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Religion in Alexandre Kojève's atheistic philosophy of science

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Abstract

This paper focuses on Kojève's account of history and philosophy of science. Kojève's understanding of science can be characterized as internalism, which is evident in his holistic view of philosophy, theology, quantum physics, and the history of classical Newtonian mechanics. It precipitates the facilitation of a further inquiry into the Christian genesis, secular evolution, and subsequent de-Christianization of scientific thought. The paper includes a critical scrutiny of Kojève's philosophical tenets, followed by a comparative analysis of the views of Hegel, Koyré, and Kojève. The primary objective of this research is to juxtapose Kojève's doctrines with Hegel's contemplations on the history and philosophy of science. In addition to identifying affinities, notably the emphasis on the Christian concept of God's Incarnation for the advancement of science, I draw the distinctions between the positions of Hegel, Kojève, and Koyré, specifically concerning the valuation of mathematical knowledge.

Keywords Philosophy of science · Theology of physics · De-Christianization of science · Philosophy of mathematics · Neo-Hegelianism

The present study undertakes a historical–philosophical analysis of Alexandre Kojève's philosophy of science, contrasting it with previous teachings and the emergence of postpositivist perspectives. We examine how the progress of science corresponds to religious (ancient Olympian religion, Judaist, Christian, Islamic) and non-religious (Aristotelian, Cartesian, and certain forms of deism) faiths, according to Kojève's viewpoint.[1] Another significant aspect of scientific progress is the absence of belief in God, which can also be religious (Buddhist). In this study, I also question

[1] As noted by Annett Jubara, there is "The paradoxical anchoring of Kojève's philosophizing in the tradition of Russian religious philosophy" (Jubara 2023) in the fact that Kojève's straightforward atheism was always engaged in dialog with theism, as it was in the debates of Russian thought in the late-nineteenth and early-twentieth centuries.

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the heuristic value of such comparisons. An important aspect of this research is the elucidation of the connection between theology and mathematics in the genesis of Early Modern physics, according to Kojève's perspective. The criticism of Kojève's arguments on the history of mathematical physics available in the scientific literature will be analyzed, the critical arguments will be expanded, and the arguments will also be compared with other perspectives on the earlier Christian origins of modern science. However, for the most part, Kojève's positions will be compared with reflections on the development of natural sciences by Alexandre Koyré, Kojève's friend and senior mentor, another philosopher of Russian origin, who is primarily known as the author of influential works on the internalistic history of Early Modern physics, and Georg Hegel, the most important philosopher for Kojève.

Natural sciences: as much mathematics as there is Christ

Kojève first became engaged in the history and philosophy of physics in the Russian émigré circles of the late 1920s–1930s, with a focus on the distinction between Early Modern European natural science, quantum mechanics, and Einstein's physics. This period of Kojève's work is characterized by ideas preserved in still little-studied drafts like "Zum Problem einer diskreten 'Welt'" (1929) ("On the Problem of a Discrete 'World'") (Kojève 2023) and the still unpublished: "Aporii Zenona i ideya Kontinuuma, Zamechaniya k dokladu Kogbetlyantsa" ("Zeno's Aporia and the Idea of Continuum, Remarks on the Report of Kogbetliantz") (1930), "Vozrazheniya na doklad Kogbetlyantsa: Ideya beskonechnosti i tipy kultury" ("Objections to the Report of Kogbetliantz: The Idea of Infinity and Types of Culture") (1931),[2] "O naivnom, nauchnom i filosofskom realizme" ("On Naive, Scientific and Philosophical Realism") (1931), and several others. Some of them were presented in the form of oral presentations, which is now a problem for historians. This is due to the fact that only some of them were partially summarized in notes or have not remained even in fragments, as can be seen by reading the manuscripts (some exist only as a 1-page outline of the report) in the Kojève Archives in Paris.[3] Kojève's studies in physics and the ensuing discussions culminated in his dissertation "*L'idée du déterminisme dans la physique classique et dans la physique moderne*" ("The Idea of Determinism in Classical [meaning 'Newtonian' or 'Early Modern'] and Contemporary [meaning 'quantum'] Physics") (1932) (Kojève 1990). Kojève continued, omitting important issues such as the discreteness/continuity of the world and the problem of determinism,[4] some of his reflections many years later, reacting to the death of his friend,

[2] Kojève's last two reports were presented in response to the lectures of the renowned mathematician, geophysicist, engineer, and inventor Ervand George (Gevorgovich) Kogbetliantz following the sessions of the "Russian Society of Philosophy of Science" chaired by Dimitri Pavlovitch Riabouchinsky.

[3] "Fonds Alexandre Kojève" at BNF (Paris): https://archivesetmanuscrits.bnf.fr/ark:/12148/cc588221/ca106.

[4] Numerous biographical details about how Kojève was fascinated by physics, mathematics, and the philosophical interpretation of their foundations can be found in Kojève's biography (Filoni 2010, pp. 194–197). His position in the debate over the problem of determinism has also been discussed previously. See: Ibid., pp. 198–210, Geroulanos 2010, pp. 59–66, Geroulanos 2011.

Alexandre Koyré, with the article "*L'origine chretienne de la science moderne*" (Kojève 1964) ("The Christian Origin of Modern Science," transl: (Kojève 1984)).

