GIACOMO RUGHETTI

FORM AS A QUALITY OF MATTER
The Translation of ἕξις in Michael Scot's Version of Aristotle's *Physics* and its Influence on Giordano Bruno's *Figuratio Aristotelici Physici auditus*

Abstract

In this article, I analyse the influence of the translation of ἕξις as '*forma*' in Michael Scot's Arabic-Latin version of Aristotle's *Physics* on a passage of Giordano Bruno's *Figuratio Aristotelici Physici auditus*. I take my cues from a passage where Bruno uses the term '*formae*' to refer to Aristotle's expression ἕξεις καὶ διαθέσεις (*Phys*. II 1.193a25-26). I then examine all the 16th-century editions of the *Physics* Latin translations to trace the use of '*formae*' as a translation of this Aristotelian passage. I focus on the 1562 Giunta edition of Aristotle's *opera omnia* with Averroes' commentary, which includes the Arabic translation attributed to Michael Scot, the only one to translate ἕξις as '*forma*'. All occurrences of the translation of ἕξις in the Latin and Arabic translations are also documented. Finally, after a brief accounting of the meaning of ἕξις in Aristotle and in the Arabic version of the *Physics*, I discuss Bruno Nardi's interpretation of Albert the Great's *inchoatio formae*, to show how Bruno's use of the *translatio Scoti* places him in the tradition of ancient and medieval philosophers who have read the form as a quality of the matter.

Keywords

Aristotle's *Physics*, *Hexis* (Aristotelian Concept), Form (Early Modern Use), Giordano Bruno, Michael Scot

Author

Giacomo Rughetti
Università Roma Tre
giacomo.rughetti@uniroma3.it
ORCID: 0009-0003-6327-6952

I

Giordano Bruno's *Figuratio Aristotelici Physici auditus* is a compendium of Aristotle's *Physics*, composed of six books and preceded by the application of the *ars memoriae* to the text itself.[1] It was published in Paris in early 1586, likely with didactic intent. Felice Tocco, along with Girolamo Vitelli, edited the unique modern edition.[2] Tocco described it as "un succoso compendio della fisica aristotelica [...] fatto con molta cura" (Tocco 1889, p. 104). Although this text is not among the most studied of Bruno's works, it is crucial to understanding the relationship between Bruno's thought and the tradition of the Aristotelian natural philosophy. Bruno's modifications to Aristotle's *Physics* are indeed frequent, with extensive references to the commentaries of Averroes, Philoponus, and Thomas Aquinas.[3] Among these, the edition of the Aristotelian text with Averroes' commentary is particularly relevant, as the *Figuratio* directly refers to the division of the text according to the comments of the Cordoban philosopher.[4] Furthermore, Charles B. Schmitt (1979), Charles H. Lohr (2000) and Charles Burnett (2013) have highlighted the relevance, for Renaissance Aristotelianism, of the Giunta edition of Aristotle's *opera omnia* with Averroes' commentary.[5] Here, I will

[1] Book VI is titled as "liber quintus" (p. 1, Bruno 1889, p. 202). In light of this, Felice Tocco states the existence of only five books (Tocco 1889, p. 104), despite the presence of a new chapter numbering system and the ornamental motif accompanying the first page of each book. He relies only on one copy (Turin) in his edition of the text (Bruno 1889, p. iv) and does not refer to the particularity of Book VI. This book holds, in fact, a unique status. Five copies of the *editio princeps* have been identified so far. They are kept in the Biblioteca Nazionale Centrale in Rome, the Biblioteca Nazionale Universitaria in Turin, the Bibliothèque Nationale in Paris, the Bodleian Libraries in Oxford, and the Smithsonian Libraries in Washington. In the Parisian and Oxford copies, Book VI precedes Books I-V, while the Roman copy contains only the introductory section and Book VI.

[2] The Tocco-Vitelli edition is included in Volume I, Part IV, of the *Opera Latine Conscripta* (Bruno 1889).

[3] Tocco (1889) p. 104 n. 1, had already pointed to Philoponus as a source for the Nolano, while Spruit (2000) pp. 351-2, mentions Averroes and Thomas as certain sources.

[4] The reference is meant to guide the reader in the only case in which the *Figuratio* does not follow the order of the *Physics* text. In Book VI, Ch. III we read: "Respondet parti 8 libri a tex. 54 ad 78" (p. 7*v*, Bruno 1889, p. 212), while in Ch. IV it states: "Respondet part 8 libri a tex. 34 ad 54 indeque usque in finem" (p. 10*r*, Bruno 1889, p. 216).

[5] The edition was published three times during the 16th century (1550-1552, 1562-1564 and 1574-1575). The *Physics* always occupies the whole Volume IV.

focus on a passage from the *Figuratio* linked to the translation of Aristotle's *Physics*, published many times during the sixteenth century, always together with Averroes' commentary.

Before examining the case study of this article, I will provide additional information about the *Figuratio* and its context, to outline the value of Bruno's interpretation of the Aristotelian text. As I have already mentioned, the work was printed in the early months of 1586, during Bruno's second stay in Paris. In fact, Bruno had previously spent about two years in the French capital, between 1581 and early 1583, before leaving Paris to travel to London with the French ambassador Michel de Castelnau. During that time, he delivered lectures at the Collège Royal.[6] This first stay was certainly very productive for Bruno, who published three works related to the *ars memoriae* in 1582: *De umbris idearum*, dedicated to the King of France Henry III, who was impressed by his mnemonic art, *Cantus Circaeus* and *De compendiosa architectura*.[7] Then, in London, Bruno published three more mnemotechnic works in 1583,[8] followed by the six vernacular dialogues between 1584 and 1585.[9] However, when he came back to Paris, the political tensions generated by the Wars of Religion affected the already unstable balance at the French court.[10] This, together with the polemic with the mathematician Fabrizio Mordente,[11] worked to Bruno's disadvantage, preventing him from

[6] The Collège Royal was founded in 1530 by Francis I. The *lecteurs royaux* were active in this institution. According to Bruno's own trial testimony, he was assigned to deliver a "lettione ordinaria" in Toulouse, while in Paris he could only read "quella estraordinaria" (Firpo 1993, p. 161). Therefore, it must be noted that the Nolan was not formally appointed as a *lecteur royal*, even though he delivered lectures at this prestigious institution.

