

Abū Bakr ar-Rāzī on the Progress of Knowledge

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Abstract

Abū Bakr ar-Rāzī's intense philosophical activity started after more than a century since the enormous corpus of Greek science and philosophy was translated into Arabic, and the philosopher's thought bears witness to the assimilation of the legacy of Late Antiquity, through the multiple influences present in his work: from the Galenic medical texts, the Platonic tradition, or Hellenistic science. In this paper I will outline ar-Rāzī's attitude towards the epistemological relevance of the philosophical tradition, as it was transmitted to the Islamicate civilisation. I will analyze the influence of Ancient philosophy on a particular topic of ar-Rāzī's thought: the eternity of the world. The chosen topic allows to clarify ar-Rāzī's position in the debate regarding the eternity of the world, but also to assess the influence of Galen on this issue.

Keywords: Abū Bakr ar-Rāzī, arabic philosophy, natural philosophy, Galen, Science, epistemology, eternity, history of science

Abū Bakr Muḥammad b. Zakariyyā ar-Rāzī (lat. Rhazes) was a physician and philosopher active in 'Abbāsīd Baghdad and in the city of Rayy in the second half of the ninth century and the first decades of the tenth century. While in the Latin West only his medical treatises were translated, in the Arabic philosophical tradition he remained known for his scientific view opposed to Neoplatonic and Aristotelian mainstream modes of thought, but also for his radical view of the legitimacy of prophecy. His philosophical work is an expression of ninth-

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century Arabic humanism, and it is inspired by both the tradition of ancient Platonism and the natural philosophy of Galen. Ar-Rāzī proposed an original explanation of the origin of the world, in which four other eternal realities are associated with a divine principle: the universal soul, absolute matter made up of atoms, absolute space and time. In addition to his critique of revealed religions, the doctrine of the five principles is the reason for the hostility of Muslim theologians and philosophers towards ar-Rāzī.

By the time ar-Rāzī became a recognized intellectual in the philosophical circles of Baghdad, the cultural policy of the ‘Abbāsīd caliphs al-Manṣūr (754-775), al-Mahdī (775-785) and al-Ma’mūn (813-833) had already materialized in the massive translation of the Greek-language philosophical and scientific corpus. Once the ancient heritage, but also the scientific contributions of the Iranian and Indian space were assimilated by the ‘Abbāsīd culture, intellectual phenomena peculiar to the Islamic world appeared very quickly.

The influx of Hellenistic science and philosophy modified deeply the Islamic culture of the 8th-9th centuries, by causing highly original intellectual phenomena, which were at the same time indebted to the scientific and philosophical inheritance of Late Antiquity. In ‘Abd ar-Raḥmān Badawī’s terms, this appropriation of Greek philosophy meant at first an almost unanimous acknowledgement of Hellenistic superiority in science and philosophy, which resulted in Greek thought permeating all strata of Arabic culture (Badawī 1968, 13; Gutas, 1999a).

Naturally, ar-Rāzī’s work is clearly influenced by Greek thought, but it is also true that his activity can be ascribed to a tendency of reevaluating Ancient philosophy and of replacing classic texts belonging to that tradition with original contributions (Gutas, 1999a, 153)¹. In this paper I intend to show what relation ar-Rāzī had towards this scientific heritage, and in what degree his theoretical borrowings, which are manifest in his philosophical vocabulary and his choice of themes, are just doctrinal building blocks that ar-Rāzī adopted without modifications, or whether because of his tendency of clashing with authority he overthrew the same theoretical assumptions

that his contemporaries accepted without reservations. Before answering this question, I have to describe first ar-Rāzī's beliefs regarding the process of knowledge acquisition.

In one *mağlis*^{un}, i.e. a public debate, in which ar-Rāzī confronted the Ismaili missionary Abū Ḥātim ar-Rāzī, the two discussed about the historical progress of knowledge and the place of ar-Rāzī in this history. Although perhaps it was not Abū Ḥātim's intention, the initiator of this debate, one of the aspects they turn to in their discussion is whether knowledge was obtained once and for all in the distant past or it is a matter of constant historical development. In accordance with the tenets of his Ismaili beliefs, Abū Ḥātim thinks that truth was revealed in the past through the vehicle of revelation, and that with regard to this truth there is no intermediary attitude between uncritical acceptance and apostasy. Therefore, the bone of contention between them is a thesis for which apparently ar-Rāzī was famous, and to which Abū Ḥātim alludes in the following text:

(1) I debated him at another learned assembly and said, "Tell me about the basis of your belief in the Five Eternals: the creator, the soul, substance, space, and time. Is this a view that you and earlier philosophers hold in common, or is it one where they disagree with you?"