To introduce Kojève's position on the genesis of the Modern physics for analysis and to criticism, we begin with a brief synopsis. Kojève's thesis could be summarized as follows: mathematical physics is based upon the Christological idea of the actual embodiment of the infinite *a priori* (thinkable, eternal, and perfect by definition) in the finite *a posteriori* (perceptible, created, temporal, imperfect) as in a single person—"without confusion, without change, without division, without separation" (Chalcedonian Creed, 451 A.D.). This concept, except for in Christianity, is nonsensical from the perspective of ancient cultures, all religions, and common sense (1 Cor: 1: 23). It expresses the idea of God's incorporation not as an imitation but as an actual human being, thus, the "celestial" science of mathematics can and should be found in "earthly" physics.

Kojève's argumentation, as summarized in his last article on the subject (Kojève 1964)/(Kojève 1984), is as follows:

- There has been scientific and technological progress, the fruits of which have surrounded people for the last several centuries. It employs mathematized or mathematical experimental physics and related natural sciences as its basis (Kojève 1984, p. 22).
- Mathematical experimental physics is the result of the work of philosophers and physicists of the Early Modern period in Europe. Beginning with the discoveries of Copernicus and Kepler to the development of inductive scientific methodology by F. Bacon, from Galileo's thought experiments and the analytical geometry of Descartes to Newtonian mechanics and the gold standard of applying mathematical analysis to model building in all empirical research.
- The prehistory of modern science begins with Aristotle and the elaboration of his thoughts during the Hellenistic period. The myth of the progressive development of science was suspended by barbarian invasions, and Christian dogmatism had been propagated by the European thinkers of the Renaissance and the Enlightenment. The nineteenth century continued this trend in its interpretation of the history of science via positivism. Even if positivist views were true, it is also true that the scientific heritage of Ancient Greece and Rome was not exclusive only to an Italian (Tuscan), French- or Englishman of the time (Kojève 1984, p. 23). Kojève's point is that we need another answer about the genesis of modern European science other than the one provided by its originators, according to which Antiquity was followed by the Christian Dark Ages and science needed to return to its ancient origins.
- Scientific development requires or presupposes the general development of intellectual culture as well as institutions of intellectual activity. Europe was not much different from other regions of the planet, neither in that it had a known cultural unity (primarily based on religion), nor in that there was diversity within the unity (Greek and Roman heritage, the variety of Germanic peoples, Slavic, Celtic, Hungarian, Hebrew, Muslim, and other components). European civilization also lacked cultural wealth in comparison to Mesopotamia or, for instance, Central Asia, India, and China. Institutionalized intellectual labor was represented in many places outside of Europe in the form of libraries, monasteries, schools, court sages, etc. (Kojève 1984, pp. 22–23)

- In the absence of solid socioeconomic or political explanations, European thinkers often resorted to racist arguments, and enforced them with metaphysical and historiosophical arguments. However, Kojève does not make this argument, either directly or indirectly. This must also be taken into account when considering his argumentation.
- Along with relatively average conditions for the emergence of science, Europe was distinct. It had been Christianized for a thousand years, with the significant majority of the population taking religious dogmas for granted since childhood. Other regions of the planet either had been Christian for a shorter time or Christianity did not dominate intellectual culture.
- Nevertheless, Christianity does not contain any specific discoveries by itself, nor does it stimulate scientific work more than other religions. Contemporary European science contradicts Christian cosmology no less than that of Judaism, Islam, Hinduism, or Buddhism. Therefore, considering Christianity as a whole as the reason for the justification of the emergence of science is untenable. A specific distinctive feature of Christianity as a grounding figure for science must be found (Kojève 1984, p. 24).
- In spite of existing common traits found among all religions in general and the Abrahamic faiths in particular, each movement has a characteristic peculiarity. Christianity, specifically, is distinguished as having the belief in the Incarnation of God in the One Person of Jesus Christ, encompassing human and divine natures. Other doctrines cannot be compared to Christology in this aspect as they only mention avatars or divine creatures morphing, which are rather imitational or behavioral and not substantional (Kojève 1984, p. 26). Christianity specifically posits the combination of two natures without diminishing either one of them. God's embodiment in the human nature corresponds with deification of said nature, at least as a potential. Therefore, the Sky, Celestial, or Heavenly world descended to Earth, and Earth ascended to Heaven.
- The above-mentioned Christian idea of human and divine unity made possible overcoming the fundamental epistemological gap in knowledge of celestial mechanics and earthly physics. The Christian scientific representation of the former were primarily based upon Pythagorean mathematics. It, in addition to other ancient knowledge of the heavens, found application in the calculation of holy dates in Islam, Judaism, and the Christian Middle Ages. The knowledge of the Earth was in turn based on Aristotelian physics, which successfully developed in different regions of the planet.
- In the present, the premodern, "divine" science of mathematics, by analogy drawn from Christian dogma, descended into the earthly physical world and turned out to be applicable to it. Physics has become mathematical, and earthly physics has ascended to the point where before everything seemed completely different. However, now, physics has a place in the heavens, and scientists know that physical laws are the same everywhere, and celestial bodies exist just like stones or gases on Earth. Astronomical objects have become homogeneous with terrestrial ones. Supralunar mathematics and sublunary physics found combination in the Early Modern time, providing radical advancement in science and technology.