[7] On Bruno's first stay in Paris see Spampanato (1921) I, pp. 307-29; Ricci (2000) pp. 142-83; *Giordano Bruno 1548-1600. Mostra storico documentaria* (2000) pp. 85-96 and Ciliberto (2020) pp. 173-208.

[8] *Ars reminiscendi*, *Explicatio triginta sigillorum* and *Sigillus sigillorum*.

[9] On Bruno's years in England see Spampanato (1921) I, pp. 329-86; Yates (1939) pp. 227-42 and (1964) pp. 205-56; Aquilecchia (1963) pp. 3-13 and (1995) pp. 21-42; Ciliberto (1986) pp. 91-153 and (2020) pp. 209-427; Ciliberto and Mann (1997); *Giordano Bruno 1548-1600. Mostra storico documentaria* (2000) pp. 97-124.

[10] On this topic see Ricci (2000) pp. 373-6.

[11] On this controversy, see the articles by Camerota (2024) and Canone (2024) in the catalogue of the recent exhibition organised at the National Central Library of Rome. Ricci (2000) pp. 380-90, stresses how the 'Mordente affair' is directly linked to the political-religious dynamics of power at the court of Henry III.

regaining his lecturing position at the Collège Royal.[12] For this reason, it is likely that the publication of a compendium of Aristotle's *Physics* with the *ars memoriae*[13] – a choice that follows Bruno's intellectual output between Paris and London – was an attempt to obtain again a teaching role.[14] As Bruno states in the dedication of the work (Bruno 1889, pp. 133-5), the *Figuratio* is the result of a precise comparison with the text of the Stagirite. However, it does not strictly follow it. Bruno, in fact, significantly modifies the text, also by using the commentaries already mentioned. These modifications often bring to light crucial themes of the Nolano's thought. The *Figuratio* is divided in six books, organized into chapters and articles. The first four books follow the order of the Aristotelian books, while *Figuratio*'s fifth book covers *Physics* books five and six, and *Figuratio*'s sixth book covers the Aristotelian books seven and eight.[15]

II

The case study of this article addresses *Phys.* II 1.193a9-28. I will briefly summarise the Aristotelian passage and then analyse how Latin translations have influenced Bruno's interpretation. As is typical of Aristotle, he introduces a new topic by presenting the views of the earlier philosophers. In this case, to define 'nature', he begins with the opinion of those who consider it to be a synonym of matter, conceived as the "first component" present in the

[12] In the second interrogation in Venice, Bruno says that "tornando il detto Ambasciator in Francia alla Corte, l'accompagnai a Paris; dove stetti un altro anno, trattenendomi con quelli signori ch'io conoscevo, a spese però mie la maggior parte del tempo" (Firpo 1993, pp. 159-64). This suggests that Bruno was not once again appointed as an extraordinary reader.
[13] For an extensive analysis of this section, see the article by Matteoli (2015).
[14] In support of this hypothesis is another direct testimony of Bruno's second stay in Paris: the *journal* of Guillaume Cotin, librarian of the Abbey of Saint-Victor. This is the only source to give direct news of the *Figuratio*. In the *journal*, in fact, Cotin notes on 27 December 1585, that Bruno told him that he was working on three works, including "la philosophie entière d'Aristote rédigée à peu de figures, et la quelle il enseignera en demy an" (Spampanato 1921, II, p. 655). On Bruno's second stay in Paris see, in addition to the already mentioned articles by Camerota (2024) and Canone (2024), Spampanato (1921) I, pp. 387-410; Aquilecchia (1957); Auvray (1900); Yates (1951); Perfetti (1992); Canone (2007); *Giordano Bruno 1548-1600. Mostra storico documentaria* (2000) pp. 125-36 and Ciliberto (2020) pp. 429-65.
[15] In addition to the number of books, Felice Tocco also misinterpreted the concordances with Aristotle's text (Tocco 1889, p. 104).

natural being, "which is intrinsically unshaped" (Reeve 2018, p. 21). According to Antiphon, evidence for this view is the fact that a rotting wooden bed generates a sprout, rather than another bed. Similarly, everything that remains identical to itself, despite being in contact with something else, constitutes the nature and substance of a being. For this reason, some say that the nature of beings consists of one or more elements, and they identify them with the "substance of all things, everything else being ἕξεις καὶ διαθέσεις" (*ibid*.). [16] The elements constituting the nature-substance are eternal, whereas *hexeis* and *diatheseis* are generated and decay endlessly. With reference to this passage from the *Physics*, Bruno writes in the *Figuratio* (Bruno 1889, p. 155):

> Materiam quidem esse naturam est manifestum, tum ex hoc quod primum informe subiectum maxime natura existimatur, ut ex lecto putrescente declarat Antiphon, et ex auro quod in aquam, et ligno quod in terram vertitur, alii; tum etiam ex antiquorum communi sententia, qui sane totam rei substantiam atque naturam (utpote unum perpetuo manens, supra quo infinitae formae variantur) materiam esse crediderunt, quos quidem per pueros patrem a matre non distinguentes figurare possumus.[17]

This text diverges from Aristotle's in many aspects,[18] but here I focus only on the definition of matter identified by the ancients with substance and nature as "unum perpetuo manens, supra quo infinitae formae variantur" (Bruno 1889, p. 155). In Aristotle's text, instead, it is stated that ἕξεις καὶ διαθέσεις of the matter "come to be or pass away an unlimited number of times" (Reeve 2018, p. 21). It is therefore evident that Bruno has replaced ἕξεις καὶ διαθέσεις with the term '*formae*'. The words ἕξεις and διαθέσεις are attested in the reference editions of the Greek text – Bekker (193a25-26) and Ross (1936) – without significant variants in the manuscripts. To

