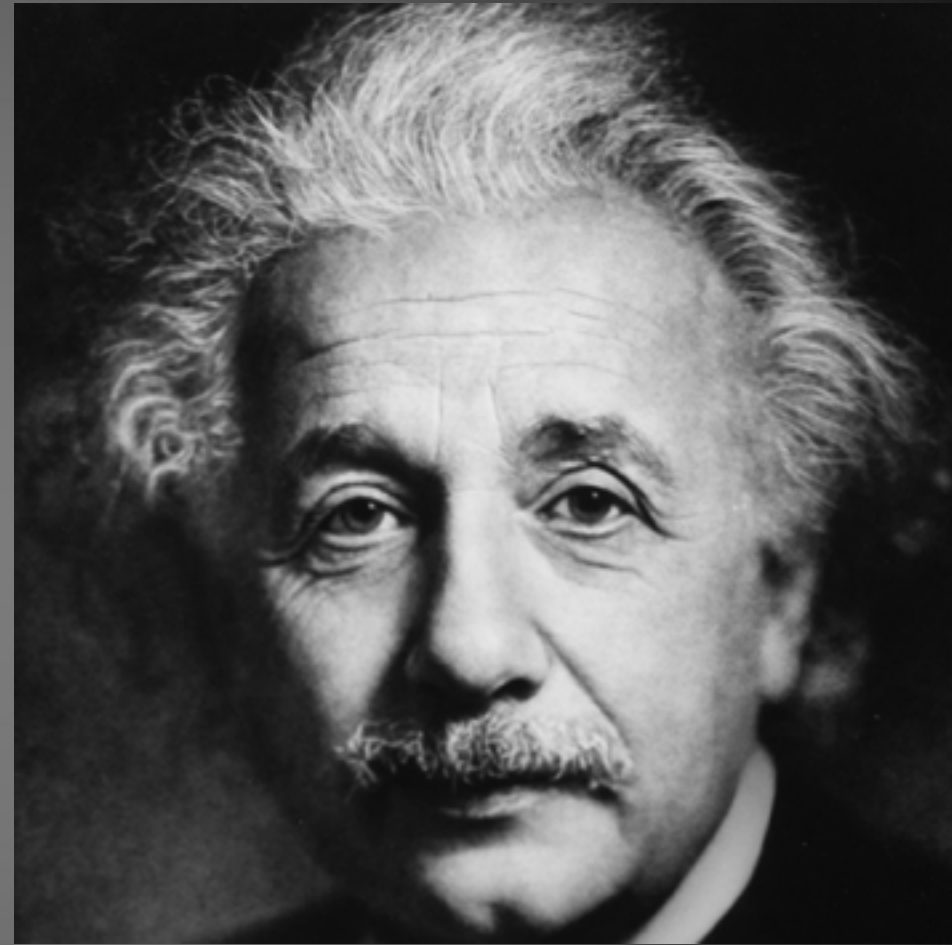
Cosmic Religious Feeling

“... я утверждаю, что космическое религиозное чувство является сильнейшей и благороднейшей из пружин научного исследования. Только те, кто сможет по достоинству оценить чудовищные усилия и, кроме того, самоотверженность, без которых не могла бы появиться ни одна научная работа, открывающая новые пути, сумеют понять, каким сильным должно быть чувство, способное само по себе вызвать к жизни работу, столь далекую от обычной практической жизни. Какой глубокой уверенностью в рациональном устройстве мира и какой жадной жаждой познания даже мельчайших отблесков рациональности, проявляющейся в этом мире, должны были обладать Кеплер и Ньютон, если она позволила им затратить многие годы упорного труда на распутывание основных принципов небесной механики!



