

Revisiting the Authorship of [Arist.] *περὶ πνεύματος*: The Case for Theophrastus

Abstract:

In this article, I claim that the treatise known as *περὶ πνεύματος* / *De spiritu* (481a-486b Bekker) was written by Theophrastus. My overall argument unfolds in three stages: first, I briefly summarize the arguments against *De spiritu*'s authenticity in Aristotle's corpus. This summary will lead to my first argument which uses the very same reasons that prove the non-Aristotelian authorship to claim the Theophrastean one, in particular linguistic aspects of the text (§2). Next, I will focus on chronology, by discussing the mention of one Aristogenes to show that Aristotle could not have known this individual (§3). Third and last, I will examine various aspects of the work that demonstrate stylistic and argumentative connections (§4), as well as doctrinal affinities with the works of Theophrastus, although some have attributed it to Strato (§5). On the basis of these arguments, I conclude that the weight of the evidence makes *On Breath* a work by Theophrastus (or his circle) rather than one composed by Aristotle.

Keywords: Theophrastus, *De spiritu*, *On breath*, Pseudo-Aristotle, *pneuma*

1. Introduction¹

The short and problematic treatise known as *De spiritu* (*περὶ πνεύματος*)² contains claims about *pneuma*, soul and body physiology which have been cited both to support Aristotelian authenticity and to support non-authenticity. Aristotle's authorship has been almost generally denied since the 15th century with very few exceptions³, but Abraham Bos and Rein Ferwerda have defended the idea that the treatise was written by Aristotle⁴. Werner Jaeger and Amneris Roselli, by contrast, have both denied the Aristotelian authorship in their respective critical editions, by citing in support different reasons, both linguistic and with regard to the content⁵. More recently, Pavel Gregoric and Orly Lewis discussed the issue in order to bring other evidence to the inauthenticity⁶. I think Gregoric and Lewis are right in defending the view that *De spiritu* is definitely not an Aristotelian work: their analysis shows stylistic aspects that are difficult to explain otherwise⁷. What is interesting for my purpose here is to show that these very same linguistic peculiarities noted by Gregoric and Lewis in their article can be attributed to Aristotle's disciple, Theophrastus. Therefore, I will begin to build my argument that *De spiritu* is a work of Theophrastus⁸ by showing the linguistic aspects that are common to the Theophrastean corpus and to the Pseudo-Aristotle's treatise.

Before the linguistic analysis, I have to deal with a preliminary difficulty. If we read the existent lists of Theophrastus' works, we would not find a treatise entitled *περὶ πνεύματος*, but only a *περὶ*

¹ I am grateful for the helpful comments of the anonymous referees and for feedback on earlier versions of this paper from Han Baltussen, Justin Winzenrieth and Alessio Santoro.

² In this contribution, I follow the text established by Roselli 1992.

³ See the summary of Roselli 1992, 13-18.

⁴ Bos and Ferwerda 2007, 565-88; Bos and Ferwerda 2008.

⁵ Jaeger 1913, xviii-xx; Cf. also Jaeger 1960, 57-102.

⁶ Gregoric and Lewis 2015, 159-67; Gregoric 2020a, 17-36.

⁷ It is difficult to believe that the lack of correspondence between the linguistic clues of *De spiritu* and Aristotle's vocabulary could depend on the aim of *De spiritu*'s author to adequate himself and his work to the linguistic technicalities of the medical language of his age, as suggested by an anonymous reviewer. The main objection to such a hypothesis is that not all linguistic aspects involve technical medical terms, see §2.

⁸ Regenbogen briefly suggested this hypothesis in Regenbogen 1940, 1545-1546.

πνευμάτων in one book. I propose that the title *περὶ πνευμάτων α'*, which appears in Diogenes Laertius' list, is corrected and replaced with the singular *περὶ πνεύματος α'*, as well as that this treatise is identified with our *De spiritu*⁹. For the correction of the plural with the singular or vice versa in Theophrastus' works, I rely on S. White's contribution, *Opuscula and Opera in the Catalogue of Theophrastus' Works*, in the volume *On the Opuscula of Theophrastus*¹⁰. Furthermore, Johannes Meursius (1579-1639) had already suggested changing the title to the singular and identifying this work with *De spiritu*¹¹.

2. Linguistic Clues

The first indication that the *De spiritu* is more likely a work by Theophrastus becomes clear from various linguistic clues. I will begin by listing several terms or expressions that we can find in both *De spiritu* and Theophrastus' works.

διαμονή (481 a1; a27; 484 a8): “preservation” or “sustenance over time”. The term is not attested in Aristotle's authentic works, who uses *σωτηρία* instead. It is found conversely in the botanical treatises of Theophrastus with many occurrences (*HP* VII 5, 5, 2; VIII 11, 3, 6; *CP* I 4, 1, 8; I 10, 4, 3; I 16, 1, 5; I 16, 13, 7; I 22, 7, 4; IV 2, 2, 5; IV 2, 3, 5; IV 3, 4, 1; *Od.* 34). See also *De piscibus in sicco degentibus* 1, 1; 1, 10; 9, 74 ed. Sharples (fr. 171 Wimmer).

τῶν ὅλων ὄγκων (481 b6): “the whole bodies”. The expression is not found in Aristotle. We find four occurrences of *ὁ ὅλος ὄγκος* in Theophrastus' works instead (*HP* IV 10, 3, 4; *CP* I 12, 4, 9; I 12, 8, 3; VI 12, 5, 7).

ἐπίσπασις (482 a15): “absorption” or “ingestion of food”. The term is not attested in the authentic works of Aristotle. It is found, on the contrary, in Theophrastus' works (*CP* I 17, 6, 6; V 1, 10, 2; and the verbal forms of *ἐπισπάω*: *CP* II 4, 4, 12; VI 10, 3, 8; *Sud.* 12; *De piscibus* 3, 33).

κατὰ συνέχειαν (482 a35): “by continuity, continuously”. The expression as such is not attested in Aristotle's authentic works (we find one occurrence in *Problemata* XVI 7, 914 b4). We find instead the very same expression in Theophrastus' *CP* I 12, 4, 10.

ἀναζωπυρέω (484 a7): “rekindle, light up again”. Not attested in Aristotle, the term appears in Theophrastus' treatise *De igne* (61, 4) and in fr. 347B FHSG (= Oribasius, *Syn.* 8.59)

μαγειρικός (485 a35): “fit for a cook or cookery”. Not attested in Aristotle, the term appears in Theophrastus' *HP* VII 5, 6, 1.

ὀμαλίζω (482 b27): “to be or remain equal”. The verb is attested in Aristotle only in his transitive form (e.g. *Pol.* 1266 b30). In *De spiritu* it appears as intransitive, as in Theophrastus' *HP* V 2, 3, 6 and *CP* V 1, 12, 11 (also in *Problemata* X 54, 897 a15).

