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ESSAY-REVIEW

Philologia ancilla philosophiae

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Ruth Glasner, *Averroes' Physics. A Turning Point in Medieval Natural Philosophy* (Oxford: Oxford University Press, 2009), X–229 p., ISBN 978–0199567737.

If anyone still raises doubts about the function of philology and the need for critical editions, this book should definitely put those doubts to rest. It shows that no history of philosophy is possible without intensive philological work with the original texts.

Although Averroes (1126–1198) wanted no more than to be a truthful interpreter of Aristotle, he was nevertheless a creative thinker in two particular fields that draw his interest, namely, how to explain intellection and the unity of the human species and how to explain the motion and unity of the world, sublunary and celestial.

The researcher faces a twofold difficulty when he wants to know Averroes' authentic ideas on any subject. The first difficult is caused by the absence of the Arabic originals of several commentaries; in the case of the *Physics*, we have only the Short Commentary or Epitome in Arabic. A good number of manuscripts of the Hebrew translation of the SC are available, besides the printing at Riva di Trento, [Yaʾaqov Marqariʾah], 320 [1559 or 60].

For the Middle Commentary we have only a synopsis of the Arabic, edited twice. However the Hebrew is extant in two complete translations and in some fragments of a third translator. Zeraḥya ben Sheʾaltiʾel is the author of the first complete translation (1284) and Kalonymos ben Kalonymos of the second (1313); the third translator is unknown to us.

An incomplete Latin translation of the Middle Commentary – Books I, II and III – was made from the Hebrew and printed with the Long Commentary in the Renaissance.

The Long Commentary was translated into Latin from the Arabic in the 13th century by Michael Scotus and printed in the Renaissance;

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it is found in the fourth volume of the Junctas edition, Venice, 1562. H. Schmieja, who is preparing a critical edition, has found fragments of another translation by Herman Alemannus. The Hebrew translation is less known, and the translator could be Kalonymos ben Kalonymos, in the 14th c. Glasner has identified a number of manuscripts, but only Paris BN hébr. 883 is complete. At this stage, the lack of a critical edition of the Latin translation makes the reading of the Hebrew manuscripts by Glasner very valuable.

The Long Commentary includes the Aristotelian text of the *Physics*. Averroes was using the translation by Isḥāq Ibn Ḥunayn (d. 910/1) from Greek into Arabic. The Latin version of the *Physics* is known as the *translatio nova* and differs from the Greek we are reading now.

With Glasner, I agree that Averroes wrote the commentaries in the increasing order – first the Epitome, then the Middle Commentary. and finally the Long Commentary. The epitomes are not really commentaries; they summarize the main issues of the Aristotelian book, and the influence of Avempace is often perceptible.

Glasner researches how Greek and Arab philosophers influenced Averroes. Themistius and Avempace were his sources when he wrote the first version of the Short Commentary. Philoponus comes in during the Middle Commentary, but Avempace is still present. In the Long Commentary, Alexander of Aphrodisias is frequently quoted, Themistius and Philoponus not so much; Glasner has set up a complete list of their quotations.

Averroes pondered crucial issues at length, and he often reworked his writings. He revised the three commentaries on the *Physics*. The Short and Middle commentaries offer two versions of the comments on chapters VIII.2.1-2, and Glasner has found in Zeraḥya's translation a first version, version A, and in Kalonymos' translation a second one, version B; in addition she has discovered fragments of a second translation of version A added to some of Kalonymos' manuscripts. We must say that Kalonymos' translation was wide-spread, and the many extant manuscripts (40) bear witness to this. On the contrary, there are only two manuscripts containing Zeraḥya's translation, which suggests that it was almost forgotten.

Glasner writes that the Arabic Version A was 'rediscovered' by one of the readers or copyists of Kalonymos' translation and convincingly argues that the translation was done in the fifteenth century. Therefore, Jewish scholars as late as the fifteenth century were familiar with the stages of Averroes' intellectual development. When she proves that Hebrew super-commentaries contain both versions, we realize how accurate Jewish thinkers were in reading Averroes.

The Long Commentary both in the Latin as well in the Hebrew translation shows intensive revising by Averroes. Glasner distinguishes two kinds of revision which she calls *editing* and *rewriting*.

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Rewriting refers to major changes, when Averroes replaces paragraphs or adds new comments. There are two layers or *strata*, early and late, of the LC but we both translations, Hebrew and Latin, do not differentiate them.

Although Glasner affirms that "there is no way to reconstruct the history of the two redactions of the Long Commentary" (p. 36), she gives us an analysis of several instances of rewritten and added passages.