Cosmic Religious Feeling

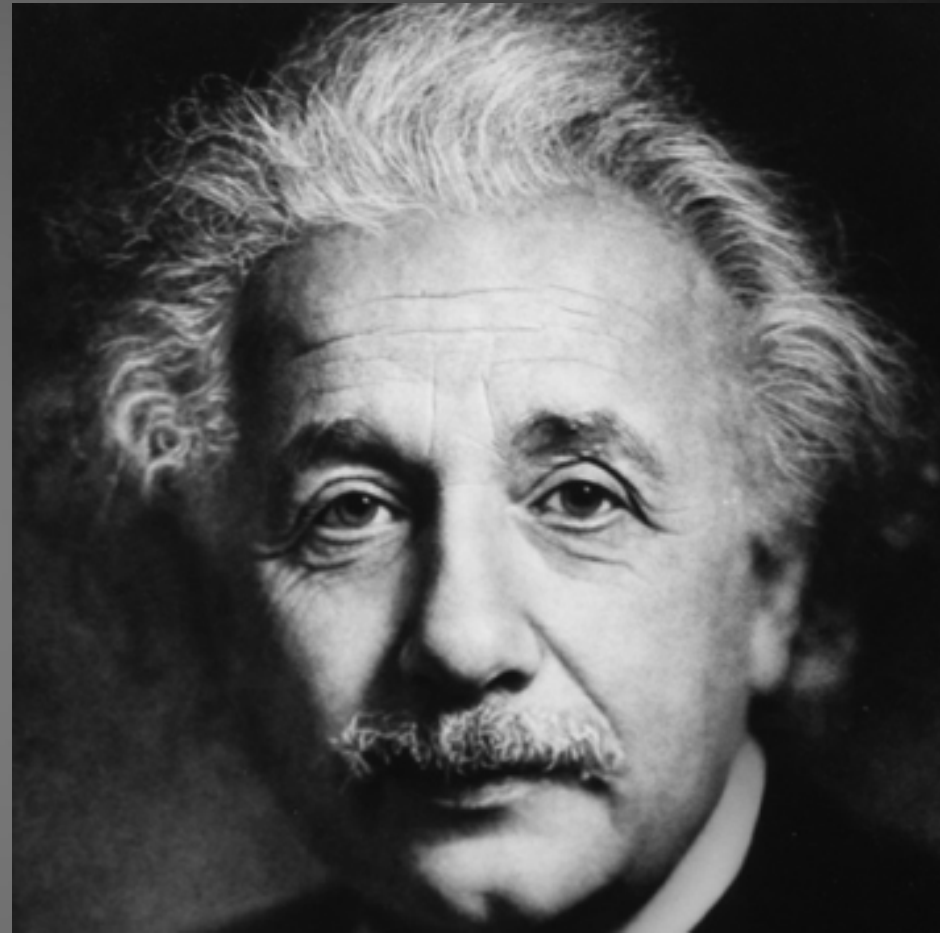
“I maintain that the cosmic religious feeling is the strongest and noblest motive for scientific research. Only those who realize the immense efforts and, above all, the devotion without which pioneer work in theoretical science cannot be achieved, are able to grasp the strength of the emotion out of which alone such work, remote as it is from the immediate realities of life, can issue. What a deep conviction of the rationality of the universe and what a yearning to understand, were it but a feeble reflection of the mind revealed in this world, Kepler and Newton must have had to enable them to spend years of solitary labor in disentangling the principles of celestial mechanics!



Cosmic Religious Feeling

Тем же, кто судит о научном исследовании главным образом по его результатам, нетрудно составить совершенно неверное представление о духовном мире людей, которые, находясь в скептически относящемся к ним окружении, сумели указать путь своим единомышленникам, рассеянным по всем землям и странам. Только тот, кто сам посвятил свою жизнь аналогичным целям, сумеет понять, что вдохновляет таких людей и дает им силы сохранять верность поставленной перед собой цели, несмотря на бесчисленные неудачи. Люди такого склада черпают силу в космическом религиозном чувстве. Один из наших современников сказал, и не без основания, что в наш материалистический век серьезными учеными могут быть только глубоко религиозные люди.”

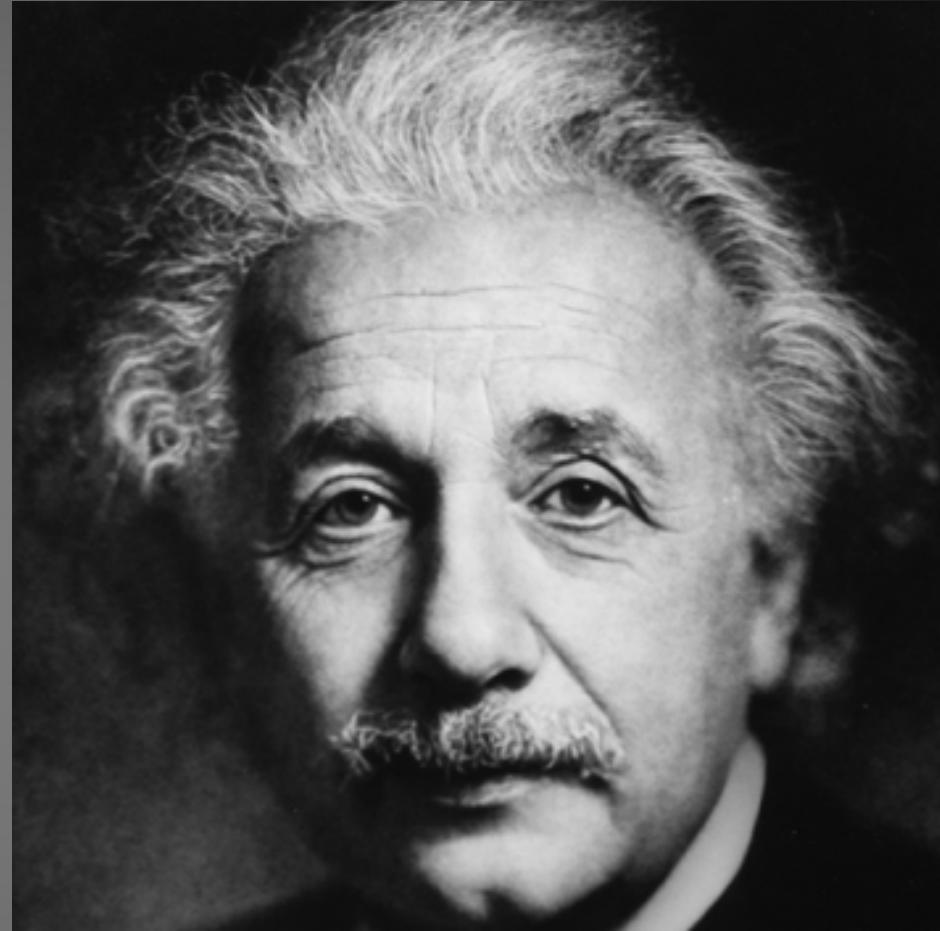
A. Einstein, *Religion and Science*, 1930.