⁹ D.L., 5.45. There are no reasons to identify the *περὶ πνευμάτων* with the treatise *De ventis*, which is already mentioned in Diogenes' list by its title: *περὶ ἀνέμων* (D.L., 5.42 = 328, 15 FHSG). Note here that, among the Catalogues of Aristotle's corpus only Ptolemy's contains a work entitled *περὶ πνεύματος*, but this appears to consist of three books and it cannot be said whether it is to be identified with our treatise.

¹⁰ White 2002, 9-37.

¹¹ Meursius 1640, 43.

ἀνεπίμικτος (483 b1): “not mixed”. Adjectives with the prefix ἀνεπί- are not attested in Aristotle. We find at least two examples in Theophrastus’s works instead (ἀνεπίδοτα *HP* VII 4, 8, 3; ἀνεπίδοτον *CP* IV 6, 3, 12).

In addition to this list, another example can be cited, but it is more problematic and needs to be explained in more detail. In *De spiritu* 481 b27, there is a textual problem that has puzzled all the editors: MS Z has λογοδέστερον, the other MSS have ἀλογωδέστερον. Bonitz and Dobson have tentatively proposed λογοδεέστερον, which is an excellent solution from a palaeographic point of view. Nevertheless, Roselli does not retain this emendation because the adjective λογοδεής is not attested elsewhere. I think that we could clarify this passage with another text that presents some difficulties in the manuscript tradition: Theophrastus’ *Metaphysics* or *On First Principles* 7 b18. Here, the editors generally retain λογῶδες, which is also the reading of P and probably of Ψ (Arabic translation), but other MSS have λογωειδες [-ωιδ- J] J¹ and λογοειδές CL A and probably Λ (Latin translation)¹². The meaning of λογῶδες is not entirely clear, but we can retain for now the translation made by Ross and Fobes as “merely verbal”: «since to say that things are at rest for *this* reason, that it is impossible that the mover at each stage should be itself in motion – for then it would not be primary – may be suspected to be a merely verbal argument, and on other grounds not worthy of belief; the view demands a grater justification than this». I would argue that the correct form in *De spiritu*’s passage is λογοδέστερον and I think that the meaning of this term fits the context of 481 b27-29, where the author says: ἄλογον δὲ καὶ τοῦτι καὶ **λογωδέστερον** εἰ ὁ αὐτὸς πόρος¹³ τῆς τροφῆς καὶ τοῦ περιπτώματος εἰ δὲ δι’ ἄλλου τινὸς τῶν ἐντός, οἱ αὐτοὶ λόγοι οἱ καὶ πρότερον: «This too is absurd, and rather verbal, if the same passage is that of the nutriment and the residue. But if it [the expulsion of the residue] occurs via another internal part, the same arguments would hold as above». This correction is not difficult to justify from a palaeographic point of view, it gives a satisfying meaning to the sentence and we would have an adjective that is attested elsewhere¹⁴. Moreover, I think that the use of this term is very close to what we find in the quoted text of *Metaphysics*. A merely verbal argument intends to provide reasons for what it is supposed to explain but merely asserts something that needs further justification. In other words, λογῶδες means an argument based on semantic niceties with little regard for the *realia* (referent). In the case of the passage (πόρος), which would be the same both for the intake of nourishment and for the expulsion of the residue, the author of *De spiritu* would emphasize not only the absurdity (ἄλογον) of such a statement (for example, the fact that the same internal channel would be occupied by the residue when it must be able to receive the nourishment), but also the statement’s explanatory incapacity, its being merely verbal, compared to the more general problem of *pneuma* nutrition through breathing.

From this recognition of non-Aristotelian terms or expressions found in *De spiritu* but present in the works of Theophrastus, one might at least suppose that Theophrastus could have written this treatise. Of course, it is necessary to make further considerations to defend this claim, as not all the terms taken into account have the same weight in deciding the authorship of a text. Some terms and expressions, such as τῶν ὅλων ὄγκων, κατὰ συνέχειαν, μαγειρικός, διαμονή, are quite common and do not really allow us to identify the style of a writer. In contrast, the use of the word ἀναζωπυρέω is very rare. With the exception of a metaphorical use in Plato, in the *Respublica* 527 e1, before Plutarchus the term is attested only in Theophrastus’ treatise *On fire* and in one of his fragments. But beyond that, ἐπίσπασις is the term that more than any other points in the direction of being a

¹² The sigla are from Gutas’ edition (2010).

¹³ Here, πόρος is an emendation proposed by Jaeger 1913 and accepted by Roselli 1992. MSS have λόγος (ZPb) or λέγει (H^aLm).

¹⁴ See Aristox. *Harm.* p.18 M, where the adjective is referred to μέλος.

distinctive feature of Theophrastus. This term is used exclusively in *De spiritu* and in Theophrastus' works (with several occurrences) BCE¹⁵. Although it is not a *hapax legomenon*, ἐπίσπασις is a peculiarity in *De spiritu*'s vocabulary and points to Theophrastean authorship.

In addition to these lexical points, if we closely analyse the structure and philosophical style of argumentation in *De spiritu*, we realise that there are many stylistic points in common with Theophrastus. First of all, as many interpreters have noted¹⁶, the argumentative proceeding of *De spiritu* is mostly aporetic. In a way, that could recall a general feature of Theophrastus' works, especially in his *Metaphysics*. This is why it is a difficult task to determine the exact doctrine supported by the author of the treatise. In fact, we are very often faced with the criticism of many hypotheses which do not meet the criteria required by the author and are therefore to be rejected completely or necessitate a different formulation, introducing nuances and precision. This style is very close to what we find not only in Theophrastus' *Metaphysics*, but also in the criticism sections of *De sensibus* and in other parts of his works (*De causis plantarum* I and VI). I will elaborate on this in the fourth section. In addition, I would stress that in *De spiritu* we find many *implicit* references to Aristotle's works or theories, and, just as is the case of Theophrastus' works, there is no *explicit* reference to Aristotle in the text. In contrast, there is mention of Empedocles and Democritus (482 a29-30), as well as clear allusions to other theories (from Plato's *Timaeus* to medical authors hard to identify by the scarcity of sources at our disposal)¹⁷. Evidently, for Theophrastus, Aristotle's pupil and fellow researcher, it would have been superfluous and unnecessary to explicitly mention the master's doctrines, which must have been well-known to his audience¹⁸.

These traits – aporetic style and implicit references to Aristotle's work – are strikingly similar to those in Theophrastus' works. Of course, it can be objected that they are not exclusively so, that is, that they could belong to another author who used the very same terminology and linguistic expressions. However, it is difficult to think that the author is a Peripatetic who lived long after Aristotle's death, as I will demonstrate in the discussion about the chronology of *De spiritu*.

3. A Problem of Chronology

The only explicit element for the dating of *De spiritu* is provided by the mention of Aristogenes: «But the growth and maintenance of the innate pneuma as a result of respiration, as Aristogenes holds – for he believes that breath, too, is food, because the air is concocted in the <lungs>, and this breath is distributed to the vessels – causes more problems»¹⁹. Unfortunately, the information we have about Aristogenes is limited and confusing. The mention found in *De spiritu* is the oldest one, the others are from the Suda²⁰, Celsus, and Pliny the Elder²¹. The chronology of Aristogenes is essentially based on his relationship with Antigonus Gonata (320 – 239 BCE), king of Macedonia, according to the

¹⁵ According to *TLG*, ἐπίσπασις occurs only three times in Greek literature of the CE: in Alexander of Aphrodisias (*Problemata* 2.59), Oribasius (*Collectiones medicae, libri incerti*, 32, 18, 2), and Eustathius of Thessalonica (*Commentarii ad Homeri Iliadem*, vol. 2, 457.6 ed. Van der Valk).

