

*The Invention of Biology?*I *Bios and Biology*

“Biology” is not an ancient word. On the contrary, it gained momentum only at the beginning of the twentieth century.¹ This term must have sounded quite strange if, in a public lecture delivered in London in 1876, Thomas Henry Huxley (1825–95) still spoke of “biology” as a “new-fangled denomination.”² In his lecture, Huxley defends the use of this neologism precisely because there is a “great analogy, [and] a very close alliance between those two sciences of botany and zoology . . . while they are much more widely separated from all other studies.”³ Needless to say, the presence of a word means in itself very little. It is possible to have a word such as “biology” without having the concept of a science of living beings.⁴ But it is also possible to have the idea of a science of living beings without having a name to designate it. This innocent observation creates the conceptual space for the following question: *Do Aristotle and Theophrastus, his younger colleague and immediate successor at the head of the Lyceum, have such an idea?*

¹ The early fortune of this term is reasonably well known. In Germany, Gottfried Reinhold Treviranus (1776–1837) adopted it to describe his project of a systematic investigation of “the various forms and manifestations of life” in 1802 (*Biologie: oder Philosophie der lebenden Natur für Naturforscher und Ärzte* [Biology or Else Philosophy of the Living Nature for Naturalists and Physicians] vol. I: 4). In France, in the same year and independently from Treviranus, in the introduction to his *Hydrogéologie, ou recherches sur l'influence qu'ont les eaux sur la surface du globe terrestre*, Jean-Baptiste Lamarck (1744–1829) employed it to carve out the conceptual space for a “theory of living bodies.” Treviranus and Lamarck did not invent this term. In Germany, Michael Christoph Hanov (1695–1773), a student of Christian Wolff, used the Latin term *biologia* in the title of the third volume of his compendium of natural philosophy entitled *Philosophia naturalis sive physica dogmatica* (published in 1766). Closer in time to Treviranus, Theodor George August Roose (1771–1803) used the term “biology” in connection with the doctrine of the vital force in the foreword to his *Grundzüge von der Lehre von der Lebenskraft* (*Fundamentals of the Doctrine of the Vital Force*) (published in 1797).

² HUXLEY 1877: 267. ³ HUXLEY 1877: 268.

⁴ Ernst Mayr reminds us, rightly and wisely, that coining the word “biology” does not *ipso facto* create a science of biology (MAYR 1982: 108).

If one ought to answer this question based on the scholarly practice of using the term “biology” in connection with Aristotle’s works on animals, the answer would have to be an unqualified “yes.”⁵ What licenses this practice is the belief that while Aristotle concentrated his attention on the study of animals, he also created the very idea of a general scientific investigation of living beings.⁶ Widespread as it is, this practice is not universally accepted. Historians of science have warned us against the danger of assuming the presence in the past of a scientific category such as biology that only makes sense today. While the deployment of this category creates the sense of a grand tradition of which we are the ultimate heirs, it also ends up giving us a distorted description of the past. In fact, the application of this category has the unwelcome consequence of obfuscating the existence of important differences. The most obvious is this: Aristotle operates with a conception of life that is a far cry from the one implicitly at work in our contemporary use of the term “biology.” His considered view is that there is plenty of life not only in the sublunary but also in the superlunary world. I mean not just the life of the heavenly bodies but also that of their separate unmoved movers. At the same time, Aristotle has self-consciously developed the conceptual resources to focus on perishable (sublunary) life to the exclusion of imperishable (superlunary) life.⁷ At least in this respect, therefore, the application of the category of biology to Aristotle’s philosophy does not create an intolerable distortion of the historical truth. Still, one may legitimately wonder whether the realm of perishable life as conceived by Aristotle and Theophrastus displays enough unity and cohesion to allow for a systematic study of perishable living beings as such. In this concluding chapter I would like to return to the question of how Aristotle and Theophrastus describe their explanatory project and what their description (or descriptions) may entail for the larger question of how they conceive of what they are doing in their extant works on animals and plants.⁸

⁵ Here are a few examples, listed in reverse chronological order and without any pretensions of being exhaustive: CONNELL 2021; MEYER 2015; TIPTON 2012; GOTTHELF 2012a; LENNOX 2001a; KULLMANN-FÖLLINGER 1997; GOTTHELF-LENNOX 1987. All these books have the words “Aristotle” and “biology” in their titles. SHARPLES 1995 extends the use of the term “biology” to Theophrastus.