(2) He said, "In point of fact, ancient philosophers hold diverse views on this matter. But I was able through diligent examination and investigation of their principles to deduce this view, arriving at a truth that is irrefutable and inescapable."

(3) I said, "Why is it that the minds of these philosophers were inefficient and their views diverged, although you claim that they were independent thinkers who had occupied themselves exclusively with philosophical inquiry to the point where they attained knowledge of very complex sciences and became real experts and intellectual paragons? Nevertheless, you allege that you have attained what they failed to attain by constant inquiry into their systems of thought and their writings, although they are your leaders and you are their follower. And all because you studied their systems and examined their principles and learned their books?! How is it possible that the follower is superior in rank to the one followed, that the one being led is more proficient in wisdom than the leader?"

(4) He said, "I shall argue here in a manner that will convince you that the matter is as I say it is, and so that you can distinguish right from wrong in this affair. Know that if every later philosopher

applies his full energy to philosophical inquiry, does so diligently, uses independent reasoning, and investigates those issues over which philosophers' views diverge because of their complexity and difficulty, he would acquire the knowledge of predecessors, digest it, and arrive through his intelligence, intensive inquiry, and investigation at different conclusions. This is because he would have mastered the knowledge of his predecessors, become aware of other valid conclusions, and preferred them. For the process of investigation, examination, and independent reasoning necessitates augmentation and excelling." (Abū Ḥātim ar-Rāzī 2011, 8-9)

Ar-Rāzī's general line or reasoning is familiar to those accustomed to the regular interpretation of scientific progress in ancient and medieval philosophy. On that account, scientific knowledge implies an accumulation process in which the theoretical contributions of the newcomers are added to the body of knowledge obtained by the previous researchers. The textual source of this positive view on scientific discovery is identifiable in Aristotle's *Metaphysics*, α, 1, 993a29-b11, where Aristotle envisions a historical process whereby a community of researchers constantly approximate the truth making use even of minor contributions and errors, since those too play a role in discovering the truth. Ar-Rāzī might have read the said passage in the Arabic translation made by Uṣṭāṭ, one of the translators of the al-Kindī circle, in the second half of the 9th century.²

Unlike the layout of the books of *Metaphysics* found in the Greek version, the Arabic tradition of *Metaphysics* placed book α in the opening of the treatise, which accidentally granted the passage mentioned above the status of a research programme for philosophy in the Islamicate culture. For instance, al-Kindī's *On first philosophy (Fī l-falsafati l-ūlā)* has as one of its starting premises the same thesis of the history of thought as an ongoing common research project (al-Kindī 2012, 11). Furthermore, this idea seems to have been diffused by more than one route in muslim intellectual circles, since a popular text, namely Alexander of Aphrodisia's epilogue to his *On the Principles of the Universe (Fī mabādi'i l-kullī)*, reiterates the need for adopting a "critical, but constructive stand" in science (Gutas 2014, 245). According to Gutas, this treatise influenced the attitude toward the philosophical tradition of Avicenna (Gutas 2014, 248), but perhaps it played a role in shaping ar-Rāzī's beliefs as well. On

this account, it would be hard to deny the influence of the Aristotelian tradition on ar-Rāzī.

Furthermore, Gutas suggests that a group of other texts, pertaining to the Alexandrian tradition, might have had an impact on ar-Rāzī's view on knowledge as a gradual process of acquisition (Gutas 2014, 240). Nevertheless, a nuanced interpretation of the debate recorded by Abū Ḥātim, which would take into account also ar-Rāzī's personality as a scientist, might eventually intimate that ar-Rāzī adopted in fact a different view of the historiography of philosophy, one in which he departs from a continuist theory. In this regard, one can highlight the possible meanings of the term *aṣl^{um}* (translated with "principle" in the English version) in the specific context of the confrontation between ar-Rāzī and Abū Ḥātim. In the plural, the term refers to the fundamental principles, the axioms or the rules of a certain science (Wehr, 1993, 23). Indeed, in the Arabic philosophical vocabulary the term received this meaning by way of the translation of the Aristotelian corpus. One of the Greek terms that were transposed in Arabic through this word was ὑπόθεσις, which has the frequent meaning, in the Aristotelian texts, not of hypothesis in the modern acception, but of assumption.³ Consequently, philosophical activity acquires at ar-Rāzī the meaning of identifying the fundamental assumptions of its predecessors, so as to highlight their theoretical shortcomings and to eventually overcome these by proposing alternative *'uṣūl^{um}* or fundamental assumptions of the respective domain of knowledge.