¹⁶ Jaeger 1960, 86; Regenbogen 1940, 1546; Lewis 2020; Gregoric, Lewis, Kuhar 2015, 120; Federspiel 2017, 39, 47. Roselli 1992, 6, draws a parallel between the aporetic character of *De spiritu* and that of Theophrastus, denying that we are dealing with a confused mind.

¹⁷ See Lewis and Gregoric 2015.

¹⁸ The same applies to any other early Peripatetic thinker.

¹⁹ *Spir.* 481 a28-31. Transl. Bos Ferwerda.

²⁰ Suda's lexicon presents two Aristogenes, one native of Thasos and the other of Cnidos, but according to Wellmann 1895 the two articles have to refer to the same person.

²¹ See Wellmann 1895 for references and Roselli 1992, 76-7.

Suda. Therefore, it is possible that Aristogenes was once at the court of Antigonos, as a physical and medical expert. If we consider that Antigonos ruled from 277/6 to the date of his death, there is a large period of time in which Aristogenes may have gone to his court. And if we also assume that Aristogenes was called to Antigonos' court only after he had made a name for himself, we can conjecture that he was born around 320 BCE (which is in accordance with Wellmann's statement that his *acme* would be in the 3rd century).

If these hypotheses are on the right track, the mere mention of Aristogenes is sufficient to suggest that Aristotle is not the author of *De spiritu*: he could not have known Aristogenes or his theories in any way. For this reason, the strenuous defenders of the attribution to Aristotle are forced to suppose a – very unlikely – «literary joke» for which “Aristogenes” would be a «sly allusion to Plato, whose father was in fact called Ariston»²². Such a solution, meant to defend the authenticity of the treatise, seems to me in any case difficult to accept, both for the uniqueness that such a nickname would represent and for the fact that Aristotle always refers to Plato by his real name in the authentic writings.

While an Aristotelian chronology does not fit the available information, a Theophrastean one (c. 371 – 287 BCE) is consistent with the possibility that he knew Aristogenes and his theories. I therefore suggest that Theophrastus composed *De spiritu* in the last years of his life. As Orly Lewis and Pavel Gregoric assume, «there are good reasons to date it [*De spiritu*] to the early decades of the 3rd century, closer to Aristotle and Praxagoras»²³. In their article, the two scholars consider different theories present in the treatise and try to study their context, with particular attention to the developments in medical science in the course of the 3rd century. This dating fits perfectly with the hypothesis that Theophrastus wrote *De spiritu* precisely in the last period of his philosophical production. In addition, it is also possible that Theophrastus had come into contact with Erasistratus of Ceos (304 – c. 250 BCE), or at least with his theories, although the presence of ideas specifically ascribable to Erasistratus in the treatise is not unanimously accepted by scholars²⁴. I do not think it is necessary in this article to revisit the question of the Erasistratean presence in *De spiritu*; it may also be possible that Erasistratus had given a more precise and standard form to ideas that had been circulating for some time and of which *De spiritu* would be a testimony²⁵.

So far, I have shown that *De spiritu* presents lexical and linguistic elements shared by Theophrastean works and that the presumed date of composition is consistent with the life span of Theophrastus. I will now examine the points of contact between the author of *De spiritu* and Theophrastus that show close similarities and overlap with the method and views.

4. Methodological Affinity

I have already mentioned the first point of contact (above, §2). *De spiritu* has a very marked aporetic style and, with the exception of some sections (§7 and the first half of §8), it can be said that almost the entire treatise is aporetic, in the precise sense of a text that poses *aporiai* and, while suggesting possible solutions, does not set as a specific objective to overcome the *aporia* and to pose an assertive

²² Bos and Ferwerda 2008, 23.

²³ Lewis and Gregoric 2015, 147.

²⁴ See Lewis and Gregoric 2015, 147: «the supposed evidence of *De spiritu*'s familiarity with Erasistratus' doctrines is rather tenuous».

²⁵ The question of the Erasistratean presence in *De spiritu* would deserve more consideration, but is not decisive in claiming or denying the authorship of Theophrastus. Indeed, Erasistratus is never mentioned in *De spiritu*, nor are his specific doctrines in the treatise unanimously assumed.

thesis. The solutions that the author seems to prefer are often raised with dubitative expressions (see for example the use of ἴσως in 481 a8, 485 a36 and 486 a3) and with caution. In general, it seems that *De spiritu* presents a tendency to pile up problems about related themes of investigation, in a manner that presupposes acquaintance with the opinions discussed²⁶.

This is a characteristic feature of the *dialectical method* as Theophrastus intended it. Starting from the best-known writing of Theophrastus after the *Characters*, i.e., his *Metaphysics*, to his biological writings, passing through other works such as *De sensibus* or *De igne* 52-53, the extensive use of *aporiai* is a trait that distinguishes the work of Theophrastus²⁷. As Regenbogen already noted²⁸, in *De spiritu* we find a lot of expressions such as ἄλογος (3 times), εὔλογος (6) or εὐλόγως (1), συμβαίνω (4), but also, and above all, I add to this list ἄτοπος (8), παράλογος (1), παράδοξος (1) and of course ἀπορία (2), ἀπορέω (1). This suggests, I think, that we interpret *De spiritu* as a work whose first purpose is to investigate a series of problems with a very precise method that we can call *aporetic dialectic*²⁹. Such a method of investigation presupposes an argumentative technique that develops in the following way: (a) finding opinions (usually ἔνδοξα) that will be the premises (προτάσεις) from which we construct reasoning; (b) building up problems (προβλήματα) and *aporiai* from these premises; (c) elaborate deductive reasoning (συλλογισμοί) starting from the premises and problems raised; (d) discovering the causes that can explain and give reason for a given phenomenon³⁰.