Cosmic Religious Feeling

Those whose acquaintance with scientific research is derived chiefly from its practical results easily develop a completely false notion of the mentality of the men who, surrounded by a skeptical world, have shown the way to kindred spirits scattered wide through the world and through the centuries. Only one who has devoted his life to similar ends can have a vivid realization of what has inspired these men and given them the strength to remain true to their purpose in spite of countless failures. It is **cosmic religious feeling that gives a man such strength**. A contemporary has said, not unjustly, that in this materialistic age of ours the serious scientific workers are the only profoundly religious people.”

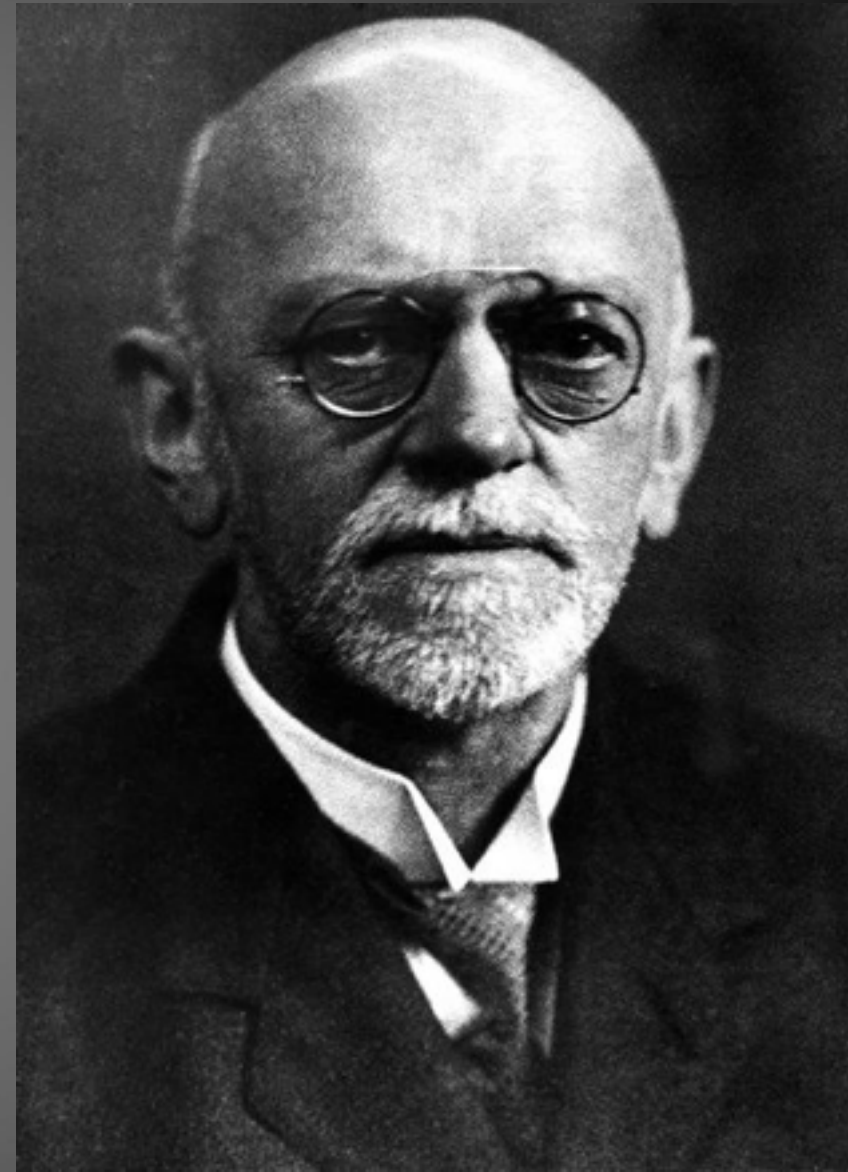
A. Einstein, *Religion and Science*, 1930.



Duty and Prophecy

We must know.
We will know.

D. Hilbert,
Retirement Address, 1930



Martyrdom

1633:

For his “Dialogue”, Inquisition sentenced Galileo to home arrest, continued until the end of his life, 9 years. All his writings were banned from publication. He lived in his villa in Arcetri, near Florence. Visiting Florence was strictly forbidden for him. He starts working on a book which became his main masterpiece: “Two New Sciences”.

1638:

His health was getting worse; he became completely blind. A permission to travel Florence for medical advises was given. Meanwhile, “Two New Sciences” was published in Holland. As a result, the permission to visit Florence was revoked just after a few months after it was given.

Until his death at 1642: Complete home arrest.