[16] I have replaced the English translation with the key terms for this study: ἕξεις and διαθέσεις (*Phys*. 193a25-26). Reeve translates ἕξεις as 'states' and διαθέσεις as 'dispositions'.
[17] Felice Tocco and Girolamo Vitelli decided to retain the expression "figurasse possumus", as it appears in the *editio princeps*. Cecilia Sideri suggested modifying the expression to "figurare possumus".
[18] In addition to last sentence, which is found in Book I of the Aristotelian text (184b12-14), it should be noted that Aristotle says the opposite of what Bruno mentions regarding gold and wood. In the *Physics* (193a17-21), in fact, it is stated that neither gold changes when in contact with water nor wood when in contact with earth.

better understand what might have influenced Bruno's interpretation, it is necessary to analyse the Aristotelian text as edited in the commentaries that Bruno extensively used to write the *Figuratio*. I refer, as mentioned, to the sixteenth-century editions of the commentaries by Philoponus, Averroes and Thomas Aquinas. Then, I examine the Giunta edition of Aristotle's *opera omnia* with Averroes' commentary, published in Venice in 1562, along with the 1570 '*Piana*' edition of Thomas Aquinas' commentary, printed in Rome by the heirs of Antonio Blado and Giovanno Osmarino Gigliotto.[19] In fact, both texts are identified by Charles B. Schmitt (1979, pp. 125-6) as reference editions for the sixteenth-century Aristotelian studies. It is well known that, in the Latin tradition of the *Physics*, the medieval translations from Greek by James of Venice and William of Moerbeke compose the *vulgata*. These translations are referred to as '*antiqua translatio*' or '*vetus translatio*' in the sixteenth-century editions (Cranz 1971, p. 113). Both the editions with Averroes' and Thomas' commentaries include two versions of the Aristotelian text: alongside the *vulgata* in William of Moerbeke's translation, the Giunta edition has the translation from Arabic, commonly attributed to Michael Scot (*translatio Scoti*), while the *editio Piana* presents James of Venice's version with the more recent translation by John Argyropoulos. Philoponus' commentary was edited in the sixteenth century with two different translations of the Aristotelian text, one by Guilielmus Dorotheus and the other by Johannes Baptista Rasarius. Here, I refer to Rasarius' translation – printed more frequently than Dorotheus' version – in the 1581 edition published in Venice by the heirs of Girolamo Scotto. This edition, in fact, is the closest to the publication of the *Figuratio* (Cranz 1971, p. 157; Lohr 2024, pp. 72-3). I transcribe from these sixteenth-century editions the passage corresponding to *Phys.* 193a23-28, that ends with the terms ἕξεις καὶ διαθέσεις:[20]

[19] The *Physics* was published in Volume II of the *opera omnia* commissioned by Pius V, alongside the *De caelo* and *De generatione et corruptione*. The publisher Giulio Bolani degli Accolti also contributed to the printing of the work, hence some copies feature the inscription "apud Iulium Accoltum" (Cioni 1969).

[20] In the transcription I expand the abbreviations and change the 'u' into 'v'.

Aristotle (1562) p. 51*r*E, *vulgata*:
quod enim aliquis ipsorum existimavit huiusmodi, sive unum, sive plura, hoc, et tot dicit esse omnem substantiam, alia autem omnia passiones istorum, et habitus et dispositiones.

Aristotle (1562) p. 51*r*F, *translatio Scoti*:
illud enim, quod existimavit unusquisque eorum esse huiusmodi, sive unum, sive plura, illud, vel illa posuerunt totam substantiam, et quod alia sunt passiones accidentes istis, et dispositiones, et formae.

Aristotle (1570), p. 16*r*, *vulgata*:
quot enim aliquis acceperit ipsorum huiusmodi, sive unum, sive multa hoc, et tanta dicit esse omnem substantiam: alia autem omnia passiones istorum et habitus, et dispositiones.

Aristotle (1570), p. 16*r*, Argyropoulos:
quod enim quisque tale esse putavit, sive unum, sive plura, id totque universam substantiam esse dicit. Cetera vero cuncta affectus horum habitus, ac dispositiones.

Aristotle (1581) p. 66, Rasarius:
Quod enim quisque putavit tale esse sive unum, sive plura, id totque universam substantiam esse dixit: caetera vero alia affectiones, habitus ac dispositiones horum.

In the following table I summarise the comparison of the texts, with the reference only to the translation of the Aristotelian expression ἕξεις καὶ διαθέσεις:

Aristotle (1562) p. 51*r*E, *vulgata*	Aristotle (1562) p. 51*r*F, *translatio Scoti*	Aristotle (1570) p. 16*r*, *vulgata*	Aristotle (1570) p. 16*r*, Argyropoulos	Aristotle (1581) p. 66, Rasarius
habitus et dispositiones	dispositiones, et formae	habitus, et dispositiones	habitus, ac dispositiones	habitus ac dispositiones

The translation "dispositiones et formae" is found only in the *translatio Scoti* of the Giuntine, while the other texts state "habitus et dispositiones". Therefore, it seems that, in the *Figuratio*, Bruno received the term '*formae*' from the *translatio Scoti*. To identify any other translation of this specific Aristotelian passage as '*formae*', I examine the other Latin translations of the *Physics* published up to the date of the printing of the *Figuratio*.

III

To trace both the translations and sixteenth-century editions of Aristotle's text, I referred to the recently published catalogue of Latin editions of Aristotle, edited by Christoph Lüthy and Davide Cellamare (Lohr 2024). This work carries on Charles Loh's research, which was built on the revision by Charles B. Schmitt, published in 1984, of the *Bibliography of Aristotle Editions, 1501-1600* edited by F. Edward Cranz (1971). Fifteen different translations of the *Physics* are known to have been published up to 1586, the year the *Figuratio* was printed. I list the translators below, including in the footnotes the editions consulted and, where applicable, the references to the catalogues:

1. James of Venice (12th C.): "habitus et dispositiones".[21]
2. Michaele Scot (12th-13th C.): "dispositiones et formae".[22]
3. William of Moerbeke (13th C.): "habitus et dispositiones".[23]
4. John Argyropoulos (15th C.): "habitus ac dispositiones".[24]
5. Guillaume Briçonnet (15th-16th C.): "habitus/ et dispositiones".[25]
6. Augustinus Niphus (15th-16th C.): "habitus, et dispositiones".[26]
7. Guillelmus Dorotheus (16th C.): "habitus ac dispositiones".[27]
8. Nicolaus Grochius (16th C.): "habitus et affectiones".[28]
9. Gentian Hervetus (16th C.): "habitus, et affectiones".[29]
10. Lucillo Filalteo Maggi (16th C.): "habitusque, et dispositiones".[30]