Kojève's arguments briefly listed above are open to criticism. Steven Louis Goldman provided a certain critical view on this position, calling Kojève's view "sociological modelling" (Goldman 1975). According to his research:

- The significance of the mathematization of natural science has been overstated, because the application of mathematics to physics could have happened without physical objects being interpreted as inherently mathematical. The thought of the mathematization of physics without the mathematization of nature predates modern science by a long time. Its origins can be traced in the works of Roger Bacon in the mid-thirteenth century with even earlier roots stretching to the prior century. Specifically, the more exploratory approach to nature follows the twelfth century's change in the Catholic Church's attitude towards nature from detached and contemptuous to viewing it as the result of the Creator's good will.
- The priority of early modern thinkers in the thesis about the universality of the laws of science in outer space and on Earth is postulated rather than proven by Kojève.
- The argument of Kojève, according to which there is a link between the deification of human nature and the nature's "ascension to Heaven" as a whole, which was allegedly necessary for the formation of modern science, as well as the idea that the mathematization of physics followed from a view of the sameness of the nature of Heaven and Earth, both of which are based on analogy, is problematic. The idea of quantitative (mathematical) precision does not necessarily follow from the idea of qualitative (divine) perfection, even if one assumes that the Christian dogma of the Incarnation entails the (latent) perfection of nature, which is also doubtful.
- The fundamental unthinkability of precision in nature for representatives of non-Christian cultures, until this precision was proven to them by European scientists experimentally, was not fully proven by Kojève.

Despite his skeptical approach to periodization, Goldman's remarks do not negate the Christian origins of science. As a result, they are comparable to Pierre Duhem's thesis on the medieval Catholic roots in the emergence of modern science, which is based on the works of fourteenth-century Parisian nominalists. For instance, the concept of "impetus," introduced by them, was made possible by an even earlier decision: on March 7, 1277, the Bishop of Paris, Étienne Tempier, officially condemned and prohibited 219 positions of medieval peripatetics from further development. This condemnation opened the possibility for the development of other theses and paved the way for further intellectual pursuits, including the work of William of Ockham, Jean Buridan, and others. P. Duhem's positions were criticized by Alexandre Koyré.[5] He argues that Duhem overestimated the role of the Condemnation, since first, the text of the document itself demonstrates a lack of understanding on the part of the Bishop of Paris of what he forbids, and therefore it cannot be said that the wise church promoted the development of science. Secondly, discussions about emptiness and infinity in Christian scholasticism would still have arisen, for which Aristotle's "Physics" would only have helped in this, as well as Greek and Arabic commentaries. Thirdly, the condemnation of the thirteenth century, even after 100 years, did not lead to the appearance of Copernicus, Kepler, Galileo, and Newton, and therefore did not inspire either active thinkers or the next few generations to new physics.

[5] "Le vide et l'espace infini au XIV-e siècle" (Koyré 1971a, pp. 37–92). See also: Drozdova 2012.

Influenced by Koyre's dispute with Duhem, further criticism of Kojeve's argumentation should also be added, noting that:

- When Kojève's periodization is taken into account, deistic rational theology appears to be no less important for science since at least the seventeenth century, not necessarily Christianity with its mysteries and dogmas.
- The thesis on the decisive role of the Incarnation appears to have been chosen arbitrarily and lacks the necessary evidence for proof.
- From a non-Christian perspective, the fundamental difference between the Christian Incarnation and the concept of the Avatar or the epiphanies of Greek gods may appear contrived or asserted.
- It is unclear what is discerned via the establishment of Christianity in culture, as well as how much time is required to make religion a suitable basis for scientific thought, in other words, why exactly it happened in the twelfth or seventeenth, rather than in the fourth century.
- If prolonged Christian dominance, deep institutionalization of intellectual labor, and mastery of ancient science were required as a foundation for further scientific development, then Constantinople until the fifteenth century should have been a perfect place.

This is a summation of concerns about Kojève's position, and by staying within the boundaries of Kojève's texts, it is possible to regard his conception of the Christian origins of science as novel. Continuing the analysis therefore requires examining the arguments and criticisms uncovered in a broader historical–philosophical context.

Koyré's influence

As a philosopher of science, Kojève should be classified as an adherent of internalist antipositivism.[6] However, Koyré also belonged to this tendency,[7] and Kojève largely followed him. Kojève's above-mentioned position in his article "L'origine chrétienne de la science moderne" ("The Christian Origin of Modern Science") (Kojève 1964) were linked with Koyré's philosophy of science, both as a direct dedication and in its contents. They were influenced by "*Études galiléennes*" ("Galileo Studies") (1939—1 ed.) (Koyré 1966), "*Du monde de l'* '*à peu près*' *à l'univers de la précision*" ("From the World of the Approximate to the Universe of the Precision (or the Exact)") (1948—1 ed.) (Koyré 1971a, pp. 341–362), and "*Du monde clos à l'Univers infini*" ("From the Closed World to the Infinite Universe") (1957) (Koyré 1973). Kojève's 1964 theses continue the reflections previously found in Koyré's work. His significant influence in Kojève's texts can be discerned in Koyré's works dating from as early as the 1920s. Koyré, being older, at the time engaged in studying the philosophy of science and mathematics (Condé 2018) and the relations between the Early

[6] These concepts are used in the sense of an established tradition in the philosophy of science (Fuller 2000). At the same time, the term "antipositivism" is used to refer to the criticism of these thinkers' ideas about the progressive cumulative progress of science and about the contradiction between science and other forms of intellectual activity, such as religion or art.