As we have said, *De spiritu* presents an aporetic approach. Its author deals with the problems first by presenting the opinions and discussing them, showing in particular the *aporiai* that arise. To give an example, in the opening lines the author faces the problem of the *sumphuton pneuma*'s maintenance and growth. He presents two views in which food is produced for the *sumphuton pneuma*: (A) by means of respiration or (B) by means of the process of concoction which accompanies the introduction of food (481 a1-7). Subsequently, after a possible and cautious endorsement for B, we find the critical discussion of this view and the author raises several objections: (B1) it is absurd (ἄτοπον) that *pneuma* is derived from food in the first instance, for that which is connected with the soul is purer (481 a15-19); (B2) if there is a residue of every form of food, by what passage is it transported outside? It is not reasonable (οὐκ εὔλογον) to assume that this takes place via exhalation (481 a19-21)³¹; (B3) what is discharged is either thinner or thicker, but both lead to an absurdity (ἄτοπον), if the *sumphuton pneuma* is assumed to be the purest of all (481 a21-25); (B2 bis) if the living creature takes in food and discharges the residue by the same passages, this is illogical and absurd (παράλογον καὶ ἄτοπον) (481 a 25-27). The author then turns to the A view and mentions the representative of the *endoxon*, i.e., Aristogenes. Subsequently, he raises the objections against Aristogenes' doctrine, specifying the numerous *aporiai*: (A1) what is the cause for the concoction of the inhaled air? Presumably, breath, just as it is in other cases. But this is in itself absurd (ἄτοπον), unless it differs from the outside air (481 b2-4); (A2) and certainly it is also reasonable (εὔλογον) that the air is thicker, mixed as it is with the moisture of the vessels and of the entire mass of the body. But if the residue becomes thinner, this is implausible (ἄλογος) (481 b4-9); (A3) if what is concocted is in the lungs and in the *arteria*, the power of the vital heat also resides in these; this they deny,

²⁶ See for example the discussion in *De spiritu* 1-2.

²⁷ See Sharples 1998, 267-280; Battagazzore 1989, 60.

²⁸ Regenbogen 1940, 1546.

²⁹ See Baltussen 2000 and Repici 2013, in particular 16-29.

³⁰ Thphr. *CPI* 11, 4; *Vent.* 59. For Aristotle see *Metaph.* A 2, 982 b14-21.

³¹ Some editors and translators make several changes to the text, replacing entire sentences among the first two chapters of the treaty. In this article, I will follow the text edited by Roselli. For an example of a substantial change in the order of the text, see Federspiel 2017, 100-101 and 160. In any case, this would not change the substance of my point concerning the dialectical and aporetic form of the passage.

saying that the food is heated by the movement of breath (481 b10-15); (A4) but if the *sumphuton pneuma* draws, as it were, food from something else, or receives it from something else that causes movement, this is even stranger (θαυμασιώτερον). In that case, moreover, it is not itself the primary moving cause (481 b15-17); (A5) furthermore, respiration extends as far as the lungs, but the *sumphuton pneuma* is present throughout the living creature. And if it is also distributed from the lungs both to the lower parts and to the others, how can the concoction take place so rapidly? This is even stranger (θαυμασιώτερον) and a greater problem (481 b17-21); (A6) and yet this would seem necessary if the concoction takes place in the lungs and if the lower parts, too, are involved in the respiratory process. But the consequence (τὸ συμβαῖνον) of this is an even greater paradox (παραδοξότερον): the process of concoction would take place merely by passage and contact (481 b21-26); (A7) this is absurd (ἄλογον) too, and more merely verbal (λογωδέστερον), if the same passage is used for the nutriment and the residue. But if it is transported via another internal part, the same arguments would hold as above (481 b27-482 a7).

After this long dialectical discussion that has raised specific difficulties to the two views, the author presents other problems with regard to animals that do not have respiration³²: how do nutrition and growth of the *sumphuton pneuma* take place in living creatures that do not respire? This discussion (482 a7-24) seems to add another serious criticism to A and will lead the author to consider a third option, in addition to the two mentioned at the beginning, namely (C) that the process of nourishing and growing of the *sumphuton pneuma* does not take place in all animals in the same way: for some, it is produced by respiration; for others, by nutrition. In the end, we have three possible solutions and the correct one must be one of these. Even if the author seems to give preference to (B), he does not point to a solution, but this does not mean that the aporetic and dialectical proceeding has not produced an advancement in the research. First of all, we have clarified the two opposing positions with regard to the initial problem and we have unfolded the difficulties to be solved. In addition, through the discussion we have also come to a new view (C) that certainly expands the discussion itself, inviting us to include more nuanced positions and to take into account references to concrete cases in order to confirm or refute our hypotheses. This passage shows the author's familiarity with the aporetic approach as well as his caution in deciding on a definitive position on the subject.

There can be little doubt that *De spiritu* uses a method of philosophical investigation that has a close correspondence to the Theophrastean practice of aporetic dialectic. Still, such consonances in method are not sufficient to corroborate the authorship of the text, because such dialectical and aporetic discussions were probably practiced by other members of the Peripatos, and among these, in particular, by Strato of Lampsacus³³, the successor of Theophrastus as scholarch of the Lyceum. But these consonances in method add to the cumulative effect of the various aspects I discuss in this paper. I will now consider some doctrinal aspects of *De spiritu* to show that these theories are close to the philosophical work of Theophrastus and, incidentally, to point out the differences from Strato³⁴.

5. Doctrinal Affinity

The most extensive set of aspects in *De spiritu* that support my overall argument consists of five doctrinal concepts that strongly suggest an affinity with ideas found in Theophrastus' extant works.

³² Cf. Theophr. *De sensibus* 46-48 on Diogenes of Apollonia and § 5.3 below.

³³ For example, see Repici 2011 and Baltussen 2015b.

³⁴ Gatzemeier 1970, 150 ff., thinks that *De spiritu* is a work of Strato, insisting on the presence of elements of his thought in the treatise.

5.1. *Energeia*

My first point will concern the use of a central notion for Aristotle’s philosophy, namely *energeia*, “activity”. In *De spiritu*, we find six occurrences of the term, which means that we can sufficiently examine whether there is a correspondence with Theophrastus’ use of *energeia*. In order to do this, I rely on the analyses of the notion made by Enno Rudolph and especially by David Lefebvre³⁵. My purpose is to show how in *De spiritu* we find the very same distinction between different meanings of *energeia* that is found in Theophrastus: on one hand, (A) *energeia* is an activity, that is, a *movement* of a certain power to act or to being affected; on the other hand, (B) it is something that is determined by the *ousia* of a being and that is not necessarily a movement.

For the first meaning (A), we find two clear examples in *De spiritu*: (A1) «the air (ἀήρ) is the agent as producing activity (τὴν ἐνέργειαν), and applying to itself the digestive capacity causes growth and nourishment» (481 a14-15); (A2) «Unless it [the process of counterflow] takes place in a different way from the extremities, but in the primary and proper sense from the cardiac region. <Such difference is observed> in many cases of <bodily> activities and powers (τῶν ἐνεργειῶν καὶ τῶν δυνάμεων)³⁶» (482 b4-7). In both cases, ἐνέργεια indicates a certain type of movement. At the same time, the author of *De spiritu* was absolutely aware – in the same way as Theophrastus was³⁷ – of the difference between movement and *energeia*. In fact, it is impossible to always identify the two notions, as we can clearly see from the following quotation (483 a15-18):

For respiration starts as soon as the embryo is released from its mother, and ingestion and nutrition belong to it both during and after its formation, but pulsation begins at the very outset while the heart is forming, as can be observed in eggs. So that pulsation is prior in origin, and resembles (ἔοικεν) a certain activity (ἐνεργείᾳ τινὶ), and not an enclosure of *pneuma*, except in so far as this contributes to activity (πρὸς τὴν ἐνέργειαν). Transl. Hett modified.