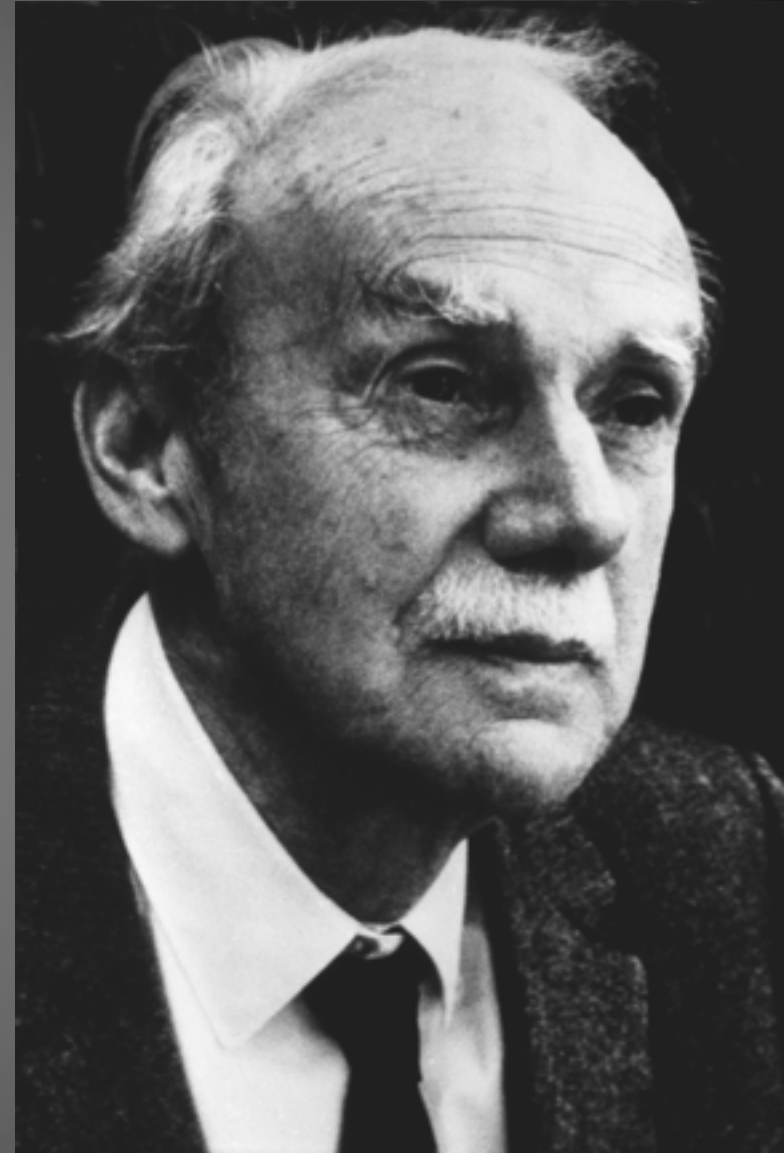


Galilei (1564-1642)

Mystic Experience

“If you are receptive and humble, mathematics will lead you by the hand. Again and again, when I have been at a loss how to proceed, I have just had to wait until I have felt the mathematics lead me by the hand. It has lead me along an unexpected path, a path where new vistas open up, a path leading to new territory, where one can set up a base of operations, from which one can survey the surroundings and plan future progress.”

P.A.M. Dirac, *unpublished note*, 1975.



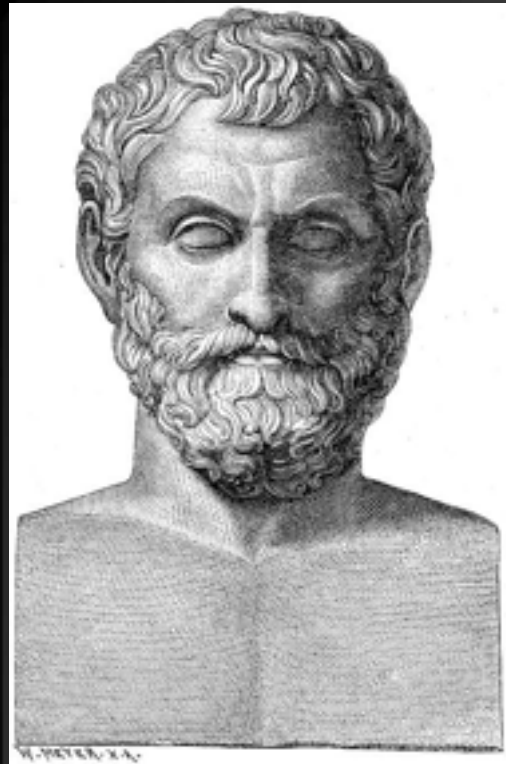
What is a Creed of this faith?

- **Fundamental Physics (FP)** is a long-term human enterprise; starting from **Pythagoras**, a father of theory, it is about **2500** years old.
- Fathers of science of various epochs expressed their faith. Let's hear them, try to understand them and see a source of their inspiration and power of their devotion.
- Let's think and try to formulate universal metaphysical premises of this faith.
- Thus, in our research of the scientific faith we will proceed both historically and logically.