[7] The classification of Koyré's philosophical stance remains a subject for debate. See: Stump 2001, p. 243.

Modern philosophy and Christianity, simultaneously studying Medieval and Renaissance thought, mysticism, and cults. Koyré regarded the thought of any theologian, alchemist, and natural scientist as equally valuable.[8]

According to Koyré, intellectual activity of any sort presupposed a certain ontological or metaphysical convention[9] that would undergo a relatively successful development. The Christological thesis outlined earlier cannot be found directly in Kojève's works from the 1920s and 1930s, but its implications can be traced indirectly in his reflections on infinity and the perfect orderliness of the world. However, Koyré's "From the Closed World to the Infinite Universe" states that the idea of the Incarnation as a dogma is absent despite Koyré's metaphoric mention of it. He also states that for the thinkers of the Early Modern era the world is arranged by the perfect mathematical laws, considering the arguments for and against the infinity of the Universe. This continues his "Galileo Studies."

Kojève inherited Koyré's central focus on mathematical natural science, the geometrization of physical space, and the double-breaking of the Aristotelian Cosmos, outside and inside. The Universe no longer has boundaries that render it finite, and its internal structure is not heterogeneous or hierarchical. However, the proposition that the genesis of the new science arose specifically from the application of the dogma of the Incarnation as a metaphor for mathematical physics can be tentatively attributed to Kojève.[10] The tentativeness of attributing to Kojève the idea of the origin of mathematical physics from the dogma of Incarnation resides in the fact that both Koyré and Kojève represented Neo-Hegelianism, with their methodology profoundly rooted in Hegelian philosophy.

Hegel without denigrating mathematics

To understand both the origin of Kojève's position and to clarify its nuances, it can be compared with the theses mentioned previously on how Hegel regarded the causes, development, and limitations of the science of Copernicus, Kepler, Galileo, and Newton. It should also be noted that these parallels correspond with the previously listed questionable aspects of Kojève's argumentation.

The approach taken by Kojève and Koyré to assess the values of religious dogma via its development into philosophy and science was similar to that of Hegel. The connection between Koyré and Kojève is most evident in their assessment of religious dogmas based on their potential to be turned into philosophy and science or their enrichment. Religious doctrines that have undergone such transformation do not cease to exist but rather retain their value as historical artifacts, cultural heritage, and elements of private religious life. These positions are reminiscent of Hegel. He also

[8] It is enough to compare Koyré's works listed above with his essays, written between 1922 and 1933. See: Koyré 1971b.

[9] Koyré A. De l'influence des conceptions philosophiques sur l'évolution des théories scientifiques (Koyré 1971a, pp. 231–246).

[10] There is even evidence of a dispute between Koyré and Kojève over the contention for priority in revealing the Christian roots of Modern European science (Rosen 2000, p. 208). Presumably, the debate was not over this general thesis, shared by both Hegel and Duhem, but about an interpretation specific to Kojève and Koyré.

regarded the intuitive overlaps (Hegel 2010a, p. 133) between mystical revelations of faith in theology and the truths of speculative reason in philosophy to be inevitable, if not required. As a result of this overlap, philosophical ideas do not become religious, and revelations do not become fundamental or defining for philosophy. Regardless of the form or time period of the expressed idea, its truthfulness can be defined by its philosophical value as well as by the place it takes in the philosophical system of the immanent understanding of truth (Hegel 2018, pp. 5–7, 15, 50–53) (Hegel 2010a, pp. 9, 43).

The matter to be more precisely focused on, however, is the parallel with Hegel's beliefs, particularly those addressing the origins of a new science.[11] For Hegel's philosophical system, abrupt transitions are inappropriate. A defining feature of his philosophy is the emphasis on the gradual emergence and evolution of new spiritual forms (*Gestalten*), historical epochs, and stages of individual development. Each of the concepts mentioned earlier is deeply rooted in others as moments in the process of development of *Geist*. The rapid development of science which, by the time of Hegel's life, was recognized and widely discussed, also had to find its origin in something preceding it. Hegel believed this to be Christianity. Following Hegel's narrative of the initial manifestation of the concept of science as substance and subsequently as subject, Christian dogmatics in the history of science can be understood as a representation of the principle of science, which, after being represented, must then be comprehended. This posed a question of novelty before Hegel: what exactly in dogmatics can claim originality, that is to become a principle both of Christianity as a religion and of science. He identified this principle with the Christian idea of the incarnate God, which significantly differed from the preceding diverse pagan traditions that endowed gods with human vices while they only temporarily embraced the appearance of humans but did not become them (Hegel 1995, p. 4). This stance aligns with Kojève's position entirely.