Glasner identifies three typical characteristics of the late stratum: 1) The introduction itemizing 8 questions; only the Hebrew translation contains it. Glasner plausibly explains that Averroes wrote this *proemium* later, and that he even revised Book I in order to adapt it to the added introduction. 2) In the late stratum, Averroes is more concerned about the logical strength of Aristotle's arguments. 3) Another instance of the late stage is Averroes' reliance on Alexander. Averroes seems to have gained access to Alexander's commentaries while he was writing the Long Commentary on the *Physics* or even after having finished it. Glasner suggests that Averroes was inspired by Alexander when he developed his new physics.

Glasner devotes the second part of her book to substantiate her thesis that Averroes developed a new physics moving away from Aristotle. She links the development to his polemic with the commentators. Polemic or dialogue with his forerunners is a characteristic feature of Averroes' philosophy and it caused his thought to evolve over time. He occasionally informs us how he changed his view on an issue, and Glasner has collected relevant instances.[1]

Glasner's inquiry into the stages of Averroes' physical doctrine focuses on books VI-VIII of the *Physics*, all dealing with motion. She has selected three Aristotelian arguments that Averroes studied intensively and then reformulated to illustrate the evolution of his thought:

- The succession argument (*Physics* VIII.1)
- The divisibility argument (*Physics* VI.4)
- The moving-agent argument (*Physics* VII.1)

The *succession argument* says that before any motion there must have been a previous motion. This argument preoccupied Averroes for many years, and Glasner links his preoccupation to the issue of determinism. According to her "The texts show that Averroes was worried not by the central message of the succession argument, that

[1] Concerning an argument of *Physics* VI, Glasner quotes Averroes' words: "We, as well as others, thought for a long time about what Ibn Bâjja argued and approved of what he said, considering it to be the most satisfactory. But a certain objection occurred to me… (p. 60, translating from Kalonymos, MC, MS Hamburg hebr. 267, f. 772b 14–17)."

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is, the eternity of motion, but rather by its deterministic implications" (p. 62).

Glasner affirms that Averroes made a clear distinction between continuous movement in the celestial spheres and contiguous movement in the sublunary world. Averroes' theory of the contiguous movements should save him from determinism. But both movements need to be united, and Glasner finds the connection established in the Middle Commentary.

Aristotle maintained that before any motion or change, there must be a previous motion or change. Since no first motion or change can be established, he bluntly concludes that motion is eternal. Averroes followed Aristotle in Version A of the Short Commentary. In the Middle Commentary, he accepted the conclusion but questioned the kind of eternity motion possesses:

> It has not been explained in what sense motion is said to be perpetual: as being in succession, or contiguous, or continuous. This is because the infinite contiguity of movements is possible in one respect and impossible in another, and this can be imagined in different aspects (which al-Fârâbî had already studied in his book *On Changeable Beings*), distinguishing between the possible and impossible aspects (p. 76, translating from MC, MS Oxford Neubauer 1386, f. 112a 5–13, and other mss. of version A).

When Averroes was writing the first version of the Middle Commentary, he became aware of the weakness of the traditional interpretation of Aristotle's argument and made what Glasner calls "the turning point": an everlasting motion must be continuous and not the sum of successive motions. These contiguous motions are possible only because of the existence of the eternal continuous movement. "After an intensive inquiry and a long time," Averroes realized the necessity of a movement of this kind (p. 77, referring to MC, MS Oxford Neubauer 1386, f. 112a 12–23 and other mss. of version A).

Eternal motion is accidental to sublunary beings, just as eternal permanence is essential to their species, but impossible for their individual cases. Glasner's challenging thesis says that Averroes saved indeterminism by making a radical distinction between contiguity in the sublunary world and continuity in the celestial.

After the turning point, Averroes revised the Middle and Short commentaries, maybe in this order. He interpreted Aristotle as resorting to the definition of motion or change to prove that the first motion, *i.e.*, the motion of the outermost sphere, is eternal.

No doubt the Middle Commentary best illustrates the evolution, but the Long Commentary fails to notice it and shows a contradiction because it contains both versions, first Version A and then B in the same text. Glasner wonders: "How is it possible that Averroes ignores in the long commentary what he achieved in the middle commentary

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and was undoubtedly very important for him?" (p. 92). She calls the question the first riddle.

The Long Commentary actually has its own turning point in comment VIII.9. Averroes apologizes for having followed the traditional interpretation up to this point and raises the capital question: Did Aristotle mean motion in *genus* or a motion that is one only in *species*? And next he unfolds the argument of version B. A contradiction seems to be in the same book, and Glasner calls it the second riddle.