Thales (c.624-546), Anaximander (c.610-546)

There is a unity of everything existing

Water



Apeiron (unbounded)

Pythagoras



Πυθαγόρας, c. 570-495

- Legendary figure. “The teacher said so”.
- *Stobaeus*: “Things that were alike and of the same kind had no need of **harmony**, but those that were unlike and not of the same kind and of unequal order – it was necessary for such things to have been locked together by harmony, if they are to be held together in an ordered universe.”

P. introduced: “Harmony”, “Cosmos” (ordered by harmony), “Theory” (theorein, contemplate), “philosophy”, “mathematics” (learning).

Theory as the way of salvation from the wheel of life.

A HISTORY OF WESTERN PHILOSOPHY



Bertrand Russell

Бертран Рассел о Пифагоре

Влияние геометрии на философию и научный метод было глубоким. Геометрия в таком виде, в каком она установилась у греков, отправляется от аксиом, которые являются самоочевидными (или полагаются таковыми), и через дедуктивные рассуждения приходит к теоремам, которые весьма далеки от самоочевидности...

Подобная точка зрения оказала влияние как на Платона и Канта, так и на многих других философов, стоявших между ними. Когда Декларация независимости говорит: "Мы утверждаем, что эти истины самоочевидны", – она следует образцу Евклида. Распространенная в XVIII веке, доктрина о естественных правах человека является поиском евклидовых аксиом в области политики... Форма ньютоновского произведения "Начала", несмотря на его общепризнанный эмпирический материал, целиком определяется влиянием Евклида. Теология в своих наиболее точных схоластических формах обязана своим стилем тому же источнику. Личная религия ведет свое начало от экстаза, теология – из математики; и то и другое можно найти у Пифагора.

Я полагаю, что математика является главным источником веры в вечную и точную истину, как и в сверхчувственный интеллигибельный мир... Мистические доктрины по поводу соотношения времени и вечности также получают поддержку от чистой математики, ибо математические объекты, например числа (если они вообще реальны), являются вечными и вневременными. А подобные вечные объекты могут в свою очередь быть истолкованы как мысли Бога.

PRINCIPIA MATHEMATICA

TO 1903

BY
ALFRED NORTH WHITEHEAD
AND
BERTRAND RUSSELL, F.R.S.

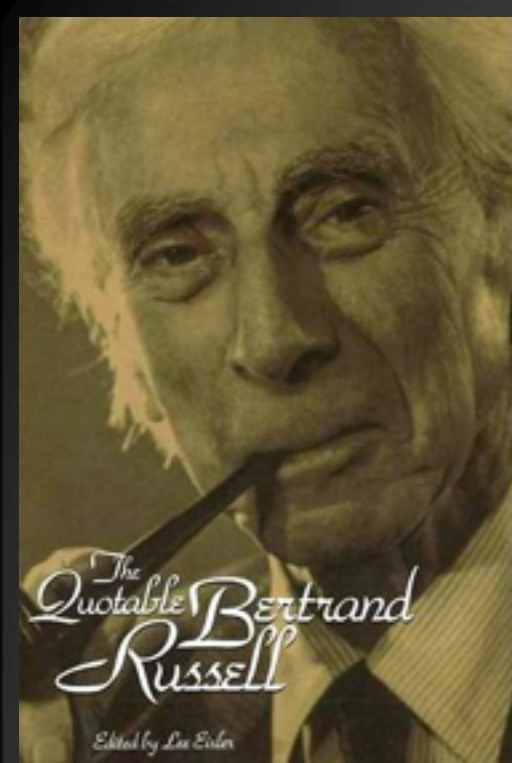


CAMBRIDGE
AT THE UNIVERSITY PRESS

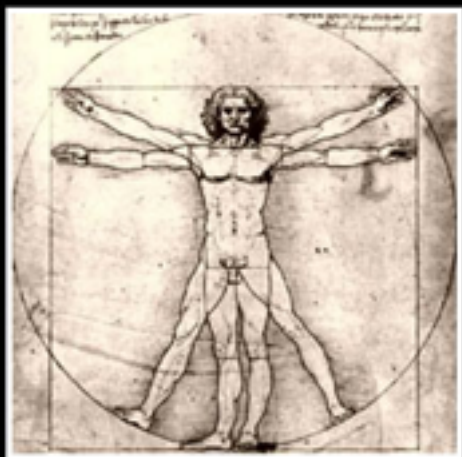
Бертран Рассел о Пифагоре

Начавшееся с Пифагора сочетание математики и теологии характерно для религиозной философии Греции, средневековья и Нового времени вплоть до Канта. До Пифагора орфизм был аналогичен азиатским мистическим религиям. Но для Платона, св. Августина, Фомы Аквинского, Декарта, Спинозы и Канта характерно тесное сочетание религии и рассуждения, морального вдохновения и логического восхищения тем, что является вневременным, – сочетание, которое начинается с Пифагора и которое отличает интеллектуализированную теологию Европы от более откровенного мистицизма Азии..

И я не знаю другого человека, который был бы столь влиятельным в области мышления, как Пифагор. Я говорю так потому, что кажущееся платонизмом оказывается при ближайшем анализе в сущности пифагореизмом. С Пифагора начинается вся концепция вечного мира, доступного интеллекту и недоступного чувствам. Если бы не он, то христиане не учили бы о Христе как о Слове; если бы не он, теологи не искали бы логических доказательств бытия Бога и бессмертия.