In accordance with this interpretation, ar-Rāzī's reply to Abū Ḥātim's question would suggest a view on the development of science in which the piecemeal accumulation of knowledge is fractured by eventual changes of the assumptions adopted by the philosophers. These replacements of the theoretical principles of a science take place when one philosopher criticizes his predecessors and strives to put knowledge on a more solid ground. Without neglecting the danger of anachronism, I see a conceptual resemblance between ar-Rāzī's argument and the modern concept of scientific paradigm proposed by Thomas Kuhn (Kuhn 1962).⁴ For Kuhn, a paradigm designates the whole of scientific theories, methods of

research, scientific achievements and examples which, through the consensus of the practitioners of a certain science, forms the normative model of engaging in scientific research which is considered valid in that specific domain. A paradigm is replaced by another when one or more than one of the scientists abandon the fundamental presuppositions of that science.

There are, of course, major differences between ar-Rāzī's concept of science and the Kuhnian theory of scientific revolutions. In the case of ar-Rāzī, since the domain of inquiry is philosophical, the effort of overcoming the theoretical principles of past philosophies is mainly conceptual and does not involve reevaluating research practices, types of experimentation etc., as it happens in the case of the sciences taken by Kuhn as examples. Next, in the modern context a paradigm is grounded in the *tacit* consensus about certain propositions, while for ar-Rāzī assumptions (*'uṣūl^{um}*) can be explicitly put at the core of a philosophical theory; such is the case of the assumptions he explicitly assents to with regard to his theoretical beliefs.

Therefore, one can understand ar-Rāzī's philosophical commitment as a program of reevaluating the main theories transmitted by Greek and Arabic tradition and of calling attention to the incongruities between the old theories and surveying phenomena anew, a fact that we can name, in a Kuhnian manner, detecting 'anomalies'. In order to showcase this argument, I will discuss a topic on which ar-Rāzī is critical towards the Graeco-Arabic tradition: the eternity of the world.

Ar-Rāzī against the eternity of the world

One of the fundamental problems that has fueled reflection in all historical periods of Greek philosophy has been the dispute between two cosmological models, one that affirms the eternity of the world, as opposed to one that postulates a temporal beginning of the universe. Within Hellenistic culture, the tension between the two models led to the creation of a rich literary corpus concerning this problem. This aporia then spread to the Islamic and Jewish worlds, with Greek philosophy and science being absorbed into these two host cultures, where the revealed message of monotheistic religions led to a long

process of accommodating the ideas of Hellenistic philosophy to the spiritual climate.

One of the basic arguments in favour of the eternity of the world thesis was the absolute incorruptibility of the superlunary world, i.e. the heavens. The thesis of the incorruptibility of the heavens is a tenet of Aristotelian cosmology, since Aristotelians argue that the substance of celestial bodies is unalterable due to its lack of interference with the four elements - fire, air, water, and earth.⁵ The thesis of the indestructibility of the heavens attracts as a consequence, however, the assumption of an overall incorruptibility of the whole universe, which therefore cannot be other than eternal.

Nevertheless, the inseparable link between the indestructibility of the heavens and the eternity of the world may not seem obvious.⁶ This connection is supported by Aristotle through an argument in the first book of the treatise *De caelo*. Thus, in *De caelo* 1, 3, 270a12-22, Aristotle puts forth an argument in favour of the ungenerated nature of the supralunary region starting from the observation that circular motion, which is characteristic to this region, does not support opposites. Instead, everything that supports opposites, such as the rectilinear movements of the sublunary world, involves the transition from a state of non-being to being. Therefore, the heavens are ungenerated and incorruptible.