Pulsation, as well as respiration and nutrition (what introduces and acts upon food), are three distinct movements (κινήσεις) of the *pneuma* in the *arteria* (482 b14-16). In the discussion about the pulsation, the author distinguishes this movement of *pneuma* from the *energeia* in itself. He states that such a movement *resembles* a certain activity, and that we can say, perhaps more accurately, that it contributes to the activity. Probably, the author intends to stress that pulsation is more than a simply accidental motion, against what it might seem from at first glance (see at 482 b30 «it seems accidental»), because it resembles an activity and hence, presumably, has a close connection with the essence of the animal. From this follows that the movement of the pulsation is not properly identifiable with the *energeia*, although it is linked to the *energeia* of the living substance.

Less can be concluded about the occurrence of *energeia* in *De spiritu* 485 b14, because the passage in question is rather controversial and (possibly) has a textual problem that concerns precisely the term analysed. This is the text of the MSS: διόπερ οὐ κακῶς εἰς ταὐτόν, ἢ ἀπλῶς ἢ μόριόν τι, τὸ δημιουργοῦν καὶ τὸ τὴν κίνησιν ἀεὶ τὴν ὁμοίαν ὑπάρχειν ἐνέργειαν. καὶ γὰρ ἡ φύσις, ἀφ’ ἧς καὶ ἡ γένεσις («therefore, the fact that its motion always exerts a similar activity may reasonably be referred to the same agent, either absolutely or to some definite effective part; for nature, from which they are generated, remains the same». Transl. Hett). I accept one correction proposed by Roselli (ἐνεργείᾳ for ἐνέργειαν, Furlanus emends with ἐνεργοῦν) and translate the passage as follows: «therefore, it is

³⁵ Rudolph 1988; Lefebvre 2017.

³⁶ As Roselli 1992 observes in his edition, the text is corrupt and probably incomplete. Perhaps, the author introduces here an *aporia* about the faculties of the bodily parts in relation to the presence in them of the *pneuma*.

³⁷ Lefebvre 2017, 47.

not incorrect to refer to the same entity, taken absolutely or in one of its parts, the production and the fact that its movement is always the same in act. For this is nature, from which generation also arises». Here, again, movement is clearly not the same as *energeia*. On the contrary, we could have an occurrence of a peculiar type of movement, κίνησις ἐνεργεία (movement in act), that can be found in Aristotle (*Generation of Animals* 768 a11-14 and *On Dreams* 461 11-13).

Let us now return to what was said at the beginning of § 5.1. If the *energeia* cannot be identified with movement, that is because it is (also) something intimately linked to the substance and essence of a being (B). If the movement contributes to the *energeia*, there will be a sort of activity that is prior to that and that is not necessarily a movement. In *De spiritu* 482 b29-36, still in the context of the discussion of pulsation, we find this very interesting statement:

The pulsation is quite distinct from the other two movements [respiration and nutrition]. In one way, it would seem to be accidental (κατὰ συμβεβηκός), since, when there is much heat in a liquid, that which has evaporated must cause pulsations due to the trapping of the air within; but it is also original and primary, since it is naturally present in the very first part; for it is found chiefly and primarily in the heart, from which it is communicated to the other organs. Perhaps, it is necessary that this movement is connected to the animal's underlying essence (πρὸς τὴν ὑποκειμένην οὐσίαν), which results from his activity (τὴν ἐκ τῆς ἐνεργείας). My transl.

From this passage the evident link between the *essence* of something, in this case of the living being, and its *activity* becomes apparent. Prudently, we could say that here the author argues for a derivation of the essence of a being from its specific activity. But such an interpretation should be justified, and *De spiritu* does not provide any further clarification about this. In any case, what I would like to emphasize here is the close connection between *ousia* and *energeia*. We find this same aspect in Theophrastus' works³⁸. I now quote a passage from his *Metaphysics* (10 a10-16), but other examples could be given³⁹:

Hence, if the activity follows from the essence of each thing (ἐνέργεια τῆς οὐσίας ἐκάστου), and each individual thing is also in motion when in activity (ἐνεργῆ), as in the case of animals and plants (otherwise [they would be animals and plants] in name only), then it is obvious that the heavens, too, in their rotation, would be in accordance with their essence (κατὰ τὴν οὐσίαν), but when divorced [from movement] and at rest, [they would be the heavens] in name only – for the rotation of the universe is, as it were, a kind of life. Transl. Gutas slightly modified.

In this text by Theophrastus, as before in the quotation from *De spiritu*, we find a decisive articulation between *energeia* and *ousia*. In fact, we can see how the knowledge of the *ousia* of a being makes it possible to know also its own activity and that the *ousia* of a being consists fundamentally in its *energeia*. Therefore, after this short comparison, it seems clear that there is a real convergence between the uses (A and B) of *energeia* in *De spiritu* and in Theophrastus' writings.

5.2. *Sumphuton pneuma*

The second point of doctrinal affinity that I want to explore here concerns one of the major subjects of study in *De spiritu*, i.e., the *pneuma*. As I said earlier, though the treatise is mostly aporetic, it is possible to detect that the author held a position on this. One element that has been generally noted

³⁸ See Lefebvre 2017, 50-54.

³⁹ See Thphr. *Metaph.* 5 a6-8 and fr. 152 FHS (Iambl. *ap. Simpl.*, in *Cat.* 9 11 b1-8 (CAG 8 p. 304.32-305.4).

by commentators is the assumption that *pneuma* is present throughout the body of the living being: «the *sumphuton pneuma* pervades the whole body» (481 b18-19 and 482 a33). On this point, *De spiritu* seems to diverge from Aristotle's theory of *pneuma* expounded in *De motu animalium* 10, 703 a11-16, where it is stated that *pneuma* is present in the region of the heart. However, we must add immediately that there is disagreement among scholars on Aristotle's doctrine of *pneuma*⁴⁰, in particular because of the scarcity of information we possess. In any case, one cannot totally exclude the possibility that, if the *pneuma* is, undoubtedly, naturally located near the heart, it could also move from that region within the whole body (as the author of *De spiritu* seems to claim)⁴¹.

In any case, here I am interested in showing above all the doctrinal affinity of *De spiritu* with other texts of Theophrastus. The first quote I want to consider is from *De sudoribus* 1:

Does sweat occur straightway with moisture when it is secreted, or (with) *pneuma* since this (the *pneuma*) passes through the flesh (διϊόντος διὰ τῆς σαρκός) and then on the outside becomes thick and condensed through cooling? Let that be another discussion in a different place. Transl. Fortenbaugh slightly modified.