According to Hegel, Antiquity and the Middle Ages remained in the shadow of the pagan past due to the slow and inconsistent Spirit (*Geist*) at that time (Hegel 1995, pp. 1–2). Representatives of these eras shared specific presuppositions incompatible with the cognitive practices required for the discoveries of the Early Modern era (Hegel 1995, p. 8). These misconceptions, according to Hegel, were dispelled by Christianity. The misconceptions include: the contradiction between thought and matter, the inconceivability of infinite subjectivity and its immeasurable worth, and absolute freedom. Despite the involvement of Christian norms and principles at the levels of individual life, legal structure, and, to a certain extent aesthetics in the Middle Ages, the inherent life of the Spirit, philosophy, and natural sciences remained ensconced in a pagan *paradigm*. The above-mentioned forms of the objective and universal Spirit were thus adapted by Christians to fit various dogmatic frames of the dominant Christian religion in Europe, manifesting as external representations. On a religious level, Christianity's self-revelation occurred with the Reformation, and this was an essential step after which the truth could be articulated in its own form. This

[11] The "Philosophy of Nature" will also be referenced, albeit in a limited form. This is due to the fact that the second volume of the *Encyclopedia of the Philosophical Sciences* was directly deemed by Koyré to be a profound misconception that has lost its relevance, a view that Kojève subsequently endorsed.

was not the form of art or religion, but rather such of philosophy. Thus, Hegel inherited the Renaissance–Modernist negative "Black Legend" about the Middle Ages, augmenting it with the positive tenets of the Reformation.

Hegel maintained that the principles of Christian faith reached the pinnacle of their spiritual activity in the Early Modern era. Preceding this, religious postulates had been embedding in individual, legal, and cultural spheres for over a millennium. In the minds of certain philosophers, beginning with Descartes, and then rapidly (Hegel 1995, pp. 158–159) spreading to the majority of the educated populace, the foundational principles of Christianity overcame the above-mentioned prejudices (Hegel 1995, pp. 165–166): "with Descartes the culture of modern times, the thought of modern Philosophy, really begins to appear, after a long and tedious journey on the way which has led so far" (Hegel 1995, p. 217). Conforming to Hegel's assertions, the Christian foundation for the principles of science developed by Descartes, and its expression in the debate between rationalism and empiricism, traces a singular developmental trajectory shared by both natural science and philosophy. Only after Fichte (Hegel 1995, p. 248) does philosophy distinguish itself as "speculative cognition," diverging from what was merely "scientific"—which simultaneously implied "not entirely scientific."

Concurrently, Descartes crafted an "a philosophy which is, properly speaking, independent, which knows that it comes forth from reason as independent, and that self-consciousness is an essential moment in the truth" (Hegel 1995, 217). This spiritual movement, per Hegel, enabled the liberated intellect to turn to the Earth: "a long time was needed to introduce clarity into the dullness and confusion lying in the meaning of things in this world, a kind of clarity which only heavenly things used to have; a long time was needed both to draw attention to the present as such, an attention that was called experience, and to make it interesting and to make it matter" (Hegel 2018, p. 7).

Thus, Hegel discerned the triumph of Christianity on every stage of scientific development—rationalism and empiricism alike were both, in his view, integrated into the New Testament mythos. Empiricism too was regarded as being inspired by the Gospel. In its negative or skeptical manifestation (Hegel 2018, p. 122), empiricism is a reflection of the freedom of self-consciousness, which underwent an internal dissociation, transitioning from the "Unhappy Consciousness" to an awareness of its imperfect existence and its transcendent truth or essence. However, together with the notion of the grave of Jesus, consciousness discerned that finite singularity is not a mere transient and deceptive shadow, but rather a singularity that concretely, and not abstractly, encompasses both the singular and the universal as integral moments of a whole. The grave of Jesus prompts consciousness to contemplate the universal perfect essence as something singular. By becoming such, the universal sheds its abstract transcendence, evolving into a concrete universal as it is no longer bounded by the singular as alien to it. The singular now constitutes a moment of the universal, rendering the universal as the principle or essence of this singularity.

Notwithstanding this, the singular discarded its abstraction as well, recognizing its universal truth, and therefore was not confined by its sensuous certainty of objectivity. This is why Christ resurrected in the body and the grave was empty: the visible and the invisible, the real and the Spirit, in the earthly life of Jesus of Nazareth dissolved

their divide, and the overcoming of this divide in eternity could only be established (as something that already existed, but in itself) or realized (in and for itself) through resurrection. The Resurrection of Jesus Christ affirms that transcendence has been overcome (Hegel 1961, p. 292). As a corollary, consciousness itself is reality, implying that the study of reality is an extension of self-understanding, diminishing the need for a skeptical *epoché* (Hegel 2018, pp. 136–138). Thus, from the vacuous "grave of its life" and "negative" empiricism emerges a "positive" empiricism: instead of vacillating between the abstraction of truth and the abstraction of object, the man of modernity (which for Hegel was the same as the man of the New Testament) discovers a concrete universal singularity (Hegel 2018, pp. 127–128). This was the idealized objectivity of the modern European science (Hegel 2018, pp. 201–202), concerning which hypotheses were posited, experiments were conducted, demanding its classification and systematization, described by theories endowed with predictive power.