This argument, as well as the other arguments put forward by Aristotle against the thesis of a generated universe, was taken up by the ancient exegetes of the Aristotelian work and later transmitted to the Islamic world. In this regard, the impact that the physician and philosopher Galen had on the development of Arabic philosophy and science plays an important role. Hence, the first relationship to be investigated is that between ar-Rāzī's work and the Galenic corpus. First of all, because Galen has a double influence on the philosopher: it is the medical authority par excellence that defines his medical practice and related theoretical activity (not only in ar-Rāzī's case), and at the same time he nourishes ar-Rāzī's philosophical reflections. Second, Galen reworks Platonic philosophy — reorienting its problems and solutions — and offers an image of

Platonism that is most likely much more important to ar-Rāzī than the various versions of Arabic Neoplatonism.

The importance of Galen for the rebirth of philosophy in the ‘Abbāsid period cannot be diminished, even if we evaluate only the symbolic importance that he acquired in the transmission of knowledge from late Antiquity to the Islamicate world. It is worth mentioning here the role played by Galen in inspiring the complex of Arabic-language narratives on the transmission of studies from Alexandria to Baghdad. There are at least four textual sources that have in common the rendering, in almost the same terms, of the transfer of knowledge from sixth century AD Alexandria, via Antioch and Harran, to the Islamic culture of the ‘Abbāsid caliphate. As Dimitri Gutas points out, the narration of this *translatio studiorum* is another case of a fictitious reconstruction of the origin of the rebirth of science in the Islamic realm, which would ideologically justify the ‘Abbāsid takeover of power (Gutas, 1999b, 177). But these narratives start from a real historical basis: the decision of the Alexandrian scholars towards the end of the sixth century to reorganize the method of teaching medicine, shortening the Galenian corpus and reducing it to a core of fundamental texts, conventionally called *Summaria Alexandrinorum* / *Ġawāmi‘u l-Iskandarāniyyīn* (Gutas 1999b, 174).

Beyond the assimilation of the Alexandrian model of structuring medical knowledge, which was of paramount importance for the evolution of a physician such as ar-Rāzī, it is equally important that Galen's plea to elevate the study of logic to the rank of propaedeutics of medicine is kept in the new context of ‘Abbāsid education (Gutas 1999b, 173). As will become clear below, the understanding of logic as a tool for studying the problems of natural philosophy is an important aspect of the scientific theories that ar-Rāzī is developing. Furthermore, Galen's authorial persona is endorsed by Arabic philosophers as an example of philosophical conduct and they also have adopted Galen's personal references in his own works as a model of autobiographical writing (Gutas 2015, 49), although Galen has never composed an autobiography himself. Ar-Rāzī is no exception, since the autobiographical elements

from his work are often linked to the invocation of Galen as his model. Thus, in one of the few references to his own scientific path, ar-Rāzī expresses his early attachment to Galen, whose philosophy he prefers to the Aristotelian model (Mohaghegh 1991, 16). In the following, I will show to what extent the theoretical content of the Galenic corpus articulates for ar-Rāzī a coherent epistemological model.

The ubiquity of methodological considerations spread throughout Galen's writings is a fact recognized in the scholarship (Tieleman 2008, 49), a feature of his work that actually reflects a common interest of his time (Chiaradonna 2009a, 44). From the sum of these considerations one can reconstruct the theory of Galenian science. At the heart of Galen's theory is the belief that the safest way to obtain certain knowledge is through demonstration. In this regard, Galen is deeply influenced by Aristotle, more precisely by the theory of science that the Stagirite developed in his *Posterior Analytics* (Chiaradonna 2009a, 44). Consequently, Galen composed a treatise entitled *On Demonstration*, which survived only fragmentary. Nevertheless, some scholars have attempted, with some success, to reconstruct the theory of knowledge articulated by Galen starting from the preserved fragments of the treaty.

At the forefront stands the concept of experience. Galen does not question the veracity of the senses, as the skeptics do, because for him sensation is the medium through which we receive information about the external world and is, in fact, the basis of the opinions that people form about the natural world. In an Aristotelian manner, Galen does not discredit these opinions, but takes them as a starting point in his quest to clarify knowledge and put knowledge on a reliable basis. As Hankinson observes, the Galenian scientific model has a circular structure: a true understanding of phenomena begins with the use of rational methods to correctly understand the data provided by experience, but the results of applying these methods to experience must ultimately be confirmed by experience (Hankinson 2008, 165).