In his commentary to the text, Fortenbaugh argues that Theophrastus has «expanded the functions of connate breath to include sweating», and in so doing he has taken «a significant step in the direction of the Pseudo-Aristotle's work *On Breath* [i.e. *De spiritu*]»⁴². The phenomenon of sweating, in fact, occurs over most of the body, and if *pneuma* is implicated in the explanation of such a process, then we must assume that the *pneuma* is also somehow present throughout the body. This precise idea, i.e., the presence of *pneuma* throughout the body, is also found, as we have seen, in *De spiritu*. But the points of contact between *De sudoribus* and *De spiritu* do not end there. In asserting that the secretion of breath is continuous (*De sud.* 2.14-15), Theophrastus likely takes into account «a discussion referred to by Aristotle (*Movement of Animals* 10, 703 a10-11) and taken up by the author of *On Breath* (1 481a1), namely, how connate breath is maintained»⁴³. It is certain that Theophrastus gave great importance to the role played by *pneuma* in the explanation of different physiological phenomena. In other fragments (fr. 365A-D FHSg), for example, we can see how he explained the change in skin colour in chameleons and octopuses by the presence of *pneuma*⁴⁴. Furthermore, paralysis is explained as follows (fr. 346 FHSg):

paralysis is brought about by chilling; and some (say) that it is brought about by breath (ὕπὸ πνεύματος), for the affection (τὸ πάθος) is one concerned with breath (πνευματικόν), but others by cessation and deprivation of breath; for it is this (i.e. breath) that causes warmth and movement (τὸ τὴν θερμότητα καὶ τὴν κίνησιν) generally. But when there is an absence of movement the blood, or speaking generally the moisture, becomes chilled. For it is on account of this that numbness, too, occurs in the feet and also in the upper parts (of the body), when they are compressed by sitting or in some other way. For then (the sitting) cuts off the breath by the pressure, and (the breath) not being able to move in its proper way, stops and chills the blood⁴⁵.

In dealing with the general theory that paralysis is due to cooling, Theophrastus presents two different views: on one hand, (1) there are those who explain this phenomenon being brought about by breath, for the affection is πνευματικόν; on the other hand, (2) there are those who explain it by

⁴⁰ Jaeger 1913; Peck 1943; Solmsen 1957; Verbeke 1978; Reiche 1960; Freudenthal 1995; Morel 2007, 40-3.

⁴¹ See Peck 1943, 593 and Verbeke 1978, 198. The two interpreters argue for the presence of *sumphuton pneuma* in the blood throughout the veins in Aristotle too.

⁴² Fortenbaugh 2003, 58. But Fortenbaugh does not imply that *De spiritu* is by Theophrastus.

⁴³ *Ibid.*

⁴⁴ See Ierodiakonou 2020.

⁴⁵ = Phot., *Bibl.* 278, 525 b22-33. FHSg transl.

cessation and deprivation of breath⁴⁶. The way the text continues seems to promote the second view, for it is said that it is when the breath is cut off by pressure that numbness occurs⁴⁷. Regardless of whether Theophrastus accepted the explanation of paralysis in these exact terms, it is apparent that he gave a prominent role to *pneuma* in this type of physiological phenomena, in particular as a cause for warmth and movement inside the living being.

In addition, we can see how important it is to preserve a certain thermal balance, especially with regard to blood. The problems concerning the innate *pneuma* discussed in *De spiritu* fully correspond to an interest that we find in the works by Theophrastus, who, on one hand, must have been dealing with the points left open in the theory of *pneuma* sporadically discussed by Aristotle in his biological works⁴⁸, and, on the other, must have had to adapt the theoretical framework to the new discoveries that the medical *milieu* was making at the time. Comparison with specific medical theories is not uncommon for Theophrastus – see for instance *On fatigue* 1, where Epigenes⁴⁹ is mentioned or *On sweat* 12, where is quoted the opinion of Monas the doctor⁵⁰ – and we have seen that *De spiritu* not only refers to Aristogenes' theories, but also quotes excerpts from other medical works (483 a18-23; 483 b12-485 a5).

5.3. Respiration, smell perception and refrigeration

At a certain point of his dialectical confrontation with Aristogenes' theories, the author of *De spiritu* takes into account the case of animals that do not breathe (482a8-9): «But in animals which do not respire (μη ἀναπνευστικοῖς), how is their *sumphuton pneuma* nourished and increased?» For such animals cannot be said to draw their nourishment from the outside air. Therefore, the opposite hypothesis is examined, namely that *pneuma* is nourished and grows through the animal's internal parts. But if this were the case, then it would be reasonable to apply this model for all animals (even those that breathe). This option is not discarded, but another is immediately introduced, which involves returning to the possibility that in some animals there is a particular kind of respiration (482 a9-17):

Unless, of course, the latter [animals which do not breathe] too obtain the nutriment from the outside, just as they perceive smells. But this implies a sort of respiration⁵¹. Here one might question (ἀπορήσειέ) whether they really do not respire – instancing both this argument and their ingestion of food (for they must draw in breath at the same time), and objecting also on the ground of refrigeration, which they must require like any other creatures. Transl. W. S. Hett modified.

The author probes the hypothesis that there may be an intake of *pneuma* nourishment into the body in a way that does not involve the respiratory process. He advances the phenomenon of smell perception as an example of such a process. According to Aristotle and Theophrastus, indeed, smell perception is not necessarily conditioned by respiration. In *De anima* 421 b10-26, Aristotle states that all animals smell, even those that do not breathe⁵². But it is in Theophrastus that we find a detailed

⁴⁶ See Sharples 1995, 28.

⁴⁷ That the compression of blood-vessels in the neck causes fainting is already noted by Aristotle, *On Sleep* 2 455b6-8 and [Arist.] *Problems* 2.15.

⁴⁸ In fact, it is uncertain whether or not Aristotle had a worked-out theory of *pneuma*. For the role of *pneuma* in animal motion, see Berryman 2002; Corcilius 2008, 332-343; Gregoric 2020b, 427-438.

⁴⁹ See Sollenberger 2003, 279.

⁵⁰ See Fortenbaugh 2003, 83-4.

⁵¹ I follow the text of Roselli, which is based on MS Z: ἀλλ' οὕτως γ' οἷον ἀναπνοῆ γίνεται.

⁵² See also Arist. *On Sense and the Sensible* 444a25.

explanation of the relationship between the respiratory phenomenon and smell perception. The general connection between the two processes is stated in *De odoribus* 3 (τὸ γὰρ τῆς ὀσμῆς ἐν ἀναπνοῇ), but Theophrastus specifies in two other texts why breathing is not always necessary, or at least not in all animals, for smells to be perceived. In *De sensibus* 21-22, Theophrastus criticizes Empedocles' doctrines on perception, in particular on smell, and points out that the error lies in identifying breathing with perception⁵³:

it is naive to say that those who inhale the most have the keenest sense of smell; for it is of no use if the sensory organ is not healthy and well opened in a certain way [...] breathing (τὸ ἀναπνεῖν) is not the cause of the sense of smell by itself (καθ' αὐτὸ), but by coincidence, as is attested by other animals as well as by the aforementioned affections. My transl.

The final allusion to other animals refers to a type of investigation that is clearly Peripatetic in spirit, i.e., the phenomenon studied must be tested for the different animal genera to confirm or to modify the theory (it may be noted, incidentally, that this procedure also appears clearly in *De spiritu* 482 a22; 485 a11-22). Finally, we can quote a passage from Priscian of Lydia, in which Theophrastus clearly sets out not only the difference between animals that perceive smells with or without breathing, but also the function of breathing in the perceptual activity of the first group:

but <the organ> of smell is not the breath which is being brought in during breathing, but that is useful for opening up the pores connected with smell <in those creatures> in which they are covered up: but for those in which <they are> not, smelling <can occur> even without breathing⁵⁴.