Reconstruction of Kojève's position as a Hegelian

Kojève and Koyré completely inhereted Hegel's position in their antipositivist thesis on overcoming the scientific prejudices of Antiquity and the Middle Ages through Christianity in the Early Modern era, when, as it is commonly believed, religious arguments gave way to secular reason. However, by repeating the Hegelian line, Koyré and Kojève in a "left-of" Hegelian manner disagreed with the initial stance of Christianity being inherently truthful. Taking into account the above-mentioned provisions of Hegel's philosophy and the previously discovered criticisms of Kojève's concept, we construct an interpretation of Kojève's position as follows:

Many scientists prior to Copernicus identified as Christians, but they were not "Christian scientists." Despite their Christian faith, they pursued a non-Christian form of science. Even the Moon possessed a transcendent nature, abiding by celestial laws. However, by the seventeenth century in Europe—and exclusively so—the mastery of ancient science and mathematics had been harmonized with a sufficient assimilation of the dogma of Incarnation.[12] This was interpreted as a metaphor denoting the indissoluble bond between the idea of the finite and the infinite. Consequently, it proved to be a metaphor of finite, natural materialization of universal and flawless mathematical laws; time and space themselves became infinite, perfectly precise and quantifiable in their nature. According to Kojève, the familiarity with the Incarnation dogma and habituation to it is sufficient to accede to the appearance of science when the establishment of Christian ideas into people's consciousness lead not only to the

[12]Not all dogmas, according to Kojève, turned out to be useful: the Resurrection of Christ and the notion of the soul's immortality are anthropologically erroneous. This is due to the fact that the concept of postmortem nonexistence is replaced with that of eternal life, whether in hell or heaven. Consequently, the religious belief in an afterlife chains humans to the mere givenness of their existence, to varying extents. This effectively deprives them of "being-towards-death," relegating humans to merely creatures of the Homo Sapiens species. This question is discussed in more detail in Nicolas 2022. This is Kojève's position, in stark contrast to Hegel's positive attitude to resurrection. Apart from this, Hegel's interpretation of Christian dogmas provides insight into Kojève's philosophical grasp of the history of science.

Christianization of the legal sphere or private life, but also to the Christianization of higher forms of human activity (which, it should be noted, are indistinguishable from the forms of the Absolute Spirit in Hegel's works, the first of which is art).

Christian theology took centuries to establish itself in all spheres of culture, and not merely in ritualistic, festive, or moral life. Christian philosophy did not exist until the end of the Middle Ages: although there were philosophers who were Christian, their thoughts predominantly depended on Platonic and Aristotelian principles.

Concerned with the purity of the faith, churchmen were both inattentive and often incompetent in their interpretation of philosophy, in which ancient models (which Kojève asserted were fundamentally pagan) took precedence throughout the Middle Ages up to the Renaissance. Kojève referenced (Kojève 1984, p. 24) the innovation in architecture, mainly in the Gothic style, which emerged as the first Christian response to spatiality and expressivity. Kojève disagreed with Vasari and Rabelais, who regarded Gothic architecture as barbaric; to Kojève, Gothic was the pinnacle of Christianity in stone. Gothic architecture represented the artistic form of *Geist*, demonstrating how deeply Europe had embraced the idea of bringing heaven and Earth together, and how this had allowed stone vaults to soar. Whilst it took architecture over a thousand years to adopt the essence of Christianity, science required even more time.[13] Copernicus' personal courage and genius (Kojève 1984, p. 25) culminated in the appropriation of Christian dogmas for science, which had occurred at a significantly slower pace than for other disciplines. This marked the first time that natural science embraced perfection; no barrier stood between them, mirroring how God made human flesh His own and healed it. Copernicus' acknowledgment of Earth as a celestial object, the same as other planets and stars, was akin to its physical resurrection, following Christ. Pagan science utilized mathematical laws and these were utilized only to describe celestial mechanics. However, in the context of Christian science, they function as a bodily resurrected God who had embraced a human form; rather than merely existing beneath or above material objects, they are "incarnated" within them. As a result, while they still retain their physical form, mathematical concepts are no longer incompatible with physical objects. They can therefore be studied without the fear of a transcendental gap of inapplicability between qualitatively distinct laws of one nature to another. The infinity and precision of mathematics were now linked with finitude and vagueness *without confusion, without change, without division, without separation*—enough to explain nature quantitatively.

[13]However, Hegel's reasoning appears to be overlooked by Kojève: between art and science, religion—specifically Christianity in its historical forms like Catholicism, Orthodoxy, or non-Chalcedonian churches—should have been Christianized. Its truth had to articulate itself independently, a process that began with the Reformation. Consequently, Kojève failed to address an evident query: why did not Christian science emerge in Byzantium? Although Constantinople fell in the middle of the fifteenth century, it had more than enough time before that. It never faced the time disparity associated with the Christianization of barbaric states. Hence, its own Galileo, Descartes, Bacon, and Newton should have emerged sooner near the Golden Horn. Nonetheless, in address to Hegel's philosophy, the question remains, why not all or at least not most of the representatives of philosophy, physics, astronomy were Protestants, if the necessary step of the Spirit was related to the Reformation.

Differences from Hegel

According to Hegel, the Early Modern opposition between rationalism and empiricism had been developing during the Christian-inspired idealistic monism; the unity of the subject and object of cognition in the Spirit's further understanding of itself ("conceptual knowledge of mind") (Hegel 2010b, p. 3). This marked the end of the positive aspect of the genesis of Modern European science for Hegel. If the abstractness of rationalism (as a *Gestalt* of consciousness) exposed itself through the deification of reality, made possible by the Incarnation of God, then the abstractness of empiricism, or its being an "empty idealism" (Hegel 2018, p. 141), lies in its unilateral domination by an empty self or "empty mine" (Ibidem). This can be characterized by its loss of the modesty of "Unhappy Consciousness." The empiricism of this "empty mine" did not reach the thought that it was reality itself, but it intuited that reality was not alien to it. Therefore, the fulfillment of its emptiness was necessary for empiricism, which it did via that reality. Empiricism designated the concepts it revealed as laws or hypotheses. By its own essence (in itself), reality was a concept, while empiricism returns that concept (hypotheses and laws) to reality in the form of experiments. According to Hegel, in these experiments "it is supposed to elevate the law entirely into the concept and to do away with all the links its moments have to determinate being" (Hegel 2018, p. 149).