Putting aside details about the complexity of the theory proposed by Galen,⁷ I will try to establish the points of contact between this theory and the model of scientific research

assumed by ar-Rāzī in his writings. I think Galen's influence is obvious in this regard, but at the same time ar-Rāzī is making an effort to distance himself from Galen and the alleged 'mistakes' that his model may have made. In this sense, ar-Rāzī considers his exegetical work as an effort to clarify and eliminate incorrect doctrines within the Galenian corpus. Mohaghegh points out that the term *šakk^{un}*, usually translated as 'doubt', corresponds to the Greek word *aporia*, i.e. a conceptual confusion, a theoretical impasse: "Thus al-Rāzī brings up certain 'doubts' or 'objections' to problematic points in which Galen has apparently entangled himself in his writings" (Mohaghegh 1991, 108).

First of all, ar-Rāzī's critique starts with noticing an incoherence within Galen's works. Ar-Rāzī notes that Galen's view seems to have moved from unequivocally supporting the thesis of the eternity of the world, in *On Demonstration* 4, to endorsing in his later works arguments in favour of the impossibility of proving whether the world is eternal or generated, such as *On My Own Opinions* (*Prop. Plac.* 2. 1) and in *The Art of Medicine*.⁸ Ar-Rāzī seems to think that, while in *On Demonstration* Galen defends the thesis of the eternity of the world starting from the premise that a reality that is not corrupt is also ungenerated (thus, because heavens seem to be incorruptible, the world is eternal), in his last works Galen adopts an agnostic position regarding the possibility of knowing whether the world is eternal or has a temporal beginning. What seems inexplicable to ar-Rāzī is Galen's abandonment of an argument whose premises, 'the universe is incorruptible' and 'that which is incorruptible is not generated', necessarily lead to the conclusion that 'the universe is not generated'. The problem is that ar-Rāzī seems to believe that Galen continued to consider the two premises valid while opting, towards the end, for an agnosticism that refutes the conclusion which must necessarily be drawn from those premises. This is probably the source of the contradiction that ar-Rāzī sees here.

Putting aside the fact that ar-Rāzī does not question whether Galen has truly adhered to the principle 'everything that is incorruptible is not generated', ar-Rāzī produces a historically distorted reading of this issue in Galen. As

Chiaradonna argues, Galen declares from the very beginning his agnosticism regarding the generation of the world, without denying the effects of providence that refer to a benevolent Demiurge and which manifests itself in natural phenomena. This dissociation of the recognition of providence from the problem of the temporality of the world makes Galen unique in the context of the Middle Platonism of the second century AD (Chiaradonna 2009b, 246). Therefore, Galen considers neither the cosmogonic model of *Timaeus*, the source of Ancient “creationism”, nor Aristotle's critique of this dialogue in *De caelo* 1, 10, 280a28-32 to be scientifically plausible. Galen explicitly denied the logical consistency of the principle ‘everything that is incorruptible is not generated’, because something generated, but by its nature corruptible, could be maintained in existence by the action of an external cause. For Galen, this cause may be a demiurge, and for this hypothesis he uses the model from *Timaeus* as an argument.

Therefore, showing that this principle is not manifestly true, Galen also rejects the Aristotelian principle that anything generated is eventually corrupted (*De caelo* 1, 10, 280a28-32), since the permanent action of a divine agent can grant eternal being to a generated universe, even if this incorruptibility is only accidental feature of the universe, and not an essential one. The textual evidence therefore confirms that Galen's constant position on this topic was agnosticism, and makes implausible Mohaghegh's proposal to see in ar-Rāzī the source of the myth that Galen is agnostic about the eternity of the world (Mohaghegh 1971). Ar-Rāzī is rather responsible for attributing an eternalist position to Galen, which the physician never claimed.

In fact, other scholars have noticed that ar-Rāzī applies an abusive interpretation to the object of his criticism, Galen, and consequently express reservations about al-Rāzī's intellectual honesty: “Il n'est pas sûr, cependant, que Rāzī ne force pas un peu le trait pour les besoins de sa critique” (Rashed 2007, 270). As textual evidence, Marwan Rashed points to a passage from Averroes's Commentary on *De caelo*, in which the Arab philosopher quotes al-Fārābī on Galen's real position on the question of the eternity of the world (Averroes 2003, 44-45).