⁶ See the motivational prelude in LENNOX 2001a: x–xix. For Lennox, Aristotle created not only the science of biology as a discrete field of investigation but also philosophy of biology understood as a reflection on the norms of inquiry to be applied in the study of living beings.

⁷ See Chapter 1, Section 2.

⁸ This is the strategy recommended by Andrew Cunningham for a truly historical study of the intentional activity that we call “science.” See the Introduction.

Let me stress, first, that Aristotle and Theophrastus have both the conceptual and linguistic resources to create an abstract term equivalent to “biology.” If they wanted to, they could have coined such a word starting from the Greek noun “βίος.” At the most general level, this term designates a way or mode of life. When in the *Nicomachean Ethics* Aristotle famously distinguishes the contemplative life from the life of pleasure and political life, he speaks of three kinds of life: three βίοι.⁹ This use of the term “βίος” is far from being an Aristotelian invention. We find it already attested in the *Philebus*, where Plato offers an evaluative comparison entailing three different *ways of life* (βίοι). They are the life of pleasure, the life of the mind, and the life that combines the two.¹⁰ Plato looks at the relative merits of these ways of life and eventually chooses the third one. All this is well known and is also relatively uncontroversial.¹¹ What is often overlooked is that Aristotle and Theophrastus do not have to borrow the word “βίος” from an ethical context. This word is already available to them in the context of their own studies of animals and plants. For Aristotle, a βίος is the *way of life* that a certain kind of animal exhibits.¹² In the programmatic passage at the beginning of *HA*, Aristotle announces a collection of all the differences that animals exhibit with respect to “their modes of life [βίοι], their activities, their character traits, as well as their parts.”¹³ When we look at what immediately follows in the text, we realize that the division into land and marine animals is the most basic distinction in the manner of animal life for Aristotle. This comes as no surprise considering that the habitat is a primary factor in controlling what goes into the βίος of an animal. For instance, there is such a thing as a marine βίος, and swimming is one of the most conspicuous activities contributing to that βίος. Of course, other features are relevant to the determination of any βίος, including the marine one. Among those that Aristotle mentions, I recall the features that relate to its behavior: whether the animal is a nocturnal or diurnal creature; whether it is a solitary, gregarious, or political being.¹⁴

⁹ Aristotle, *NE* I 5, 1095b17–19. ¹⁰ Plato, *Phil.* 20 E–22 B.

¹¹ More examples of the use of the ancient Greek term “βίος” can be given. In the *Apology*, Socrates says that the unexamined life (βίος) is not worth living (βιοτός) for a human being. In this case, the style or manner of life is a βίος. For a fuller discussion of the use of the words “βίος” and “ζωή” in Plato, see NAAS 2018: 164–183.

¹² The connection between the use of the term “βίος” in Aristotle’s ethical writings and the use of the same word in the context of his works on animals is still unexplored. An educated guess is that the ethical use of the term “βίος” is the original one.

¹³ Aristotle, *HA* I 1, 487a11–14.

¹⁴ For an in-depth discussion of how Aristotle conceives of the βίος of an animal, and how he uses this scientific concept both at the pre-explanatory and the explanatory stage of his study of animals, I refer the reader to LENNOX 2010a: 239–258 and LENNOX 2010b: 329–355.

Interestingly enough, at the outset of *HP I*, Theophrastus tells us that not only animals but also plants have a βίος:

the differences in plants and the rest of their nature are to be understood with respect to their parts and their qualities, as well as their modes of generations and *modes of life* [βίοι]; for they do not have character traits and actions as animals do.¹⁵

Again, the habitat is at the very heart of the definition of a βίος. Like animals, plants live and grow on land, near water, or in water.¹⁶ But we cannot rule out that other features are constitutive of the βίος of a plant. The details do not matter here; what matters is that “βίος” is a term of art in the Peripatetic study of animals and plants. Aristotle and Theophrastus could have used this term to create an abstract noun to designate the study of the different ways in which the different kinds of living beings (animals and plants) live. Neither one of them show any inclination whatsoever to do so.