The development of the *aporia* in *De spiritu* 482 a9-17 appears to make use of Peripatetic material with a certain ease and with a thorough knowledge of the problems discussed in the Lyceum. Further evidence is provided by the fact that the author poses the key problem of the cooling function of respiration (482 a16), as all animals and plants require refrigeration in order to survive and maintain vital internal heat (see Aristotle's *De respiratione* and Theophrastus's botanic works).

5.4. Vital heat and generation

In section 5.2, we saw that discussions on *pneuma* are closely related to those on the heat of the living (fr. 346 FHSG). The nature and function of vital heat are discussed in chapter 9 of *De spiritu*⁵⁵. In what follows, I will try to show how many of the insights found here are also present in Theophrastus. The chapter opens with a critique against those who hold that it is not the vital heat which is the productive principle in bodies, and who claim that fire has only one direction of movement and only a capacity to cut. After pointing out that, the author states that, in the case of inanimate beings, fire does not always produce the same effects (485 a32-b2):

We must therefore assume that the same applies to ensouled beings, when we inquire into the fire which nature uses, as into the fire which *technai* uses. For in the *technai*, too, the fire of the goldsmith produces a different result from that of the coppersmith and that of the carpenter and the cook. But perhaps it is more correct to say that the *technai* differ: for they use fire as an instrument to soften or melt or dry things, and also to shape some things. The natures do the same: hence their products also differ. My transl.

⁵³ See Baltussen 2015a for some links between *De odoribus* and *De sensibus*.

⁵⁴ Priscian of Lydia, *Theophrastus on Sense-Perception*, 16, 15-18 (= 277B FHSG). Transl. P. Huby.

⁵⁵ On the belonging of this chapter to the rest of the work, see Roselli 1992, 121-2.

This passage affirms the need to investigate nature taking into account the continuity between the properties of fire that appears in biological phenomena and those of fire that operates in the *technai*. Such a comparison is typical of Peripatetic philosophy and several examples can be found in Aristotle (e.g. *GA* 740 b25-34). But in the more specific case of fire, two important parallels can be cited that we find in Theophrastus. The first is drawn from *De lapidibus* 54-55 and is about the production of certain colours from the power of a natural or artificial fire:

for it would seem that all these substances change under the influence of fire, if it is right to consider that the red ochre made in this process is the same as the one made by nature (τῆ φυσικῆ) or very similar to it. Just as there is a natural and an artificial (αὐτόματος ἢ δὲ τεχνικῆ) red ochre, so there is a native (αὐτοφυῆς) *kyanos* and a manufactured kind, such as the one in Egypt. Transl. Caley.

The second is even more precise and is taken from *De igne* 37. After stating that, with regard to melting and boiling, all substrates present great differences, such as the soft flame, the heat which is not too fierce, and the piercing, more intense and more concentrated heat (*De igne* 36), Theophrastus gives the example of the medical use of fire and then says that:

the other *technai* proceed in a more or less similar manner. Rightly so, in relation to those that require, so to speak, softening or melting or division into small parts, craftsmen try to obtain a mild and fine heat; for those, on the other hand, that require a more forceful treatment, as in metal work, they seek a more intense heat. My transl.

But the analogy between the instrumental use of fire in the arts and natures is not the only element shared between *De spiritu* and Theophrastus. A further aspect to be noticed is the need to set a vital and generative heat that is clearly distinct from the power of fire, especially when the latter is too intense. In *De igne* 44, Theophrastus specifies the characteristics of the heat present within animate bodies and the equally generative heat emanating from the sun. Both of these types of heat have a certain appropriate predisposition to generate, by reason of their gentleness and fineness, not like the heat of fire, which is hard and caustic instead. Comparing the fire and the heat, Theophrastus observes, in *De igne* 6, that heat and its power constitute a principle, since it is more capable than fire of inducing transformation and natural generation (φυσικῆς γενέσεως). *De spiritu* is also very sensitive to the peculiarity of fire that is involved in biological processes. In particular, the author asserts the specificity of fire/heat in vital processes and connects this aspect to the soul and nature (485 b6-15):

But the *technai* use fire solely as an instrument; nature, on the other hand, also uses it as matter. And this presents no difficulty, but rather the difficulty lies in the fact that nature, which uses the fire, makes intelligent plans (νοῆσαι) when it assigns to beings, together with sensible qualities (πάθεισι), their arrangement (τὸν ῥυθμὸν). For this is no longer a matter of fire or *pneuma*. It is clearly remarkable that such a power should be combined with these matters. And the case is just as remarkable with the soul, for it is present in them. Therefore, they incorrectly attribute to the same entity, either in general or to a part of it possessing this demiurgic faculty, also the fact that the movement which is realized always remains similar: and indeed, this agent is the nature from which generation also proceeds. My transl.

The quoted passage raises a variety of translation and interpretation issues that I cannot address here. For the purpose of the article, it is sufficient to point out that the author is fully aware of the difficulties involved in the relationship between material instruments (fire, heat, *pneuma*) and formal capacity (soul or nature). In sum, not only is the author aware of the distinction between fire and vital heat, he is also interested in the problem of the interaction between material and formal potencies in the case of natural substances. This specific issue is frequently found in the botanical texts of

Theophrastus⁵⁶. At this point, it appears worthwhile to examine the information on the soul that can be extracted from *De spiritu*.

5.5. Soul and *pneuma*

It is important to observe that neither for Theophrastus nor for the author of *De spiritu* there is a real identification between soul and *pneuma*. In fact, we do not have for either of them any affirmation of a materialist theory of the soul that would ultimately identify the psychic principle with the vital breath⁵⁷. Even if we do not have identification, we have nonetheless a very intimate relation between *pneuma* (and also fire/hot) and soul, because *pneuma* «is connate (συμφυές) to the soul» (481 a17), and it is its primary vehicle or receptacle (τὸ πρῶτον δεκτικόν) (483 b11). These formulations are not so different from those we can find in Aristotle's *De motu animalium*, where we read that *pneuma* «seems to bear a relation to the psychic principle that is similar to that which the point in the joints, the one which imparts movement and is moved, has to the unmoved»⁵⁸. It seems to me that, both for Aristotle and for the author of *De spiritu*, *pneuma* has primarily an instrumental function, in the first instance with regard to the origin of bodily movements. As for Theophrastus, since we find no evidence of the relationship between *pneuma* and soul, we can only presume that he had more or less adhered to Aristotle's doctrine of the soul as the first actuality of a natural body that has life potentially. Therefore, it is better to explain closeness to Aristotle's views from Theophrastus' loyalty to some of his mentor's views rather than to conclude that such (limited) connections indicate Aristotle's authorship.