Adamson raises in turn questions about the purpose of ar-Rāzī's critique: "In fact he is probably misrepresenting Galen's purposes here in *On Demonstration*. Galen's approach seems to have been highly dialectical, seeking to show flaws in the arguments of other thinkers that fell short of demonstrative status" (Adamson 2016, 90). After all, as Adamson points out, the reinterpretation of Galen's text in favor of his position is a strategy encountered at ar-Rāzī within the context of explaining Galen's position on the existence of vacuum (Adamson 2014).

Furthermore, ar-Rāzī finds in Galen's argument a deviation from the methodological requirements that the ancient philosopher himself proclaimed. As ar-Rāzī describes Galen's method, this would involve analyzing the premises used in inquiring into a specific issue so as to clarify those concepts that are necessary to understand the issue. Therefore, ar-Rāzī casts doubt on the premises on which Galen builds his argument in support of the eternity of the world. Ar-Rāzī argues that the concepts which Galen presupposes in order to validate the premises of his argument are not necessary:

Next, I note that he has violated the injunction that he always orders us to obey, namely, to be careful to use and acquire premises from the positions that are *necessarily* consequential to the object of investigation. The [premise] that the magnitudes of the planets and the earth and the measurement of the water in the oceans and of the rest of the parts of the universe always remain the same, does not entail the impossibility of the corruption of the world. The corruptibility of things is not just by way of deterioration and degeneration, but also such that something can corrupt when it is the most complete and perfect it can be, like a building erected on a support once the support is removed from under it, or a tree once it is uprooted, or a fire once it is doused, and so on. So, he should not have established his conclusion by means of [the premise] he used without explaining that the universe is one of the things that corrupt only by degrading. Not only did he not pay attention to this at all, he also added to this antecedent, that is, "If the universe were corruptible," this consequent, namely, "then the [celestial] bodies... would not persist in one and the same state," as though [the universe] could corrupt as a result of this only. This consequent would conclude necessarily for this antecedent only if one adds either a stipulation to it, such that it becomes, "If the universe were corruptible through deterioration [of its parts], then the [celestial] bodies... would not persist in one and the same state," or a premise to explain that

corruption does not happen to anything whatsoever by way of deterioration alone. That, however, is not a possibility [in this case], because things may “doff” their forms not just by simple disintegration but also such that the form in substances that disintegrate and dissipate very slowly will barely corrupt at all, except through their immediate degeneration when they are the most perfect and complete that they can be, like a glass vessel when smashed with a rock, or a cliff-top fortress when the ground below it gives way after a jolt. Similarly, then, the universe may corrupt in this way, even if its form stays in the same state right up to the moment of its corruption. It is in this manner that the world corrupts according to those religious scholars who maintain that it corrupts – I mean, by immediate degeneration, not by deterioration (McGinnis/Reisman 2007, 51-52).

The central point of Ar-Rāzī’s critique in this passage is the weak construction of Galen’s argument. According to the Philosopher, the antecedent and the consequent of the hypothetical argument formulated by Galen do not sufficiently explain the conditions of validity of the thesis of the eternity of the world. The argument would be valid if its premises were complemented by the certainty that the corruption of any reality takes place only through gradual degeneration, as we can see in the natural world. But this certainty is not possible, because we have the alternative – omitted by Galen – of a kind of immediate corruption of things, which does not gradually affect their form, and which happens suddenly, either by a violent action or once their substrate is separate from them.

Ar-Rāzī’s examples are suggestive: a glass can be destroyed in one swoop, a fortress shatters once the earth that supports it moves quickly, and so on. Therefore, nothing blocks the possibility of the universe being corrupted in a similar way. Moreover, ar-Rāzī recalls a consensus of some “religious scholars” or believers (*mutadayyinūna*) who understand the corruption of the universe through such kind of immediate destruction.

It is not clear who are these *mutadayyinūna* referred to by ar-Rāzī. It may be a generic term for followers of those religions that develop an eschatology in which this world is destroyed through divine will at the end of time. This category includes Jews, Muslims, Christians, and Zoroastrians, and it is not known whether ar-Rāzī had a specific group in mind. He

probably does not want to suggest sympathy for them by invoking them, since the purpose of the counter-argument he proposes is to show the inconsistency of Galen's argument in support of a supposed eternity of the world.