[21] Aristotle (1570) p. 16*r* (Lohr 2024, 7.1).
[22] Aristotle (1562) p. 51*r*E (Cranz 1971, 108.193; Lohr 2024, 7.7).
[23] Aristotle (1562) p. 51*r*F (Cranz 1971, 108.193; Lohr 2024, 7.5).
[24] Aristotle (1570) p. 16*r* (Lohr 2024, 7.3). There is another version of this translation, attested in a single printed copy, which I have not been able to examine (Cranz 1971, 108.074; Lohr 2024, 7.4).
[25] Aristotle (1518) p. 13*v*. This is a revision of the *vulgata* (Cranz 1971, 107.850; Lohr 2024, 7.9).
[26] Aristotle (1549) p. 62*v*N (Cranz 1971, 108.173; Lohr 2024, 7.8).
[27] Aristotle (1546) p. 49*v*. The text contains only Books I-IV with the commentary of Philoponus (Cranz 1971, 108.291; Lohr 2024, 7.14).
[28] Aristotle (1552b) p. 27. This is a revision of Périon's translation (Cranz 1971, 108.241; Lohr 2024, 7.13).
[29] Aristotle (1551a) p. 45*r* (Lohr 2024, 7.12).
[30] Aristotle (1566) p. 125 (Lohr 2024, 7.18).

11. Joachim Périon (16th C.): "habitus et affectiones".[31]
12. Johannes Baptista Rasarius (16th C.): "habitus ac dispositiones".[32]
13. Francisco Vallés (16th C.): "habitus, et dispositiones".[33]
14. Francesco Vimercati (16th C.): "habitus et dispositiones".[34]
15. Anonymous: Lohr (2024) 7.17, refers to a single edition of the anonymous translation – absent in Cranz (1971) – printed in Paris in 1562, which I have not been able to consult.

In addition, the online *Vernacular Aristotelianism in Renaissance Italy Database* (VARI 2012), edited by David Lines and Eugenio Rufini, points to a vernacular translation by Antonio Brucioli, published in Venice in 1551,[35] which states "habiti, et disposizioni" (Aristotle 1551b, p. 26). I summarise the results of the investigation below:

1. habitus et/ac dispositiones:	10 translations: James of Venice, William of Moerbeke, John Argyropoulos, Guillaume Briçonnet, Augustinus Niphus, Guillelmus Dorotheus, Lucillo Filalteo Maggi, Johannes Baptista Rasarius, Francisco Vallés, Francesco Vimercati.
2. habitus et affectiones:	3 translations: Gentian Hervetus, Joachim Périon, Nicolaus Grochius.
3. dispositiones et formae:	1 translation: Michael Scot.

The expression '*habitus et dispositiones*', with the variant '*ac*' replacing '*et*' in the translations by Argyropoulos, Dorotheus, and Rasarius, is the most attested translation, also found in the *vulgata*. The translations by Nicolaus Grochius, Gentian Hervetus, and Joachim Périon feature the variant

[31] Aristotle (1550b) p. 14*r* (Cranz 1971, 108.187; Lohr 2024, 7.10).
[32] Aristotle (1558) p. 72. The text contains only Books I-IV with the commentary of Philoponus (Cranz 1971, 108.361; Lohr 2024, 7.15).
[33] Aristotle (1562b) p. 57 (Lohr 2024, 7.16).
[34] Aristotle (1550c) p. 101 (Lohr 2024, 7.11). This volume also includes the Greek text, and at p. 100, we read ἕξεις, καὶ διαθέσεις, as in both the Bekker and Ross editions (1936) 193a25-26.
[35] See also Cranz (1971) 108.224.

'*affectiones*' in place of '*dispositiones*'. Only the translation attributed to Michael Scot includes '*formae*', used by Bruno in the *Figuratio* to address the Aristotelian passage. By cross-referencing the catalogues of Cranz (1971) and Lohr (2024), thirteen editions of *translatio Scoti* can be identified, from 1501 to 1584.[36] Among these, I have been able to consult, in addition to the three Giunta editions of Aristotle's *opera omnia* with Averroes' commentary already mentioned (Aristotle 1550a, 1562a, 1574), the following editions:

1. Aristotle (1520) p. 41*v*: "habitus et dispositiones"/"dispositiones et forme".[37]
2. Aristotle (1529) p. 41*v*: "habitus et dispositiones"/"dispositiones et forme".[38]
3. Aristotle (1560) p. 40*v*E: "habitus, et dispositiones"/"dispositiones, et formae".[39]

Although in only three out of ten copies, the other editions confirm the Giuntine's version. I analyse below all occurrences of '*habitus*' in the *vulgata*, with reference to its equivalent in Michael Scot's translation. For this purpose, I keep referring to Volume IV of the 1562 Giunta edition, for both translations. The textual research was conducted by cross-referencing the online resources *Aristoteles Latinus Database* (ALD 2023) and *Digital Averroes Research Environment* (DARE 2010). The former enables searches within the Greek-to-Latin translations by James of Venice and William of Moerbeke, while the latter allows searches within the *vulgata*, the *translatio Scoti* and Averroes' long commentary, in the incunable printed in Padua around 1472-1475 (Aristotle 2011):

	Book	Bekker/Ross	*Vulgata*	*Translatio Scoti*
1	I	188a7: ἕξεις	p. 25*v*I: habitus	p. 25*v*K: formae
2	I	193a25: ἕξεις	p. 51*r*E: habitus	p. 51*r*F: formae
3	II	195a9: εὐεξίας	p. 60*r*E: Boni habitus / bonae habitudinis	p. 60*v*G: Bonae consistentiae corporis
4	IV	209b27: ἕξις	p. 127*v*K: habitus	p. 127*v*L: forma

[36] Cranz (1971) p. 155, lists fourteen editions, but the one printed in Venice in 1516 contains only Augustinus Niphus' version (107.838).
[37] *Ibid*., 107.866.
[38] *Ibid*., 107.906.
[39] *Ibid*., 108.423.