We can fortify this conclusion by returning to the programmatic passage that opens Aristotle’s *Meteorology*. There, Aristotle has no qualms adopting the word “μετεωρολογία” when he tells us that there remains for consideration that part of natural investigation that coincides with what his predecessors called meteorology (μετεωρολογία).¹⁷ But what the early Greek thinkers called meteorology is emphatically not what Aristotle means when he uses this term. Physics before Aristotle was impervious to the distinction between celestial physics and sublunary physics. By contrast, Aristotle assumes this distinction right from the start of his *Meteorology*. As a result, he is self-consciously giving a new meaning to an old term by adapting it to his own natural philosophy. To fully appreciate what is at stake, and why it is important for Aristotle to adopt (and adapt) the term “μετεωρολογία,” we must turn to the list of sublunary phenomena he plans to explain in his *Meteorology*. A reader who is not familiar with Aristotle and his explanatory strategy may wonder why the latter is reserving a single slot in his research agenda for the explanation of sublunary phenomena as diverse and disparate as (among others) comets, winds, and earthquakes. It is only in the context of his investigation that Aristotle is able to vindicate his approach by showing that the phenomena discussed in the first three books of his *Meteorology* are all explained in terms of a material cause (the dry and moist exhalations) combined with

¹⁵ Theophrastus, *HP I* 1.1. For a discussion of this pivotal text, I refer the reader to Chapter 4, Section 2.

¹⁶ Theophrastus, *HP I* 14.3. ¹⁷ Aristotle, *Meteor.* I 1, 338a25–b21.

a moving cause (the circular motion of the heavenly bodies).¹⁸ Therefore, the use of the term “μετεωρολογία” gives an impression of unity to what is *prima facie* a random list of phenomena. At the very least, Aristotle should have been more forthcoming about his overall strategy. Instead, he relies on a term that his reader would interpret in a different way to introduce an investigation that makes sense only within his own natural philosophy. It is possible to restate this point by saying that meteorology as a branch of sublunary physics is an Aristotelian innovation. Furthermore, it is an innovation that crucially depends upon Aristotle’s idiosyncratic division of the natural world into a celestial and a sublunary part. It is no wonder that this innovation did not gain much momentum in antiquity after Aristotle.¹⁹

I briefly elaborated on Aristotle’s appropriation of the word “μετεωρολογία” for three main reasons. First, the history of this term shows that the ancient Greek philosophers were quite adventurous with words. They not only created new words but were also ready to appropriate existing words and change their meaning as they needed. Second, meteorology is conceived by Aristotle as a discrete discipline. In addition to being discrete, this discipline is also strongly unified. All the phenomena that are explained in the first three books of Aristotle’s *Meteorology* are explained as stemming from the same causal starting points. Finally, the existence of a name for the discipline is important because it testifies to the existence of unity within the discipline.

2 **Animals and Plants Rather Than Perishable Living Beings**

With this conclusion in place, we can return to what Aristotle means to say at the beginning of the *Meteorology* when he is announcing a study of “*animals and plants*.” It is not open to us to think that carving out two slots in his research program in natural philosophy (animals and plants) rather

¹⁸ We can leave aside the additional question of how *Meteor.* IV relates to *Meteor.* I–III.

¹⁹ A full study of the history of the term “μετεωρολογία” before and after Aristotle can be found in the old but still very useful article by Wilhelm Capelle (CAPELLE 1912: 414–448). Except for WILSON 2013, Aristotle’s *Meteorology* has not attracted a great deal of attention lately. The main thesis defended in this valuable monograph is in broad agreement with the interpretive line I sketched in the main text. According to Malcolm Wilson, Aristotle does not repudiate the old study of the μετέωρα but neither does he simply continue it. Rather, he adopts some of the conceptual resources developed in the context of the Presocratic study of nature and adapts them to a new explanatory context. The outcome is not a revival of the Presocratic project of investigation but rather a transformation of this project into a discipline at once discrete and firmly inscribed into a larger explanatory project (Aristotle’s natural philosophy).