Why I am Not a Christian

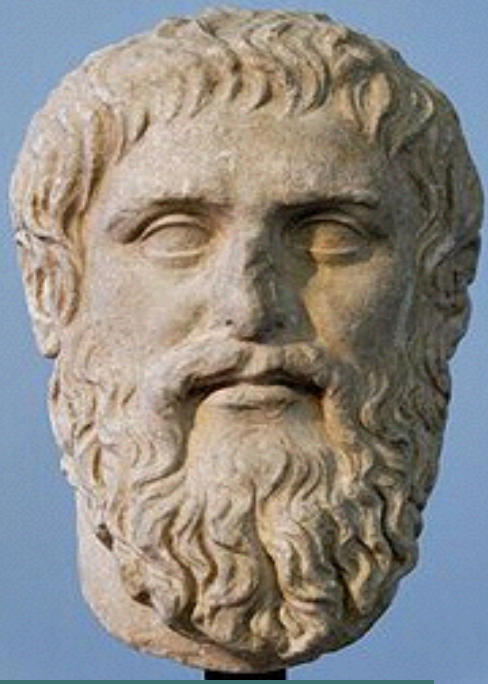


by Bertrand Russell

B. Russel on Pythagoras

The combination of mathematics and theology, which began with Pythagoras, characterized religious philosophy in Greece, in the Middle Ages, and in modern times down to Kant. Orphism before Pythagoras was analogous to Asiatic mystery religions. But in Plato, St Augustine, Thomas Aquinas, Descartes, Spinoza, and Leibniz there is an intimate blending of religion and reasoning, of moral aspiration with logical admiration of what is timeless, which comes from Pythagoras, and distinguishes the intellectualized theology of Europe from the more straightforward mysticism of Asia... I do not know of any other man who has been as influential as he was in the sphere of thought. I say this because what appears as Platonism is, when analysed, found to be in essence Pythagoreanism. The whole conception of an eternal world, revealed to the intellect but not to the senses, is derived from him. But for him, Christians would not have thought of Christ as the Word; but for him, theologians would not have sought logical proofs of God and immortality.

Plato, Euclid



Plato teachings on forms and salvation follow Pythagorean philosophy.

Platonic myth about creation of World and Man (“Timaeus”) is close to the Book of Genesis in several essential aspects:

- Monotheism
- Void as a substance of World
- Humans are created in God similarity

Πλάτων, 428-348

- **Euclidian** geometry had nothing to do with practical needs; it was neither motivated by them nor added a single practically important result to what was well-known already for centuries in Egypt and Babylon.
- The goal of **Euclid** was purely spiritual: to see the divine reality of **Logos/Harmony/forms**, hidden under a veil of phenomena.
- “Give him three obols and let go”



Εὐκλείδης, c. 300 BC
(Florence, Bell Tower, XIVc.)

Aristotle (384-322)

World=forms+matter

World is rational and purposeful, led by Mind (Nous) to Good

Human nous is an only part of the souls coming directly from God, not from parents; it is a specific human gift, turning humans to be similar to God.

Since the specific purpose for humans is to think, the best human life is a thinker, philosopher.

Platonism: religion, ethics and science

- **Albinus**, “Schoolbook on Platonic Philosophy”, c. 145 AD:
- “The soul, when it contemplates (*theorein*) the divine and the thoughts of the divine, is said to experience bliss, and this experience is called wisdom, which one could say is nothing else but **assimilation to the divine**.”

And later: “Geometry is also very valuable for knowledge of the **Good**, provided one does not study it for practical ends but uses it to ascend towards what always is, not wasting time with what comes to be and passes away.”
- Ancient fundamental science was contemplative (theoretical). It was assumed that there is a single reasonable way for things to be; hence, the philosopher is able to see truth by pure *theorein* - following contemplation of his divine soul.
- **Platonic science, ethics and religion combined a single entity.**

Summary on ancient rationalism

- The visible **world is underpinned** by perfect structure of divine Thought (Harmony, Logos, Forms), atemporal and absolute, as integer numbers. This is the true Being, thoughts of the absolute Mind (Nous).
- Everything nebulous and ambiguous is due to **non-being (me-on)**, or chaos, or matter or nothingness which enters as a “**second parent**” of the world, or “the receptacle, and as it were the nurse, of all Becoming” (Plato, “Timaeus”). The physical world is then a **fluctuating shadow**, or rough copy of the true being, the world of forms.
- Humans are divine souls/minds inside physical bodies. Thanks to our divinity, we are able to dis-cover the truth (**αλήθεια**) and to contemplate it (**theorein**), which is our destiny or the way of salvation.
- Platonism, mathematics and experiments.