5	IV	210b26: ἕξις	p. 132*v*G: sicut habitus	p. 132*v*H: secundum formam
6	IV	223a19: ἕξις	p. 201*r*F: habitus	p. 201*v*G: forma
7	V	228a8: ἕξεις	p. 229*v*M: habitus	p. 230*r*A: formae
8	V	228a14: ἕξεις	p. 230*r*F: habitus	p. 230*v*G: formae
9	V	228a15: ἕξις	p. 230*r*F: habitus	p. 230*v*G: forma
10	VII	245b22: τοῖς σχήμασι καὶ ταῖς μορφαῖς καὶ ταῖς ἕξεσι	p. 318*r*D: In figuris, et formis, et habitus	p. 318*r*F: In figuris, et formis, et vestiti
11	VII	246a29-30: ἕξεσιν	p. 319*v*K: in habitibus	p. 319*v*L: in formis
12	VII	246a30: ἕξεις	p. 319*v*K: habitus	p. 319*v*L: formae
13	VII	246b27: περὶ τὰς ἕξεις	p. 319*v*L: circa habitus	p. 320*r*A: in formis

There are a further thirteen occurrences in the two versions of the *vulgata* text in the *Aristoteles Latinus* edition and in the *vulgata* of the Paduan incunabulum transcribed in DARE (2010). However, in this case these texts differ from the version of the *vulgata* in the Giunta edition. In fact, the occurrences of '*habitum*' in both *Aristoteles Latinus* and DARE always correspond, in the Giunta edition, to '*contiguus*'.[40] The Greek text edited by Ross also does not feature ἕξις in any of these occurrences. It is likely that the editors of the Giunta edition revised and emended those previous versions of the *vulgata*.[41]

The analysis has shown that all occurrences of '*habitus*' in the *vulgata* in the Giunta edition correspond to the Greek ἕξις. Also, excluding the translation of εὐεξίας, eleven out of twelve instances are rendered as '*forma*' in Michael Scot's translation. The only exception occurs in the passage where, in the Greek text, ἕξις follows μορφή in the phrase τοῖς σχήμασι καὶ ταῖς μορφαῖς καὶ ταῖς ἕξεσι. This passage poses no difficulty for translators from Greek. However, in the *translatio Scoti*, '*forma*' is replaced with '*vestiti*'. It is therefore evident that we are dealing with a systematic approach: the Arabic equivalent of the Greek ἕξις is translated into Latin as '*forma*'. Evidence for this lies in the absence of '*habitus*' in Michael Scot's translation and the substitution of '*forma*' with '*vestiti*' in the only case where ἕξις directly

[40] And mostly to the verbs '*sequor*' and '*succedo*' in Michael Scot's translation, as also founded in DARE.

[41] In fact, the volume's introduction states: "Aristotelis de Physico auditu libri Octo, ex optimis codicibus castigati" (Aristotle 1562a, p. [1]*v*).

follows μορφή in the Greek text. As previously mentioned, this translation is attributed to Michael Scot and was conducted from Arabic. All the other translations printed in the sixteenth century, starting with James of Venice's *vulgata*, were made from the Greek.[42] This distinction is crucial for this research. The variant '*formae*', indeed, can only result from the double translation of the Greek ἕξεις into Arabic and then from Arabic into Latin.

IV

Before analysing the Arabic text, it is useful to briefly outline the history of this translation, to highlight its significant role within Aristotle's *Physics* tradition. I first examine the sixteenth-century editions, for information about the translation. As I have already mentioned, I have analysed six editions from the thirteen listed in Cranz (1971) and Lohr (2024): the three Giuntine (Aristotle 1550a, 1562, 1574), the editions printed in Lyon in 1520 and 1529 and, finally, the one printed in Venice by Comin da Trino di Monferrato in 1520. None of these editions contain specific references to the *translatio Scoti*, not even the Giunta editions, despite the extensive information given about the criteria for the edition of the texts. In the preface to the first volume of the first edition, Marco degli Oddi mentions only the revision of the Aristotelian text by Giovanni Battista Bagolino, with no distinction between the two versions.[43] In Cranz (1971) p. 155, this translation is described as a "translation associated with the commentary of Averroes," while in Lohr (2024, p. 70, 7.7), it is referred to as anonymous. However, in the introduction to the critical edition of James of Venice's translation of the *Physics*, Fernard Bossier and Jozef Brams (1990) p. liv n. 84, clarify that this translation is the one commonly attributed to Michael Scot. The Scotsman was already identified by De Vaux as a possible translator of the *Physics*, the certain translator of the *De Caelo*, and most likely the translator of Averroes' long commentary

[42] From the manuscripts, before the printing of the Aldine edition of Aristotle's works, at the end of the fifteenth century.

[43] "Ob id Physicorum liber in Quarto volumine locum obtinuit, qui quidem de principiis naturalium rerum agit: vbi contextus in primis Aristotelis castigatus fuit a Bagolino nostro, et Averrois commentaria magna, quae in hanc conscriptis tractationem, ab iis, quos supra recensuimus, doctoribus emendata sunt" (Aristotle 1552a, p. 9).

(1933, p. 219; Glasner 2009, p. 12 n. 16). Although the attribution remains uncertain, it is nonetheless possible to link this translation with Averroes' commentary. In fact, the *translatio Scoti* is always linked with it, both in manuscripts and printed editions. Furthermore, De Vaux (1933, p. 221) was the first to suggest Theodore of Antioch as the translator of Averroes' *Proemium* to the long commentary on the *Physics*. According to De Vaux, the translation of the *Physics* could also have been made by Theodore, or by both him and Michael Scot. The two, in fact, were together in the service of Frederick II, during the last years of Scot's life, before his death in 1235. Theodore would then succeed him as court philosopher.[44] In addition, according to De Vaux (1933, p. 224), the translation was not part of the Aristotelian works introduced in Paris around 1230. Since the translation is preserved in a manuscript from the Bibliothèque Nationale in Paris dated 1243,[45] it can be dated to the first three decades of the 13th century. Thus, the *translatio Scoti* can be placed in the milieu of Frederick II's court. Indeed, Theodore succeeded Scot as court philosopher, and the two are the translators, respectively, of Averroes' *Proemium* and, almost certainly, his long commentary on Aristotle's *Physics*, to which the *translatio Scoti* is always associated.