than one (perishable living beings) is an innocent move. We have seen that speaking of animals and plants is far from obvious and uncontroversial; on the contrary, it presupposes the application of the main results reached in Aristotle's research into the soul understood as the principle of living beings.²⁰ Moreover, in the opening lines of his *Meteorology*, Aristotle promises to study animals and plants "in common and separately." It does not take much imagination to envision an alternative scenario in which a study of living beings in the form of a common study of animals and plants is the starting point of a study of perishable life. In this alternative scenario, we would still have separate studies of animals and plants, but they would be subsumed under this common study of animals and plants. But this is emphatically not how Aristotle proceeds at the outset of the *Meteorology*. Instead of starting from a picture of unity, *Aristotle lists two separate studies and leaves us to wonder how much unity we can find in them*. There must be a reason why Aristotle speaks of animals and plants rather than living beings, ensouled beings, or things that partake in life.

To reiterate a point I made in Chapter 1: the beginning of the *Meteorology* is not a random list of investigations, but it is a programmatic passage in which a whole research project in natural philosophy is carefully sketched out. What matters in this sketch is not whether we can associate a specific writing (or set of writings) with each slot in this project but rather the order in which those slots are listed, and how they are organized. When we look at the passage in this way, we are compelled to take seriously not only what Aristotle says but also what he does not say. The presence or absence of a name to designate a slot in Aristotle's research agenda is highly significant, so we are perfectly entitled to ask why Aristotle did not coin a word for the investigation of animals and plants if he really thought this investigation amounted to a single, discrete discipline.

We can make progress toward understanding why Aristotle (and Theophrastus after him) did not coin a new word to refer jointly to the separate studies of animals and plants envisioned at the outset of his *Meteorology* if we reflect on the other Greek term employed for life, namely "ζωή." While "βίος" refers to a certain mode of life, ζωή means bare life, namely the activity or set of activities that are jointly constitutive of being alive.²¹ For Plato, everything that partakes of life (ζωή) is a living being (ζῷον). Plato makes this point in the *Timaeus*, where he introduces plants

²⁰ Here I am relying on the results reached in Chapter 1, Section 2.

²¹ Compare NAAS 2018: 172–176.

as another (kind of) living being (ζῷον) from the human being.²² We can modify his statement to make it acceptable to Aristotle (and Theophrastus): whatever partakes of *perishable* life is either an *animal* (ζῷον) or a *plant* (φυτόν).²³ Interestingly enough, Aristotle and Theophrastus do not give us a definition of life, let alone of perishable life, in their extant writings. In addition, Aristotle criticizes an attempt at the definition of life that goes back to Dionysius, who is a rather obscure figure for us today.²⁴ Dionysius's definition goes something like this: life (ζωή) is a "connate movement belonging to the kind [of creature] which is nourished, accompanying it from beginning to end."²⁵ The reference to nutrition makes it clear that this is meant to be a definition of *perishable* life. Aristotle criticizes it on the ground that animals and plants are different forms of perishable life rather than a single kind of living being.²⁶ In *De anima*, where Aristotle is not concerned with life but with the soul as the source of life, he gives us a statement to the effect that life manifests itself in more than one way followed by a list of life activities.²⁷ For Aristotle, the presence of any one of them is sufficient for being alive. While these activities are not all restricted to perishable living beings, they can be jointly used to offer a disjunctive definition that recognizes that there are different kinds of perishable living beings, and so different forms of perishable life. And yet proceeding in this way is not the same as giving a definition of perishable life. A bona fide definition of perishable life is expected to capture at least one salient feature of the *definiendum*. Such a definition is found neither in Aristotle's extant works on animals nor in Theophrastus's surviving writings on plants.

The absence of a Peripatetic definition of perishable life has not deterred scholars from trying to supply one on behalf of Aristotle and Theophrastus. Most notably, Gareth Matthews has gone beyond the letter of what we are

²² Plato, *Tim.* 77 A 5. For more on Plato's conception of a living being (ζῷον) in the *Timaeus*, see Chapter 1, Section 2.