Glasner discusses several alternatives to answer the riddles. The first riddle can be solved assuming that Version A of the Middle Commentary contains some insertions belonging to the late stage (p. 100). The second one can be solved by admitting that "the turning point occurred when Averroes was writing the long commentary" (p. 108). Personally, I accept her solution to the first riddle but prefer to interpret the seeming contradiction in the Long Commentary as a true narrative.

Authors love their creations and are proud of their achievements. Why should Averroes have neglected the argument of Version A when he was writing the Long Commentary? He acknowledges that he was somewhat mislead when he adhered to the traditional interpretation, but we need to understand that he still adhered to it when he was writing the Long Commentary. The traditional issue remained worthy of being expounded. If the Short and Middle commentaries do not need to go into such detail, the Long Commentary should not skip it.

The *divisibility argument* is found in *Physics* VI.4. There Aristotle said that everything that changes (*to metaballon*) must be divisible (234b 10–20). The argument occurs in various statements concerning the quiddity of motion.

Aristotle defined motion as "the actualization [of the potentiality] of the movable as such" (VIII.1, 251a 9–10), he called motion something as contradictory as "an incomplete perfection" (III.2, 201b 31–32). Motion and change are here synonymous. In *Physics* V.1, however, he explains motion as a change between two contraries with intermediate states always existing between them; motion comprehends change in place, quantity, and quality. He excludes coming-to-be and passing-away from motion, because it is a change between contradictories; no intermediate states are possible.[2]

His double approach led to two basic interpretations of motion, and Glasner refers to Anneliese Maier's famous article "*Forma fluens* or

[2] See Averroes' remarks reproduced by Glasner on p. 117, footnote 47.

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fluxus formae?"[3] to this purpose: motion can be regarded as the process, the way, as an entity in itself (*fluxus formae*), and as a gradual part-by-part (*forma fluens*, p. 113). Albert the Great was the first to coin the concepts, to contrast them, and to use them to read Avicenna; but their antecedents can be traced to Averroes. In his Long Commentary, he enquired whether motion belongs to one category, which implies that it is a genus in itself, or to the various categories of the moving subjects. To consider motion as one category is the *modus famosus*, but the *modus verus* is that of considering motion belonging to the categories of the moving subjects (LC II.3, Latin 87D 16-87E 2). Most of his commentators associated Averroes with the *forma fluens* option; Maier points to Jean de Jandun as the firmest defender among them, but she also mentions Petrus Aureolus who denied that Averroes made the distinction *forma fluens* / *fluxus formae* at all. For Averroes, according to Aureolus, motion is neither *forma fluens* nor *fluxus formae* but *generatio partis post partem formae*.[4]

Glasner observes that there are more texts of interest than those pointed to by Anneliese Maier (p. 114). She identifies the passages in the various commentaries and analyze them.

The passages are related to divisibility of motion. Aristotle had argued that everything that changes (*to metaballon*) must be divisible (*Physics* VI.4, 234b 10–20). Aristotle thought of motion, and the first example he brings in is the change, or alteration, from white into black. Although he asserts that coming-to-be and passing-away are divisible to, the proposition is more evident in the changes of place and quality (VI.5, 235b 19–20). When something changes, it is partially there where it comes from and partially there where it goes to.

Divisibility of the movable originated a long debate among the commentators, who enquired how the proposition was valid in the case of instantaneous movements. The young Averroes knew it and considered Avempace's solution when he wrote the Short Commentary: According to Avempace, Aristotle meant divisibility by contrary accidents. Let me add that contrary accidents are obvious in qualitative changes. This would be Version A, and Version B takes the form of an addition (SC 100: 12–103: 1) He did not accept Avempace's explanation and answered that divisibility of that which changes instantaneously is caused by divisibility of the continuous magnitude between the two extremes of limits. But he had much more to say.

Glasner has attentively examined the issue in the Middle and Long commentaries and concludes that Averroes replaced the Aristotelian premise "Change is from something to something" by his premise

[3] *Zwischen Philosophie und Mechanik: Studien zur Naturphilosophie der Spätscholastik*, Storia e letteratura 69 (Rome, 1958; facsimile ed. Modena, 1977), c.2, p. 61–143.
[4] *Zwischen Philosophie und Mechanik*, p. 87.

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"Change is from rest to rest". To support the thesis, she quotes a passage of Averroes' Middle Commentary on c. 4 (referring to Aristotle's Book VI):

> What he [Aristotle] meant by 'from something to something' is 'something at rest to something at rest' or, generally, 'from an opposite rest to an opposite rest' (p. 117, footnote 45, translating from Kalonymos MC, MS Hamburg hebr. 267, f. 73a 13–14; Zeraḥya, MS Oxford Neubauer 1386, f. 89a 1–3).