The *translatio Scoti* is not the only *Physics* translation from Arabic. There are, in fact, two others: the first, by Gerard of Cremona, dated between his arrival in Toledo in 1144 and his death in 1187, which presents only the Aristotelian text, without commentary; the second, anonymous, is preserved in only three manuscripts, one of which contains only Book VII and sections of Book VIII with Averroes' commentary, while the others contain only Book VII with the commentary of the Cordoban philosopher (Arnzen 2021, p. ccv).[46] Rüdiger Arnzen (*ibid*., p. ccvi) highlights how the

[44] On Michael Scot at the court of Frederick II, see Burnett (1994) and (1999) and Pick (1998).

[45] Paris, B. N. lat. 15453 (Bossier and Brams 1990, p. lv n. 84).

[46] Arnzen (2021) pp. ccv-ccix, formulates the hypothesis that this translation was meant to fill gaps in the *translatio Scoti*. He had, in fact, already demonstrated the earlier date of the anonymous translation, based on the influences of the *translatio Scoti* on it. However, Arnzen adds that it cannot be excluded that it consists of excerpts of a new and complete translation. Moreover, Schmieja (2007) pp. 85-135, highlights that this translation is truly

three translations differ significantly from each other. The text of Gerard of Cremona follows the Arabic closely, while the other two translations are more focused on the fluency of the Latin text. Nevertheless, Arnzen (*ibid*., p. ccix) adds that the technical terminology is translated mostly the same. Here, my analysis focuses on the *translatio Scoti*, as it is the only one to have been published during the sixteenth century. Bossier and Brams (1990, pp. lv-lvi) note that this translation had a greater fortune, and influenced authors such as Robert Grosseteste, Adam of Buckfield, and Albert the Great. Moreover, they observe that a chain of scholastic glosses appeared at the University of Oxford, including excerpts from an '*alia translatio*', which refer to this translation and Averroes' commentary.[47] Finally, the authors point to the influence of Scot's translation on the later tradition of the translation by James of Venice, dating from around 1235-1240 (Bossier and Brams 1990, p. lix).

After having briefly outlined the historical and cultural context of the *translatio Scoti*, I examine the Arabic text. Among the three Arabic translations of the Greek text, the *translatio Scoti* was based on that of Isḥāq Ibn Ḥunayn. This translation, carried out between the 9th and 10th centuries, has been preserved almost intact in the manuscript Leiden Or. 583, dated October 5, 1130. The manuscript is the result of roughly a century of teaching activity on Aristotle's *Physics*. In fact, Isḥāq Ibn Ḥunayn's translation was adopted as the canonical text in the school of Yaḥyā ibn 'Adi, and countless scholars from the Baghdad school worked on this manuscript over the centuries.[48] Arnzen (2021) p. xciv, stresses that their goal was not to preserve the translation but to modify the text in order to understand, adapt, and incorporate Aristotle's thought into the philosophy and cosmology of their school. All three Arabic translations are accompanied by a commentary. In the case of the manuscript tradition of Leiden Or. 583, these include the commentaries of Alexander and Themistius, alongside those of the Arab

independent and not merely a revision of the *translatio Scoti*. Finally, Schmieja also suggests Hermannus Alemannus as a possible translator.

[47] The authors clarify that from the study of the existing copies, it emerges that this is neither the result of multiple scholars working independently, nor the copying of glosses from one manuscript to another. Instead, they suggest that this is the work of several scholars who progressively formed the core of the Oxford exegesis of the text (Bossier and Brams 1990, p. lv).

[48] The manuscript was last copied by Abū al-Ḥakam († 1135) (Peters 1968, p. 31).

commentators of the school of Yaḥyā ibn ʻAdi (Peters 1968, p. 31). Additionally, it is relevant to underline that Averroes worked on a different manuscript tradition of the translation, as did the Latin translators.[49] The manuscript text was edited in two volumes in 1964-65 by Abdurrahman Badawī. For the textual research, I have used the online resource *Glossarium Græco-Arabicum. A Lexicon of the Medieval Arabic Translations from the Greek* (GGA 2011), but my gratitude goes to Tommaso Alpina, who provided me with invaluable information on the Arabic terms. He has also integrated the missing occurrences in GGA (2011). I therefore proceed to list the correspondences between the passages I have examined in the Giuntine and the text of Isḥāq Ibn Ḥunayn's translation in the edition by Badawī:

		Bekker/Ross	*Vulgata*	*Translatio Scoti*	Badawī
1	I	188a7: ἕξεις	p. 25*v*I: habitus	p. 25*v*K: formae	al-hay'āt
2	I	193a25: ἕξεις	p. 51*r*E: habitus	p. 51*r*F: formae	malakāt
3	II	195a9: εὐεξίας	p. 60*r*E: Boni habitus / bonae habitudinis	p. 60*v*G: Bonae consistentiae corporis	ḫiṣb al-badan
4	IV	209b27: ἕξις	p. 127*v*K: habitus	p. 127*v*L: forma	hay'a
5	IV	210b26: ἕξις	p. 132*v*G: sicut habitus	p. 132*v*H: secundum formam	l-hayʾa
6	IV	223a19: ἕξις	p. 201*r*F: habitus	p. 201*v*G: forma	hay'a
7	V	228a8: ἕξεις	p. 229*v*M: habitus	p. 230*r*A: formae	al-hay'āt
8	V	228a14: ἕξεις	p. 230*r*F: habitus	p. 230*v*G: formae	hay'āt
9	V	228a15: ἕξις	p. 230*r*F: habitus	p. 230*v*G: forma	hay'a
10	VII	245b22: τοῖς σχήμασι καὶ ταῖς μορφαῖς καὶ ταῖς ἕξεσι	p. 318*r*D: In figuris, et formis, et habitus	p. 318*r*F: In figuris, et formis, et vestiti	al-aškāl wa-l-ṣuwar wa-l-hayʾāt
11	VII	246a29-30: ἕξεσιν	p. 319*v*K: in habitibus	p. 319*v*L: in formis	al-hayʾāt
12	VII	246a30: ἕξεις	p. 319*v*K: habitus	p. 319*v*L: formae	
13	VII	246b27: περὶ τὰς ἕξεις	p. 319*v*L: circa habitus	p. 320*r*A: in formis	

[49] See Arnzen's *stemma codicum* (2021) p. ccxxx.