This articulated the limitations of the natural sciences during the sixteenth and seventeenth centuries: contrary to Hegel, starting with abstract geometric forms and mathematical models, the Early Modern era advanced towards the universal. This conception acquired prevalence rather than the old idea of ascension from the contemplation of existing being by natural awareness to the understanding of the universal, as considered right by Hegel. This renders the accomplishments of Modern European natural knowledge a static abstraction, indifferent to the qualitative differences of nature as the form of being-other (*Anderssein*). The new science is only capable of seeing quantitative magnitudes (Hegel 2018, p. 164), which are not "magnitudes" (*Größe*) in the fullest sense, since magnitude implies a quantity of something, a determinate quantity. Despite this, mathematics is "indifferent" to any determinacy of being (Hegel 2010a, p. 157).

Despite this, Hegel acknowledged the partial justification for the special emphasis on mathematics in the natural sciences: "For in nature, taken as the idea in the form of otherness and at the same time of being-outside-itself, quantity is—precisely for that reason—of greater importance than in the world of spirit" (Hegel 2010a, pp. 158–159). He specifically underscored the importance of mathematics in the studies of inanimate nature and, most prominently, in mechanics. However, while conceding this, Hegel disagreed with his predecessors—Descartes, Spinoza, Leibniz, and Kant—who, in various ways, deemed mathematics the exemplary science.[14] On

[14]Undoubtedly, it cannot be not suggested that Kojève, or even more so subsequent researchers, believe that the idea of the significance or exemplarity of the science of number emerged in the Modern Age. This thought traces back to Plato (in particular, to "Philebus" and "Theaetetus"), and even before him to Philolaus. This concept was attributed to Pythagoras—with the notable distinction that the assertion of the identity of knowledge of number, given the broad semantics of "arithmos" as counting, order, grasping internal divisions. Another key element in this is that knowledge of essence not only has Modern European

the contrary, the reduction of the multitude of relations to the category of quantity is permissible only as a deliberate abstraction. To accept this science as universal, which alone could establish it as exemplary, would mean mistaking a part for the whole, overestimating the limits of applicability by elevating one of the categories, "this specific stage of the logical idea," to an absolute, identifying it with the idea itself (Hegel 2010a, p. 158). The abstraction of a physical law and a mathematical magnitude is such that they remain blind to the distinction between an apple, laden more than negatively with mythology (Hegel 1987, p. 293), and a celestial body, Venus, (Hegel 2018, p. 90), describing them uniformly; this being the essence of Newton's mechanics. The mathematization of natural science in the Early Modern era supplants logical or conceptual rational proof with "empty semblance," concrete difference with a meaningless juxtaposition of numbers, and concrete equality with an "abstract, lifeless unity" (Hegel 2018, p. 28). Both the precision and the clarity of the propositions of mathematical physics, according to Hegel, are consequences not of its merits but of its conceptual impoverishment; thus, the price of their precision is minimal. This latter point on mathematics is a pivotal stance where Koyré and Kojève diverge from Hegel, while, for the most part, they continue his thought, with Kojève doing so even more consistently.

Conclusion: from secular science to de-Christianization and the loss of the unity of mathematical physics

According to Kojève, the idea of an incarnate theory is the product of habituation: the habit of understanding Jesus, as theologians of most Christian faiths do, as the personification of perfection in the limited and imperfect world, without compromising infinity and perfection. This eventually resulted in the development of mathematical physics. Mathematical laws were used to describe celestial mechanics in pagan science. In Christian science, mathematical laws are embodied in physical objects. Despite being mathematical, these objects are still physical. Mathematical laws in regard to the natural world are similar to an incarnate and bodily resurrected God. Consequently, each researcher can study nature via mathematics without worrying about the "impassable screen" (*un écran infranchissable*) (Kojève 1984, p. 22) of different worlds. There is no more transcendental break because of which the laws of the celestial world differ, thus being inapplicable to the earthly world, in which its own laws are applied. The infinity and precision of mathematics, combined with the finitude and elusive imprecision of the physical world, are bound *without confusion, without change, without division, without separation*. It suffices to explain nature quantitatively, mathematically. A potential counterargument regarding the at least millennium-long gap between the triumph of Christianity over most of Europe and the emergence of the new physics is addressed by Kojève as the gradualness of Christianization: it initially transformed individual life, then the society including

implications about the mathematical nature of physics, but also the direct opposite, popular until the end of the Middle Ages—that of the insignificance of physics as nonmathematical knowledge. The conclusion about how to study the objects of the physical world and whether mathematics can be applied in this depends not on the value of mathematics, but on cosmology—Kojève and Koyré's position is just that.

the legal system, later the arts (such as Gothic architecture), and only after Christian ideas had become commonplace everywhere did they finally permeate the highest intellectual endeavors of European humanity, the natural sciences, and philosophy.