²³ The addition of the qualification "perishable" becomes important when Aristotle compares (and contrasts) animals and plants with the heavenly bodies. The exhortation to the study of life in all its manifestations and forms offered at the outset of *PA I 5* is a prime example. There, Aristotle speaks of *perishable* plants and animals and contrasts them with the heavenly bodies, which are not subject to generation and destruction (*PA I 5*, 644b22–645a3).

²⁴ Aristotle, *Top.* VI 10, 148a23–33. Oliver Primavesi (PRIMAVESI 1992: 246–261) has argued that for chronological reasons this Dionysius cannot be identified with Dionysius the sophist as scholars have routinely done at least since Hermann Bonitz (BONITZ 1870: 199a53–54). Primavesi suggests that our Dionysius is most likely the same person as Dionysius of Chalcedon (also known as Dionysius the dialectician), a figure connected with the Megarian school.

²⁵ Aristotle, *Top.* VI 10, 148a23–33. ²⁶ Aristotle, *Top.* VI 10, 148a23–33.

²⁷ See Chapter 1, Section 2.

told in Aristotle's *De anima*. His definition of life takes the form of a schema in which being alive is a species-specific phenomenon involving one or more powers that any member of the species has in virtue of having a soul and exercises over the course of its life.²⁸ Christopher Shields has criticized this interpretive strategy because the definition offered by Matthews on behalf of Aristotle would be "too biocentric." This definition would preclude Aristotle from ascribing life beyond the boundaries of perishable life.²⁹ Since there is plenty of life beyond the sublunary world, this criticism is well taken. At the same time, however, we have seen that Aristotle has developed the conceptual resources to distinguish perishable from imperishable life.³⁰ Moreover, the focus on perishable life, to the exclusion of imperishable life, is at work from the beginning of the second book of Aristotle's *De anima*. Thus, far from being arbitrary, the definition supplied by Matthews reflects the logic of the argument as it unfolds in the first part of *DA II*. And yet I find it difficult to see how this definition can generate a unified science of perishable living beings. To the extent that it invites us to proceed by pursuing what is specific about the different forms of living beings, this definition does not bridge the division of the study of perishable living beings into separate studies of animals and plants. Rather, it confirms, and indeed strengthens, this division.

At this point, one may legitimately wonder whether, instead of trying to supplement what Aristotle and Theophrastus say in their extant works on animals and plants, we should take their silence seriously. Presumably, Aristotle and Theophrastus do not give us a definition of perishable life, not because they are not able to find one but because they do not think that there is one. As a result, the option of a common study of animals and plants remains for them a project that can be pursued only in a very limited number of cases. Moreover, they pursue this project starting from the results achieved in the context of the study of animals. This is a direct consequence of the Peripatetic approach to perishable living beings I labeled "*first animals, then plants*."³¹

²⁸ MATTHEWS 1992: 185–193.

²⁹ SHIELDS 1999: 183. According to Shields, the definition offered by Matthews would preclude Aristotle from ascribing life to a god. As a result, Shields takes an alternative route. This route consists in finding out a core meaning of life in the idea that a living being is an intentional system engaged in end-directed activities (SHIELDS 1999: 188–192). I do not see how this second definition of life, precisely because it is *not* programmatically restricted to perishable living beings but rather has the life of a god as its central case, can serve as a starting point for a science of *perishable* life. Further discussion (and criticism) of the route taken by Shields can be found in JOHANSEN 2012: 50–51.

³⁰ See Chapter 1, Section 2. ³¹ See Chapter 2, Sections 3 and 4.