The translation of Isḥāq Ibn Ḥunayn attests to the two words commonly used to translate ἕξις, namely *malaka* (ملكة) and *hay'a* (هيئة) (Naaman 2017, p. 4).[50] The former refers to a personality trait, a disposition, and, in this sense, a *habitus*. The latter denotes form as external configuration or appearance.[51] It is therefore evident that the Latin translator has translated not only the Arabic *hay'a* as '*forma*', but also *malaka*, while, since James of Venice, the Latin translators have used '*habitus*' to refer to the Greek ἕξις.

V

The analysis of all the translations of the *Physics* highlighted that the *translatio Scoti* is the only one to refer to the Aristotelian phrase ἕξεις καὶ διαθέσεις as 'dispositiones, et formae'. Moreover, it has been shown that in this version, through the Arabic, there is a systematic translation of ἕξις as '*forma*'. On the contrary, in the translations from Greek, the term is always translated as '*habitus*', since the version by James of Venice. Additionally, it has been noted that the passage from *Phys.* 193a9-28 is reported by Giordano Bruno in the *Figuratio* following precisely the *translatio Scoti*. In fact, Bruno writes that matter is "unum perpetuo manens, supra quo infinitae formae variantur" (Bruno 1889, p. 155). By adopting the term found only in the Arabic translation, Bruno does not modify the meaning of the Aristotelian passage. Indeed, both translations in the Giuntine edition state that, for the ancients, nature is the "primum non formatum per se" (Aristotle 1562a, fol. 50*v*I, 50*v*K-L). It is therefore the Aristotelian text itself that refers, in all its editions, to the fact that ancient thinkers conceived the form as ἕξις or διάθεσις of the matter. Indeed, all the Latin editions – except for Scot's translation – indicate that for the ancients, everything other than matter is described as *passiones*, *habitus*, and

[50] Along with *malaka* and *hay'a*, Naaman lists *qunya* (acquired disposition), *ḥāl* (state), and *ḥāl lāzima* (inseparable state) as alternatives to convey the sense of ἕξις.

[51] Naaman (2017) p. 6, explains that Al-Fārābī uses the term *malaka* to refer to consolidated dispositions that are difficult to lose, while *ḥāl* refers to dispositions that are easy to lose. According to Al-Fārābī, who was trained in Baghdad – where, as previously noted, the translation of the *Physics* by Isḥāq Ibn Ḥunayn circulated – it is a mistake to use *hay'a* as a synonym for *malaka*, since *hay'a* can also indicate a transitory disposition, much like the term *ḥāl*. From this perspective, *hay'a* should translate διάθεσις instead, and only *malaka* should refer to ἕξις.

dispositiones of the matter. This necessarily includes the form, which is explicitly mentioned by Averroes (Aristotle 1562, pp. 50*r*M-52*r*A), Thomas Aquinas (Aristotle 1570, p. 16*r*), and Philoponus (Aristotle 1581, pp. 64-6). After all, ἕξις and διάθεσις belong to the category of quality, along with πάθος (*Cat*. 8.9a28-10a9) and σχῆμα or μορφή (*Cat*. 8.10a11-26), the latter two conceived as figure and external form. It is therefore likely that, in this passage, Aristotle refers to the category of quality, suggesting that, in the view of the ancients, the form – understood as figure or external appearance – is a πάθος, an ἕξις, and a διάθεσις of the matter. In short, they conceived the form as a quality of the matter-nature-substance. Thus, while in following Scot's translation Bruno does not modify the meaning of the Aristotelian text, the expression "unum perpetuo manens, supra quo infinitae formae variantur" clearly evokes his own theory of the relationship between matter and form. In doing so, he links up with the tradition of those who have interpreted the form as a quality of matter-nature-substance, thereby assimilating it to the other components of the category of quality, including ἕξις.

To discuss this parallel between ἕξις and form as a quality of the matter, it is useful to briefly outline the meaning of ἕξις and διάθεσις in Aristotle's work. In *Cat*. 8.8b29-9a1, the Stagirite defines them as two genres of the category of quality, differing in that the ἕξις is more stable and enduring – such as knowledge and virtue – while the διάθεσις is easily removable and changes quickly – such as hotness and chill, sickness and health. As qualities rather than substances, ἕξεις do not belong to the essence of a being, even though, unlike διάθεσεις, they are characterised by stability and permanence (Ackrill 1963, p. 24). Furthermore, Pierre Rodrigo (2004) emphasises that ἕξις relates to πρᾶξις, θεωρία, and ποίησις, implying a dynamic process as a tension toward fulfilment, conceived as ἐνέργεια. As a habitual, stable, and enduring state, ἕξις has always an evaluative aspect, meaning either perfection or, conversely, decadence. Hence, in ethics, the virtue is an ἕξις as a perfection in accordance with the nature of the being (κατὰ φύσιν): to be virtuous means to have a stable disposition to function well, with a strong and healthy body and a good quality of character. Although it is a quality and not a substance, ἕξις constitutes the natural perfection of a substance, the stable condition

of its proper functioning, i.e. its perfection (Morel 1997; Chiaradonna and Farina 2020).