Summary on ancient rationalism

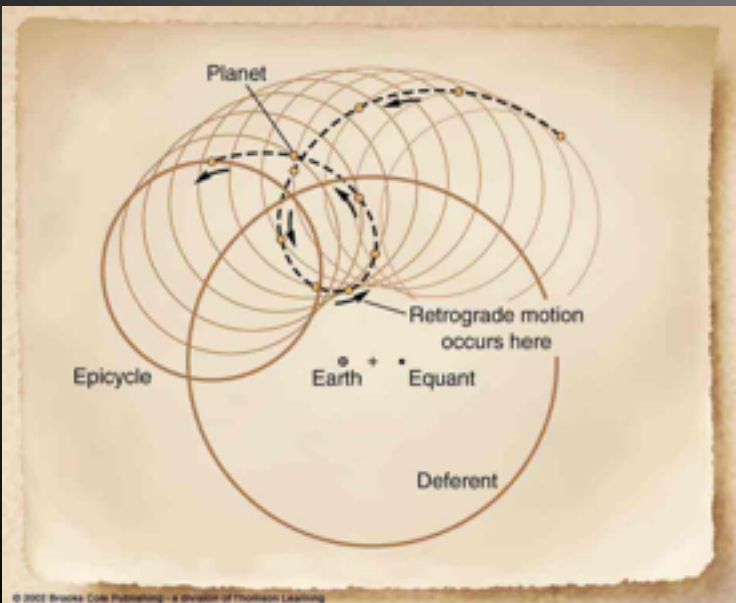
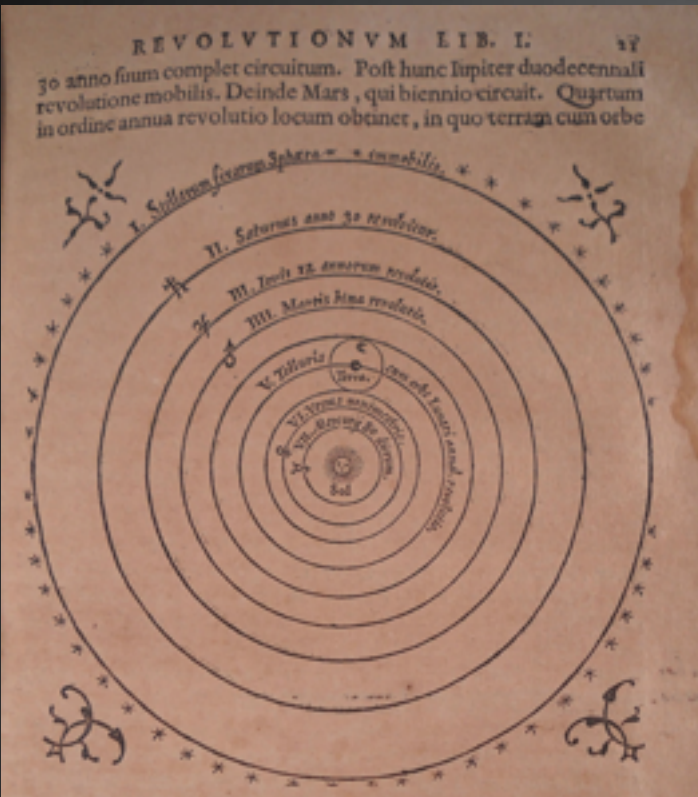
- Platonism, a cult of mathematics “Let no man ignorant of geometry enter here.” (engraved at the Academy door, also the epigraph of “On the Revolutions of the Celestial Spheres”).
- Aristoteles vs Plato: Does the world of forms exist by itself?
- Why greeks did not care about experiments?



Bible Cosmizm (Genesis, Job, Psalms)

- The world as a highest masterpiece: “...and God saw that it was good”. Thus, it deserves highest attention (compare with Platonism).
- God was free to make the world in one or another way. Thus, it's impossible to conclude about world from the pure reason only. To read the letters of God, one has to observe the world.
- Christianity accepted in itself the main currents of the ancient thought: Platonism, Aristotelianism, Stoicism, Cynicism, Skepticism... As to the fundamental science, it was inspired predominantly by Platonism with its greatest metaphysical revelation of the Cosmic Logos open to humans:
- Ἐν ἀρχῇ ἦν ὁ Λόγος, καὶ ὁ Λόγος ἦν πρὸς τὸν Θεόν, καὶ Θεὸς ἦν ὁ Λόγος.

Copernicus/Ptolemy = Euclid / Egyptians



For all **practical** purposes, Ptolemy model was good.

Copernicus rejected it on the **aesthetic** ground only.

Why the true theory must be beautiful?

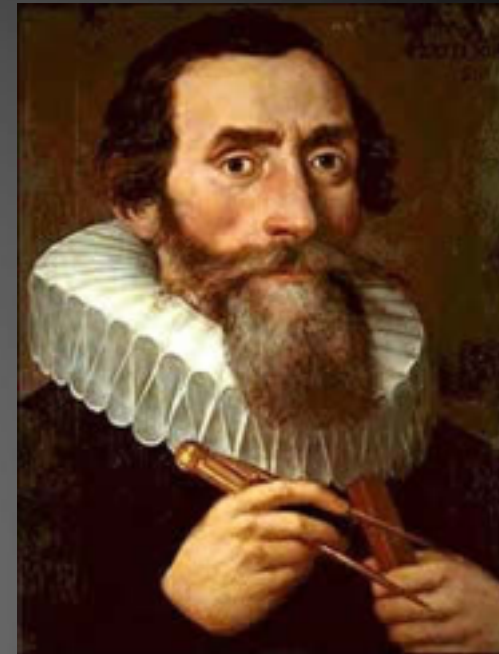
Because the Cosmic Logos is divine...