3 The Nutritive Power of the Soul in Animals and Plants

One may wonder whether the nutritive capacity can help bridge the gap between animals and plants. *Why not think that this is the power that secures the sort of unity that appears to be missing in the absence of an explicit definition of perishable life?* To fully appreciate the implications of this question, we need to bear in mind that Aristotle describes the nutritive soul as the most primitive and most widely distributed power; this is the power in virtue of which all perishable living beings have a share in being alive (ζῆν).³² In *Juv.* 24 (= *Resp.* 18), Aristotle says that “coming to be consists in the first participation in the natural heat associated with the nutritive soul, and life [ζωή] is the continuation in this participation.”³³ Finally, both Aristotle and Theophrastus not only adopt the same terminology (they both speak of a threptic power, τὸ θρεπτικόν) but also approach this power in the same way. Both make it the same as the power for growth and reproduction: while imperishable life does not entail the power for nutrition, growth, and reproduction, perishable life requires it.³⁴ Why not, therefore, give definitional priority to the nutritive soul and say that this soul is what secures unity and allows us to speak of a unified science of perishable living beings rather than separate studies of animals and plants?³⁵

To be sure, Aristotle and Theophrastus think that *something* is shared between animals and plants; however, it is far from clear that what is shared is the very same capacity.³⁶ To understand why, we must return to the analogy between souls and rectilinear plane figures ordered in a series beginning with the triangle. We have seen that this analogy plays a pivotal role in Aristotle’s research into the soul.³⁷ When Aristotle offers this analogy, he is careful to add that a triangle exists only *potentially* in the

³² Aristotle, *DA* II 4, 415a23–26. On Theophrastus on the nutritive power of the soul, see *CP* I.12.5.

³³ Aristotle, *Juv.* 24 (= *Resp.* 18), 479a29–30.

³⁴ For the view that the capacity for nutrition is the same as the capacity for growth and reproduction, see Aristotle, *GA* II 1, 735a17–19:

The nutritive power [τὸ θρεπτικόν] exists in all animals and plants alike, and this is the same power which enables an animal and a plant to generate another being like itself.

For Theophrastus on the nutritive power and its relation to growth, sprouting, and fruiting, see Chapter 5, Section 3.

³⁵ This line of interpretation is explored in KING 2009: 171–187.

³⁶ Both “power” and “capacity” are perfectly acceptable translations of δύναμις. The powers we are concerned with are capacities animals and plants have in virtue of being ensouled. Sometimes the Greek δύναμις is rendered with “faculty” or “ability.” While I refrain from using “faculty” and “ability,” I employ “power” and “capacity” interchangeably.

³⁷ See Chapter 1, Section 2.

next rectilinear plane figure; likewise in the case of the capacities of the soul. Here is the relevant passage:

In the case of both [rectilinear plane] figures and ensouled beings, what is prior is always present *potentially* [δυνάμει] in what follows in a series; for instance, a triangle in a square and the nutritive capacity in the perceptual capacity.³⁸

The addition of the qualification “potentially” is important. A square can be divided into two isosceles triangles. But each of these triangles is not a separate and self-contained figure: it exists only as a potential part of the square. In an analogous way, the nutritive capacity we find embedded in the perceptual capacity is not a separate and self-contained power. As a result, it is far from clear that we can isolate it from the larger system in which it is embedded.

The significance of this observation for Aristotle becomes obvious when we reflect on a question that looms large as soon as the soul is identified with a set of capacities rather than a single thing. I mean the question of the unity of the soul. This question can be introduced by recalling that most of the capacities studied in Aristotle’s *De anima* are basic powers of the soul – namely, powers that are separate (or separable) in account from one another.³⁹ If these powers are separate (separable) in account from one another, how do they come together so as to form single principle of perishable life (i.e., a certain kind of soul)? This question becomes even more pressing as soon as we realize that Aristotle speaks not only of a nutritive and a perceptual *power* of the soul but also of a nutritive and a perceptual *soul*. Aristotle cannot possibly entertain the thought that one and the same perishable living being has more than one soul since he thinks that the soul is the principle that grounds the unity of the living body, so we want to know how these basic powers come together in a single soul. The analogy with rectilinear plane figures is meant to help us see how to handle this delicate question. Recall that a square is a regular quadrilateral – that is, a plane figure with four equal sides and four equal angles. Such a definition makes no reference to triangles. And yet we have just seen that two right-angled isosceles triangles are potentially present in a square. We can restate this point by saying that a square is definitionally independent from a triangle. While a square can be divided into two right-angled isosceles triangles, a square is not just an aggregation of those triangles; it

³⁸ Aristotle, *DA* II 3, 414b28–32.