In the meaning outlined above, the concept of ἕξις relates to Bruno Nardi's (1936) interpretation of Albertus Magnus's theory of *inchoatio formae*, which Nardi directly connects to Giordano Bruno's thought. The Italian scholar identifies the first use of the expression to refer to Robert Grosseteste's doctrine, according to which light is the primary form that put into act all matter (Nardi 1936, p. 75). In Scholasticism, the term is used to indicate Augustine's theory of *rationes seminales*, according to which form already exists, albeit incompletely, within the active power of matter (*ibid*., p. 76).[52] Similarly, Bonaventure interprets the power of matter not as a passive capacity but as an active power that, in actualising itself, becomes form, "in quell modo che il bocciolo schiudendosi diventa la rosa" (*ibid*., p. 79). This culminates in Albertus Magnus's view that the virtue of the heavens impresses into the pure and indeterminate power of the prime matter the *principia formalia et effectiva*, that enable the matter to send forth all particular forms from within itself. These *principia* are created alongside matter, distinct from it, and all forms originate from them. Albertus refers to this process as *potentia activa indita materiae*, arising from a primordial, indeterminate, and imperfect form that, striving towards its perfection, determines itself, and evolves into the infinite forms of nature, more or less perfect, depending on their distance from the heavens (*ibid*., p. 82). The conception of form as a tension towards the fulfilment of the *principia formalia et effectiva* inherent in the matter overturns the Aristotelian position – adopted, among others, by Thomas Aquinas – according to which the matter is pure power, awaiting to receive from the outside act and order from the form (*ibid*., p. 84). For Albertus, by contrast, the matter must already contain something of the form – an *inchoatio formae* – enabling it to move towards the fulfilment and perfection of forms. The Dominican, indeed, marks a distinction

[52] Michele Ciliberto highlights the influence of Augustine's thought on Bruno's work, through Teofilo da Vairano. He was Bruno's teacher in Naples, and had a great impact on him, particularly "nella critica della materia come pura potenzialità, e nel riconoscimento ad essa di una dimensione positiva, di una certa dimensione 'attuale'" (Ciliberto 1986, pp. 56-8). On Teofilo da Vairano, see Carella (1995) and (2012), Scapparone (2014) and Carannante (2019).

between two conceptions of the power of the matter: *potentia indifferentemente ad esse et non esse* and *potentia formalis* as *aptitudo ad actum*. In this latter sense, the matter contains a beginning of the forms, which strive towards their perfection and fulfilment within the matter itself (*ibid.*, p. 88). In Nardi's interpretation of Albertus Magnus's *inchoatio formae*, the form represents, for the Dominican, the perfection of something inherent in the matter, in accordance with the nature of the being. This interpretation of the form is similar to the Aristotelian conception of ἕξις. In this sense, ἕξις and form converge, both representing the fulfilment of a nature inherent in matter itself, as its perfection.

The use of the term '*forma*' by Bruno in the *Figuratio*, as found in the *translatio Scoti*, is placed within the tradition of the *inchoatio formae* and the overturning of the Aristotelian relationship between matter and form. It is Bruno himself who refers to this expression in the *De vinculis* (Bruno 2000, p. 516):

> Profundius vero philosophantes intelligunt quod nos alibi declaravimus, ut materia ipsa inchoationem habeat omnium formarum in sinu suo – ita ut ex eo omnia promat et emittat –, non puram illam exclusionem – ita ut quasi omnia peregrina concipiat ab externo. Extra quippe materiae gremium nulla forma est, sed in eo tum omnes latent, et ex eo tum omnes educuntur.

Barbara Amato (2010, p. 63) stresses the importance, for Bruno, of the meaning of the indeterminacy of the matter. Whereas for Aristotle the matter is indeterminate in the sense that it lacks forms, for Bruno it is so because it contains all forms within itself. Matter is the only substance of physical things and is more worthy of being called 'nature' than form, since form without matter has no subsistence (Bruno 2009, p. 54). In the parallel between nature and artistic production, Bruno speaks of an "arte della materia", capable of eliciting forms "per modi di separazione, di parto, di efflusione, come intesero i Pitagorici, comprese Anassagora e Democrito" (Bruno 2007, p. 719). For the Nolano, the matter is a "cosa divina", as it "esplica lo che tiene implicato" and is "ottima parente, genitrice e madre di cose naturali: anzi, la natura tutta in sustanza" (*ibid.*, p. 720), just as the ancient philosophers, mentioned by Aristotle in *Phys.* 193a9-28, believed. Moreover, immediately before the passages from the *De la causa* cited above, Bruno (*ibid.*, p. 719) directly refers to the *Physics* passage that I have analysed in this paper:

Et io dico, che l'essere espresso, sensibile et esplicato, non è principal raggione dell'attualità, ma è una cosa consequente et effetto di quella: sì come il principal essere del legno e ragione di sua attualità non consiste ne l'esser letto, scanno, trabe, idolo et ogni cosa di legno formata.

It is finally in his commentary on Aristotle's *Physics* that Bruno clearly reveals what in the *Figuratio* was only implicit (Bruno, forthcoming, p. 84):

Natura dupliciter dicitur: uno pacto significat materiam, alio pacto significat formam. Primo modo iuxta antiquorum opinionem maxime natura materia dicebatur, siquidem materia videtur esse quod semper manet et perseverat idem, ut argumentabatur Antiphon ex similitudine lecti infossi, qui si putrescens germinet, non producet lectum alterum, sed lignum; unde totam substantiam rerum existimabat esse materiam. Ita et hi et alii multi, quorum hi quidem terram, illi vero aerem, alii vero aliud naturam existimabant, omnem vero formam ad passionem, dispositionem et habitum referebant. Stat ergo commune nobis et ipsis naturam uno modo dici materiam.[53]

Here, Bruno mentions all the terms present in the Latin text of the *Physics* – '*passionem*', '*dispositionem*', and '*habitum*' – and not only, as in the *Figuratio*, the term '*formae*' found in the *translatio Scoti*. However, it is the addition of "stat ergo commune nobis et ipsis naturam uno modo dici materiam" that makes explicit what was implicit in the *Figuratio*. The use of the term '*formae*' from the *translatio Scoti* in the passage of the *Figuratio* reveals how the overturning of the Aristotelian conception of the relationship between form and matter means for Bruno placing the '*nolana filosofia*' into the tradition of those who conceived the form as a quality of the matter-nature-substance.

[53] This work contains Bruno's commentary on the first five books of the *Physics*, on the *De generatione et corruptione*, and on Book IV of the *Meteorologica*. It was published at the end of the nineteenth century in Volume III of the *Opera Latine conscripta*, edited by Felice Tocco and Girolamo Vitelli, under the title *Libri Physicorum Aristotelis Explanati*. Ilenia Russo edited a new critical edition of the text, with an Italian translation (Bruno, forthcoming).

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