As Pauline Koetschet argues, the association that ar-Rāzī makes between Galen and the eternalist position is a deliberate one, because the philosopher's intention is to show that Galen's teleological model is based on eternalist assumptions (Koetschet 2015, 167). According to Galen, the present order of the world is the manifestation of divine providence, whether the world lasts for a finite amount of time or has existed since eternity. Galen's real position is to classify philosophical disputes over the eternity of the world as unnecessary, since they fall outside the legitimate sphere of concern of the physician and philosopher. For the physician, the guarantee of a providential order is sufficient for him to understand that this order is expressed by the fact that each organ has a function, while the philosopher can explain natural phenomena by the role of each in the world's ecosystem (Chiaradonna 2009b, 246). According to Koetschet, ar-Rāzī considered teleology the main limitation of Galen's philosophy, because through it Galen cannot explain the presence of evil and disorder in the universe: if the world is the manifestation of the goodness of a Demiurge, as Galen believed, then the existence of evil raises serious problems regarding the alleged power or intelligence of such a Demiurge.

Therefore, ar-Rāzī would consciously distance himself from any explanation of the universe that has eternalist assumptions and intends to offer primarily a theodicy, an explanation of the presence of evil in a world that is supposed to be the work of a good and omnipotent Demiurge (Koetschet 2015, 197-198). Ar-Rāzī's solution is to develop an alternative cosmogony, in which the negative aspect of creation is the responsibility of an inferior principle, the universal soul, while the positive aspects of the world fall under the influence of a creative principle, the Demiurge, and the rest of the necessary conditions for the emergence of a world are filled by the existence of an absolute time and space along a primordial matter.

Koetschet's hypothesis seems extremely plausible to me. Yet I believe that ar-Rāzī's cosmogony has its origins in an attitude that aims not only at Galenic teleology or the eternalist presuppositions of the cosmologies of ancient philosophers, but also at a more general refusal on ar-Rāzī's part to give a positive meaning to the world. In this sense, the cosmological theory developed by ar-Rāzī belongs to a long current of thought that rejects the more popular tradition in which the visible universe was considered a model of the divine order that man must imitate in order to fully realize his human nature.⁹

Important moments of this paradigm are also recorded in the Arabic philosophical tradition. One can mention the cosmological reflections, inspired by Greek sources, in al-Kindī's *On the Prostration of the Outermost Body*. Al-Kindī develops in this treatise the idea that the celestial sphere is a living and rational being that donates life and rationality to the sublunary world. The focus of al-Kindī's arguments is on emphasizing the thesis that the lunar region surpasses the entire human species in nobility (al-Kindī 1998, 191, ll. 11-15). Another argument is supplied that touches on the very issue of the importance of the human species in the universe. If humans were the only beings endowed with reason, that state of affairs would indicate drastic limitations on behalf of God's power. Compared to the celestial realm, human rationality is just one example on a much smaller scale of the rationality of celestial bodies (al-Kindī 1998, 193, ll. 18-22).¹⁰

It is plausible that the mentality behind this kind of arguments is opposed by ar-Rāzī's alternative cosmology, in which one of the main aspects is a diminution of the role of the world (by metonymy, the noblest part of the universe, the heavens, is the cosmos par excellence) in the economy of individual salvation. Therefore, it is consistent with ar-Rāzī's attitude that the donation of the intellect to the soul is in his cosmology the action of the Demiurge, and not a an initial feature of the world. In this regard, the presence of rationality in the universe is not a positive fact of the universe, but an attempt by the Demiurge to redeem the fall of the soul in this world. For ar-Rāzī, it is not the universe itself that is good, but only the intellect that allows the particular soul to detach itself

from the material world. Therefore, the emphasis is on highlighting the precarious and soul-damaging nature of the universe, while the traditional line of Arabic philosophy diminished these negative aspects in favor of a positive appreciation of the universal order. This is also the accusation of Maimonides, about which, in his *Kitābu l-‘ilmi l-ilāhī*, ar-Rāzī stated that there is more evil than good in the world (Stroumsa 2009, 142).