The nature of the soul and the role of the *pneuma* may, however, be useful in excluding Strato as a candidate for *De spiritu*'s authorship. We do not have certain information about Strato's theory of the soul, but several testimonies suggest that for him (1) *pneuma* is the carrier of all psychic activity – it is maybe identified with the soul –, (2) it has its centre in the brain behind the eyebrows and (3) spreads to all parts of the body. In a recent contribution, Sylvia Berryman, talking about «the material basis of soul», states that «a number of passages suggest that he [Strato] based his theory of the soul on the substance *pneuma*»⁵⁹. In fact, the soul seems to be for Strato a single entity that «functions by transmitting impulses and information between core and periphery via the tension of the *pneuma* in the nerves»⁶⁰. This interpretation accords well with the claim, which we found in different testimonies⁶¹, that sleep and death involve relaxation of the *pneuma*.

The author of *De spiritu* casts doubt on the doctrine that the soul can be identified with *pneuma* or air («the air is not the whole of the soul, but is something which contributes to this potentiality» 483 a33-34) and it seems preferable to lean towards an interpretation of *pneuma* as an instrument of the soul. Hans B. Gottschalk, speaking of *De spiritu*, goes so far as to say that the content of this treatise is directed against Strato's teaching⁶². Therefore, it is difficult to attribute this work to Strato on the basis of his theory of *pneuma* and soul. In any case, I think we have to be very cautious both with

⁵⁶ Thphr. *CPI* 12, 4-5; III 22, 3; V 1 4-12; V 2, 1.

⁵⁷ See Gregoric 2020a, 29. Gregoric argues that *De spiritu*'s «author is not committed to any particular conception of soul» (31). Cf. also Federspiel 2017, 48-50.

⁵⁸ Arist. *MA* 10, 703 a11-14. Nussbaum transl. modified.

⁵⁹ Berryman 2020, 16. But the idea that for Strato the soul coincides with *pneuma* remains a controversial point. See Repici 1988, 28-30, and *Ead.* 2020, 50-5; Verde 2022, 65-6.

⁶⁰ Berryman 2020, 17.

⁶¹ Fr. 66-67 Sharples.

⁶² Gottschalk 1998, 295.

regard to the reconstruction of Strato's doctrine⁶³ and to the exact doctrinal content of *De spiritu*. For this reason, I think we need to introduce further proof of the attribution of this treatise to Theophrastus and not to Strato. Consequently, I deal now with the question of teleology in nature.

Strato has been regarded, in antiquity and for a long time, as substituting materialism for Aristotelian metaphysics, mechanism for teleology, atheism for theology and empiricism for intuition. These formulations are simplistic and potentially misleading. Nevertheless, it is possible to claim that Strato's physics relegates teleology to an even more marginal role than that of Theophrastus⁶⁴. Now, it is true and well-known that Theophrastus raised many *aporiai* in his *Metaphysics* concerning teleological explanations, but it is also true that he continues to make use of them in his writings and particularly in his botanical works⁶⁵. The interest that Theophrastus has in the final cause is undeniable, while this is absolutely not the case for Strato⁶⁶. Therefore, since in *De spiritu* the question concerning the teleological explanation of a given phenomenon is raised several times (482 a28-b17; 484 a30-31; 484 b9-37; 485 a5-18) and it is affirmed that searching for the final cause is worthy of value for the study of nature («we must give due consideration to the final causes» 485 a5) because «everything exists for a purpose» (484 b27), I would say that, on this point again, *De spiritu* is not in accordance with Strato's doctrines. On the contrary, the importance of the final cause seems to me to be another clue that goes in the direction of Theophrastus' authorship.

6. Conclusion

In this contribution I have argued that there are many clues that point to Theophrastus as the author of *De spiritu*. Compared with Regenbogen's hypothesis of a Theophrastean authorship of the treatise⁶⁷, my contribution proposes a novel interpretation that includes all the issues that are important in identifying the author of *De spiritu*. I am convinced that in this case we can use Agatha Christie's expression «one coincidence is just a coincidence, two coincidences are a clue, three coincidences are a proof» to say that *De spiritu* has many credentials to be a work by Theophrastus. First, lexical and linguistic elements (§2) are consistent with those found in many Theophrastean works. Second, the supposed chronology of the treatise (§3) is at least compatible with the Theophrastean one. Third, the *aporetic-dialectical* method (§4) and the doctrines (§5) of *De spiritu* show an undeniable affinity to the thought of Theophrastus. I have also tried to briefly illustrate the reason why the attribution to Strato is more difficult and presents problems, in particular with regard to doctrinal compatibility. As I have already said, the content of *De spiritu* is very complex and difficult because of the uncertain state of the text transmitted by the manuscripts. Generally speaking, we can prove the *inauthenticity* of a text in a very strong way, whereas proving the authorship is much more complicated. Yet, in this case, all the elements I have provided in this article strongly suggest

⁶³ Repici 1988, 1-2, argues that Strato's view of the soul is essentially continuous with Aristotle's, retaining many central metaphysical commitments. According to Berryman 2020, Strato's «position could be seen as one natural line of development of Aristotelian thought, resisting the attempt to take Aristotle's thought in the direction of ineliminably teleological properties. Yet the fundamental commitment to teleological explanation and hylomorphic analysis remains» (29).

⁶⁴ See the fr. 20 Sharples (Plu. *Against Colotes* 14 1114F–1115B) and its analysis by Pellegrin 2010, 248: «contrairement à Aristote, Démocrite et Straton adoptent une conception que nous disons mécaniste du fonctionnement de la nature et notamment de la formation de l'univers».

⁶⁵ See for example Thphr. *CP I* 1, 1: «nature does nothing in vain»; *CP I* 16, 1-3. There is a rich literature about teleology in Theophrastus: Repici 1990; Lennox 1985; Gourinat 2015.

⁶⁶ See Berryman 1996. Because it discusses the limits of teleological explanation, the work of Theophrastus is crucial to understanding Strato's views.

⁶⁷ Regenbogen 1940 just noted the use of *διαμυνή* (see §2 above) and the *aporetic* approach (§4).

that we are dealing with an author who writes like Theophrastus, who is familiar with the theories of Aristotle and Theophrastus, who uses argumentative strategies and applies the philosophical method of Theophrastus. Therefore, I conclude that either the author is an unknown epigone of Theophrastus or is Theophrastus himself. I think that the latter is our better choice for the authorship of *De spiritu*. This attribution can contribute to our understanding of the history of philosophical and medical ideas in the early Hellenistic period and in the peripatetic school, showing how Theophrastus developed and problematized pneuma-related issues from Aristotelian biology and how he took into account and criticized other concurrent theories emerging from the medical *milieu* of his time. One could also suppose, therefore, that Theophrastus was a point of reference for early Stoicism in the development of a philosophical doctrine of *pneuma*⁶⁸, later refined by Chrysippus⁶⁹. But this is another story and would require that one accept the conclusion reached in this paper.

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⁶⁸ On Theophrastus and the early Stoa, see Long 1988. Cf. also Coughlin, Leith, Lewis 2020.

⁶⁹ See Piazzalunga 2022.

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