Copernicus shared this Pythagorean belief - but he failed to find this beauty...

Kepler, Newton

Johannes Kepler (1571-1630): “Геометрия вечно сияет в уме Бога. Это сияние передается и людям - ибо люди сотворены по образу Бога.”

“Меня охватывает невыразимый восторг от божественного созерцания небесной гармонии... Не имеет значения, пишу ли я книгу для настоящего или для будущего. Она может подождать своих читателей хоть и сотню лет; Господь шесть тысяч лет ждал наблюдателя.”



Isaac Newton (1643-1727) wrote more on Theology than on Physics.

“This most beautiful system of the sun, planets, and comets, could only proceed from the counsel and dominion of an intelligent and powerful Being... This Being governs all things, not as the soul of the world, but as Lord over all; and on account of his dominion he is wont to be called Lord God παντοκράτωρ, or Universal Ruler”



Kepler, Newton

Johannes Kepler (1571-1630): “Geometry is one and eternal shining in the mind of God. That share in it accorded to humans is one of the reasons that humanity is the image of God.”

“I feel carried away and possessed by an unutterable rapture over the divine spectacle of heavenly harmony... I write a book for the present time, or for posterity. It is all the same to me. It may wait a hundred years for its readers, as God has also waited six thousand years for an onlooker.”



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Galilei, Descartes

Galilei (1564-1642): Вселенная есть гигантская книга, написанная на языке математики. Незнающие этого языка подобны бредущим через пространство темного лабиринта.

Не думаю, что я обязан верить, что Бог, одаривший нас чувствами и разумом, хотел бы, чтобы мы пренебрегали ими, и получали каким-то иным путем то знание, которое мы можем добыть посредством разума и чувств.



For **Rene Descartes (1596-1650)**, trust in God was a precondition to trust our ability to see true reality:

“Наконец, если есть еще люди, которых и приведенные доводы не убедят в существовании Бога, то пусть знают что все другие вещи, в кои они, может быть, более верят, как-то: что они имеют тело, что есть звезды: земля и тому подобное – менее достоверны”



Galilei, Descartes

Galilei (1564-1642): Universe is a great book written in the mathematical language. Ignoramuses of this language wander in vain through a dark labyrinth.



“I do not feel obliged to believe that the same God who has endowed us with senses, reason, and intellect has intended us to forgo their use and by some other means to give us knowledge which we can attain by them.”

For **Rene Descartes (1596-1650)**, trust in God was a precondition to trust our ability to see true reality:

“Finally, if there be still persons who are not sufficiently persuaded of the existence of God and of the soul, by the reasons I have adduced, I am desirous that they should know that all the other propositions, of the truth of which they deem themselves perhaps more assured, as that we have a body, and that there exist stars and an earth, and such like, are less certain...”





Cartesian Circle

“Когда, к примеру, я представляю себе треугольник, то, хотя такой фигуры, быть может, нигде на свете, кроме как в моей мысли, не существует и никогда не существовало, все равно существует ее определенная природа, или сущность, или, наконец, неизменная и вечная форма, которая не вымышлена мною и не зависит от моего ума.”
(**Platonic World**)

These immutable eternal clear and distinctive (C&D) forms may come only from a perfect absolute mind, i.e. from God.

God, being perfect, does not deceive, so the C&D statements are true.

This is the “**Cartesian Circle**”.

Is it a logical fallacy?

What does it actually prove or express?



Cartesian Circle

“When I imagine a triangle, even though such a figure may exist nowhere in the world except in my thought, indeed may never have existed, there is nonetheless a certain nature or form, or particular essence, of this figure that is immutable and eternal, which I did not invent, and which in no way depends on my mind.” (Platonic World)

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- It was Spinoza who first clearly proclaimed religion of the totally ruling Substance – **impersonal Reason**, or Substance, – instead of personal God.
- His Substance was omnipotent and omnipresent, leading to total **determinism** and refutation of the free will.
- Ironically, his main book was called “**Ethics**”, but it was ethics which was actually negated by this book, as it is negated by any coherently deterministic worldview.



B. Spinoza (1632-1677)

He did not realize that **all the values lost their power** when the old God was killed and impersonal Substance was enthroned instead.

What forced him to do that?

What forced him to do that?

Spinoza at some moment of his life started to believe that there must be only one explanatory principle of the World. He saw that there were **two of them: Reason and Person**. Thus, one had to be sacrificed.

That is why divine personality was refuted by him. God was equated to the totality of ruling reason, sort of Cosmic Software.



Consequence :

"Ибо разум и воля, которые составляли бы сущность Бога, должны были бы быть совершенно отличны от нашего разума и нашей воли и могли бы иметь сходство только в названии, подобно тому, например, как сходны между собой Пес - небесный знак и пес - лающее животное"

What forced him to do that?

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Consequence:

"For the reason and will, which constitute God's essence, must differ by the breadth of all heaven from our reason and will, and have nothing in common with them except the name; as little, in fact, as the dog-star has in common with the dog, the barking animal."