Glasner sees here the turning point for a new concept of motion, closer to that of *forma fluens*. Averroes made the distinction between essential and accidental changes. Essential changes are from rest to rest, and accidental changes those which are results from essential ones. Essential changes are of two kinds: the end of the change is of the same genus of the change or different. Glasner draws the consequences: Change can no longer be considered as a homogenous entity (p. 118–19). Since *fluxus formae* was homogeneous and *forma fluens* is heterogeneous, she concludes that Averroes adopts the *forma fluens* doctrine.

According to Glasner, the Middle Commentary marks the turning point, and the Long Commentary develops the new interpretation. Glasner defines Averroes' new theory as follows: "Complete essential change is between actual stops, but is composed of intermediate changes which are not separated by stops" (p. 123). By contrast, the MC seems to admit the intermediate termini as stops.

Averroes' comment on *Phys.* VI, 234b 10, LC VI.32, is offered by Glasner as exemplary of the new interpretation (p. 122). Aristotle referred to qualitative change. Averroes considered the views of Alexander, Themistius and Avempace on divisibility of the movable and admitted that he sustained the latter's view for a long time. Averroes repeats what he said in the MC: Essential, *principales*, changes are of two kinds. The first is when the end of the change belongs to the same genus and the second when it does not.[5] In both cases, divisibility is a necessary property. Glasner observes how Averroes moves to a new definition of essential motion:

The end or result of any change is not a change and, if it is said to be a change, it is said equivocally according to Averroes. Next he defines essential change as "from rest to rest" (LC Latin VI.32, 266 F14, and G1). Essential change must take place between two periods of rest while accidental change takes place between two moments of an essential change. He applies the definition to qualitative changes, in which we easily see partial progress[6] and insists on the existence of

[5] LC, Latin, *Quartum Volumen Aristotelis de Physico Avditv libri octo cum Averrois Cordbvbensis variis in eosdem commentariis* (Venice, 1562), VI.32, 266D 7–16.
[6] LC, Latin VI.32, 266H 6–12.

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intermediate states – for instance, a finite number of intermediates exists between contrary colors. Averroes extends his analysis to motion in place and finally to substantial change, to coming-to-be. When fire, for instance, is generated from air,[7] Averroes recognizes gradual progression in this change.

Glasner considers other passages of the LC, but I believe that her interpretation of LC VI.32 best supports her thesis that Averroes "gives up the conception of motion as a continuous entity" in the Long Commentary (p. 127).

Glasner relates the evolution to a change in Averroes' concept of 'perfection'. Themistius and Philoponos distinguished between perfection as a final state, and perfection mixed with potentiality; the latter is appropriate to motion. The distinction was known to the Arab philosophers, and Averroes reproduces it in his three commentaries. Glasner argues that Averroes re-defines the distinction and that Averroes understands the second kind, *i.e.*, incomplete perfection as an "intermediate terminus, the end of an intermediate motion" (p. 132). Glasner relates this re-definition to the indeterminism she found in Averroes: the accidental factor intervenes at any intermediate point.

As for the date of the turning point Glasner places it late, most probably when Averroes was composing the Long Commentary, so that the Short and Middle commentaries contain tardy revisions (p. 139).

The *moving-agent argument* (*Physics* VII.1) says that 'everything that is in movement must be moved by something' (241b 34). Even in the case of something apparently self moved there is an internal principle or source acting as the mover. The argument seems to be addressed against Plato's doctrine of the self-motion of the soul.

Aristotle recalls the premise that everything that is in movement must be always divisible and argues: If it moves *per se* and in a primary sense, and one of its parts comes to rest, the whole must come to rest. Therefore it is moved by something because "We have agreed that if a thing is at rest because something else is not in motion, it must have been kept in motion by that other thing" (242a 45–47).

The argument is problematical, and the Ancient commentators disagreed about its interpretation. Glasner calls attention to the *Refutation by Alexander of Aphrodisias of Galen's Treatise on the Theory of Motion*, a book which was translated into Arabic.[8] Glasner writes that Averroes most probably had access to the book (p. 167).

[7] Primum autem in generatione, et corruptione est minima pars. quae potest inueniri de generato. minimum. nam. de omni generato est terminatae quantitatis. v.g. quod minima pars ignis est terminata. scilicet. minima pars, quae potest esse ignis. LC, Latin VI.32, 267D 6–11. Cf. Glasner, p. 158, footnote nº 108.