Abū Bakr ar-Rāzī wrote in a historical period during which several intellectual circles were formed, the common goal of which was rather continuity with the Ancient philosophical tradition than establishing a radical beginning. Ar-Rāzī took part in this effort to assimilate the legacy of Classical and Late Antiquity in a manner as unconstrained as possible by the predominant religious sensibilities in the host culture, i.e. in Islamic culture. From the studied passages of his works, ar-Rāzī’s critical attitude towards any authority, whether religious or philosophical, stands out. Even in the case of Galen, whose work ar-Rāzī probably appreciates more than any other corpus of texts, the philosopher maintains his autonomy of thought. However, it is clear that in some cases ar-Rāzī distorts the meaning of Galen’s arguments, as in the case of the debate over the eternity of the world. The historical distance between the two authors may explain ar-Rāzī’s misinterpretations, but it is also possible that the critique of Galen is related to a fundamental attitude of ar-Rāzī’s thought, according to which the visible universe ceases to be considered an expression of the divine order that man must imitate in order to fully realize his human nature. Such an attitude would also explain the philosophical values of the Platonic-inspired myth conveyed by ar-Rāzī, in which the soul is foreign to this world.

NOTES

¹ Gutas includes in this category of works critical towards classic texts ar-Rāzī’s *Fī šukūki ‘alā Ġālīnūs* (Doubts on Galen), Ibn al-Hayṭam’ *Aš šukūku ‘alā Baṭlamyūs* (Doubts on Ptolemy), but also Avicenna’s *Al-Hikmatu l-mašriqiyyatu* (Eastern Wisdom). See Gutas 1999a, 153.

² The passage survives in Arabic as a lemma inside Averroes' Commentary on Aristotle's *Metaphysics*, which can be consulted in Averroes 1938.

³ One pertinent example is a passage from *Physics* 8, 3, 253b5, where the Arabic translator renders ὑπόθεσις with 'aṣl^{un}. See Aristotle 1965.

⁴ Alastair MacIntyre transposed the concept of paradigm from its original context in the historiography of science into philosophy, operating with a few modifications. MacIntyre nuances the thesis regarding the incommensurability of scientific theories, insisting on the necessity of a core of issues common to several theories by which we can judge the performance of the theories and assess their rate of success in explaining phenomena. MacIntyre introduces this revised notion of paradigm and uses it to evaluate the various ethical theories from Antiquity to the modern ages (MacIntyre 1984). In studying medieval philosophy, the utility of the paradigm as a methodological instrument to describe premodern philosophical theses was advocated by Baumgarten 2008. I do not want to adopt the concept of paradigmatic change as a real explanation of

⁵ The main argument for designating a fifth element as the substrate of the heavens is based on observing the difference between the movements of terrestrial and celestial bodies. The former have a rectilinear motion, while the latter are naturally endowed with a circular motion. According to Aristotle, the difference in motion must be given by their different composition. The argument appears in Aristotle, *De caelo* 1, 3, 270b20-26.

⁶ It should be noted, as Edward Grant points out, that the theory of the ether as the indestructible constituent element of the heavens is an Aristotelian invention, which also went against the scientific prejudices of its contemporaries. After all, until the introduction of the Aristotelian corpus of philosophy into the Latin world, the idea of a corruptible celestial realm was implicitly assumed almost unanimously (Grant, 1994, 191-192: "The introduction of Latin translations of Aristotle's works during the twelfth and thirteenth centuries radically altered this tradition. A vital ingredient of Aristotle's "new" cosmology was the belief in celestial incorruptibility"). The situation was different in the case of Arabic philosophy, given that there the impact of Aristotelian natural philosophy was earlier and arguably stronger.

⁷ Galenic epistemology becomes a subject intensely studied by the scholars of Ancient philosophy. I point here to the following contributions: Chiaradonna 2009a, Chiaradonna 2009b, Tieleman 2008, and Hankinson 2008.

⁸ *Kitābu ṣ-ṣināʿti ṭ-ṭibbiyyati*, also known as *Kitābu ṣ-ṣināʿti s-sağīrati*, is the Arabic translation of the Galenian treatise *The Medical Art* (*Techne iatrica*), but according to Pauline Koetschet, this work does not address the issue of the eternity of the world. It is therefore more plausible that ar-Rāzī refers in this context to another Galenian treatise, *On Medical Experience*, where the physician refers indeed to this issue (Koetschet 2015, 175).

⁹ The history of this tradition and the counter-currents it stimulated from Antiquity to the Modern Ages is dealt with by the French philosopher Rémi Brague in Brague 1999.

¹⁰ Curiously, Brague omits this last argument, although it is perhaps the most appropriate illustration of the degree to which the Platonic-Aristotelian cosmological model can value the superlunary above the human species, an aspect which the French philosopher deals with at great length in his work.

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