Thus, scientific progress has been and continues to be followed by an increase in the appeal of secularism,[15] particularly among the educated public. Along with globalization and the development of academic science into regions where Christianity had never been a major form of religion, this posed a challenge to Christianity's appeal among scientists. As a result, the prerequisites for post-Christian science were established. Kojève identified the first steps of this paradigm shift in Heisenberg's uncertainty principle—Kojève describes this shift as a pagan "revenge" (Kojève 1984, p. 25). According to Kojève, the difference between the laws of the microcosm and the macrocosm observed in quantum physics was evocative of the transcendence, the *utopian* (Kojève 1984, p. 25) comprehensible realm of the Neoplatonists. The notion that the microworld might shape the realm of human existence in a "random" manner (as manifested in the superposition of the microcosm within the macrocosm) reflects a pagan resurgence, albeit partially, since mathematics remains the main means of describing both worlds (Kojève 1984, p. 25). In "The Idea of Determinism," Kojève contends that it was not Einstein who surpassed Newtonian physics, but Planck (Kojève 1990, p. 39). The tenets of quantum mechanics have shaken the ideals of universality and experimental verifiability intrinsic to classical causality, which postulated that individual physical phenomena and real occurrences could be deduced from overarching principles. Quantum mechanics posited an inescapable duality of the observer and the observed systems, with each subsequently bifurcating infinitely into observer and the observed.

This echoed Hegel's portrayal of phenomenological experience wherein the object is continually differentiated between its givenness in itself and for the observer. Consequently, new physics dispelled naive realism on one hand, and on the other, it shattered the almost lucid transparency through which reality was once understood clearly and distinctly based on uniform rules. Transformations induced by quantum mechanics in cognitive schemes also lead to a departure from deterministic stances, leaning towards statistical correlations devoid of the ever-increasing predictive power characteristic of Early Modern era's Newtonian physics. The classic mathematical (Christian) physics presupposed an absolute, a vantage point from eternity, where the complete insight into the infinity of the cosmos and determinism provided an unhindered gaze upon the arrow of time in both directions. This idea was most vividly displayed in Laplace's Demon. Heisenberg's Uncertainty Principle in quantum physics shattered these hopes. However, by dismantling them, it also razed the conception of the Christian God. Contemporary de-Christianized physics now perceives the determinism of the world not as its ontological (and cosmological) hallmark but merely as a regulative principle in an extensively "contingent" world (Kojève 1990, p. 54). In other words, Kojève interpreted the same problem for contemporary and future science as the inconceivability of "actual infinity." The concept of "actual infinity" exists in contemporary science, most notably in Cantorian set theory, and further in the cer-

[15] On the contradictory concepts of secularity and laity in Kojève's thought, explained by their post-Christian rather than anti-Christian nature, cf. Jeffs 2014.

tainty of noncontingent concordance between theoretically mathematically precise anticipations and practical facts.

However, Kojève deemed it inconceivable, only analogously imaginable with the incarnate divinity, a definition can be traced back to Anselm of Canterbury's ontological argument in the "*Proslogion*" and Descartes' reinterpretation of this argument in his third Meditation in "Meditations on First Philosophy"—conceived as that than which nothing greater can be thought. The problem here is that the very elimination of the idea of "actual infinity" or the secularized Christian God (Kojève 1993, p. 46) for Kojève,[16] equates to the loss of the Cartesian guarantee of knowledge and the confidence that scientific conclusions are of a necessary nature. This equates to a statement regarding the randomness in the correlation between physical laws and empirical data. This already introduces a theme that casts doubt on the design argument or the argument of the beauty of cosmological order as a kind of the *petitio principii* fallacy, and further alludes to the narrative of the Great Outdoors, a theme that speculative realism persistently revisits in current times.

In conclusion, Kojève's acknowledgment of the value of the Incarnation in his internalist antipositivist philosophy of science does not imply, for Kojève himself, an endorsement of the Bible's truth in any nonfictional sense, unlike Hegel's affirmation of his Lutheran convictions. Aligning with postpositivist tendencies, Kojève highlighted the utmost utility of the Christian Incarnation as a metaphor in contesting common sense. In terms of Dawkins' memetic analogy it could have been formulated in this way: just as the evolution of living creatures can generate any genetic mutation, some of which prove adaptive, human imagination, language, and culture too can produce concepts that, at specific times and places, offer advantages. Moreover, as in classic Darwinism, where nature is a thrifty mistress who hoards everything and puts it to use whenever possible, this is the way science is organized. This is elucidated by another doctrine: Feyerabend's epistemological anarchism. It operates on the principle of "Anything Goes." Such comparisons with later conceptions help discern that Kojève's Neo-Hegelianism can be examined not only in the entirety of his system along with the concept of "the Last Man," and the state of "the End of History," which served as pivotal themes in Kojève's philosophy intertwined with Marxist undertones and a philosophy of history. The latter renders Kojève's conception not merely an "intriguing curiosity" in the annals of philosophy but also posits it as a source of, at the very least, provocative arguments in the realms of the philosophy of science and historical epistemology.

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[16]The epistemological problem of actual infinity in Kojève's philosophy is analyzed in Kurilovich 2019.

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