[8] Ed. and translation Nicholas Rescher - Michael E. Marmura (Islamabad, 1965).

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Galen was very critical of Aristotle, and Averroes summarizes his view before refuting it. Galen and others maintained, against Aristotle, that the whole which moves *per se* does not come to rest if some part of it is at rest; it is moved by the part, *per partem* although it is not moved by the whole, *per totum*.[9] Let us say that Galen must have had in mind the movement of the elementary bodies, fire, air, water, and earth and their local movement towards their natural places.

Averroes blames Galen for misunderstanding *per se* as that which is opposed to *per accidens*, while the true sense of *per se* is both being opposed to *per accidens* as well as being moved by the whole.

To defend Aristotle's position, Averroes expounds his doctrine of the *minima pars*. There must be some first movables, because natural bodies do not divide into endless parts insofar as these are natural bodies. Averroes says that for the first movable in the case of fire, the minimal part is what can be actual fire, *minima pars, quae potest esse ignis in actu* (LC Latin VII.2, 307H 8).

Averroes wants to defend Aristotle, but he is introducing an argument which is not found in the latter, based in the existence of *minimae partes*. The theory of *minimae partes* is related to that of *minima naturalia*, which claimed that parts of animals or plants cannot be "as large or as small as you please". Glasner refers to the research on the Aristotelian *minima naturalia* carried out by scholars like Murdoch, Holden, and Van Melsen and shows that the doctrine is scarcely a first attempt in Aristotle.[10] She follows Van Melsen in his affirmation that Averroes developed a complete theory of the *minima naturalia*. "Averroes not only 'anticipated' the Scholastic theory of *minima naturalia*, but actually developed a complete and coherent theory of his own" (p. 145).

The tenet that minimal parts are in natural bodies is found in the three commentaries. As early as in Version A of the Short Commentary (114: 3–9), Averroes defines the first movable as the smallest part of fire which can move upwards or the smallest part of earth which can move downwards, "and this is so because beings have limited dimensions".

However, the Hebrew translations of the Middle Commentary help us to understand better how Averroes completed his interpretation. There is no contradiction between the two versions, but Kalonymos' translation is based both on the updated version and also on a more elaborated text. There Averroes notes that he finally found a

[9] LC, Latin VII.2, 307G 18 – H8.

[10] For the historiography of the subject, see J.E. Murdoch, "The Medieval and Renaissance tradition of *Minima Naturalia*", in C. Lüth, J.E. Murdoch, W.R. Newman (eds.), *Late Medieval and Early Modern Corpuscular Matter Theories* (Leiden / Boston / Köln, 2001), pp. 91–6.

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commentary by Alexander on passage VII.1 and "that it agrees with what we wrote" (p. 165, translating from Kalonymos MC, MS Hamburg hebr. 267, f. 84a 11–13).

Averroes' doctrine of *minima pars* seems to contradict the Aristotelian doctrine of the continuous character of spatial and temporal magnitudes, to which Averroes subscribed, and seems to be closer to the atomistic theory he opposed. Glasner may solve the contradiction when she affirms that for Averroes: "The concrete physical entity, the moved body, is composed of minimal units while time and distance are mental constructs and as such infinitely divisible" (p. 162).

That time exists mentally is reminiscent of Alexander, whom Averroes often follows. Glasner argues that for Averroes not only time but also motion *qua continuous* exist only in the mind. We face therefore another challenging thesis, namely, that Averroes became a radical nominalist. The reader may not agree and point to other passages in favor of an essentialist Averroes, but as for the doctrine of the *minima pars* Glasner has adduced solid evidence to support its originality and its import for the history of modern science.

All three issues studied by Glasner in her book preoccupied Averroes during all his life and were dealt with in his three different commentaries on the *Physics*. As said, Averroes usually revised his writings and for one commentary we can have an earlier and a late version. These revisions are essential for understanding his thought and they play an important role in the Middle Commentary on the *Physics* that is completely extant only in Hebrew translation. Jewish scholars in the 13–14th centuries were exceptional in appreciating the value of the Middle Commentary, and we are indebted to them for the different translations into Hebrew and for the number of manuscripts preserving them.

The task of reading and analyzing the manuscripts – containing different translations in the case of the Middle Commentary – is arduous and requires high philological qualification in Hebrew, Arabic, and Latin. There follows the task of the philosopher who has to ferret out the arguments, evaluate them, and put forward an interpretation. In her book Ruth Glasner has admirably accomplished all of these tasks.[11]

[11] I thank Prof. C.E. Butterworth for his comments and corrections.

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