³⁹ See Chapter 2, Section 1. I say “most of the powers” because *phantasia* and the power to move with respect to place are notable exceptions to the rule.

is a separate rectilinear plane figure over and above them. In an analogous way, the soul is not just an aggregation of separate powers (let alone an aggregation of multiple souls), but it is a single entity entailing those powers.

Aristotle says that the nutritive power is *in* the perceptual power just as the triangle is *in* the square. But how is the relation of containment to be understood here? To begin with, this relation does not obtain in the abstract but always within a certain kind of perishable living being – either a human or a nonhuman animal. Aristotle makes this point when he says that not only in rectilinear plane figures but also *in ensouled beings* (ἐπὶ τῶν ἐμψύχων) that which is prior is always present *potentially* (δυνάμει) in that which follows.⁴⁰ Whenever these powers are both present, the perishable living being possessing the higher (cognitive) power potentially contains within itself the lower ones.⁴¹

Let us reflect on the implications of this approach to the powers of the soul for how we ought to think of the nutritive power. This power cooperates in animals with the perceptual capacity, which also entails the presence of the capacity to feel pleasure and pain, as well as the capacity for non-rational desire in the form of appetites. By contrast, plants do not have a share in cognition; hence, they cannot feel pleasure and pain, and they cannot have appetites.⁴² We may or may not agree with Aristotle on this point. In fact, I suspect that a few of us may be willing to ascribe a rudimentary form of cognition to plants along the lines suggested by Plato.⁴³ But at least for Aristotle (and presumably for Theophrastus),⁴⁴ the *nutritive power is a different kind of capacity when it works jointly with pleasure, pain, and desire*. We can restate this point by saying that this capacity is transformed by the presence of higher – that is, cognitive – powers. The “transformation thesis” is normally discussed in connection

⁴⁰ Aristotle, *De anima* II 3, 414b30. ⁴¹ I owe this formulation to JOHANSEN 2012: 68–69.

⁴² I believe that this is also true for Theophrastus. There is no hard evidence that Theophrastus ascribed a thicker notion of life to plants.

⁴³ While Plato does not think that plants have a share in judgment, reason, and intelligence, he ascribes them a share in pleasant and painful perceptions as well as in appetitive desires (*Tim.* 77 B 3–6). For a helpful discussion of the cognitive capacities that Plato may be willing to ascribe to plants, I refer the reader to CARPENTER 2010: 281–303 (reprinted and updated in BALDASSARRI-BLANK 2021: 35–53). For a contemporary attempt to ascribe not only pleasure and pain but also intelligence and even memory to plants, I refer the reader to MANCUSO 2017.

⁴⁴ Aristotle's *De anima* plays a foundational role for the study of animals and plants. Without that work in the background, the decision to approach the study of perishable life via separate but coordinated studies would simply be unthinkable. See Chapter 1, Sections 2 and 3 (Aristotle); Chapter 4, Section 5 (Theophrastus).

with the power of reason.⁴⁵ Aristotle is committed to a transformative (as opposed to an additive) theory of rationality. According to him, reason is not just an additional power that humans alone have; it is also a power that transforms the lower capacities humans share with non-rational animals. For instance, the capacity for desire as well as the perceptual capacity manifest themselves differently in human and nonhuman animals precisely because humans are rational animals while nonhuman animals are not.

To be sure, we can give an account of sense-perception and desire that does not presuppose any relation to the power of reason. Aristotle offers such an account in the first part of *DA* III 7.⁴⁶ Since this account is common to both human and nonhuman animals, it is meant to have a zoological significance. But when reason is factored in, this power does not add to the existing ones but rather transforms them. While the transformation thesis is standardly discussed in connection with reason, it has a significance that goes beyond the study of the cognitive capacities in rational and non-rational animals. It also applies to the study of the lower (non-cognitive) capacities that animals share with plants. What we read in Aristotle's *De anima* suggests that it would be unmethodical to think that the lower capacities can be studied by taking an additive approach, and by thinking that the study of reason alone requires a transformative approach. Recall that the basic powers of the soul are ordered in a series, so they are to be studied serially. But to study them serially requires a prior decision as to whether we adopt an additive (aggregative) approach or a transformative one.

A hybrid that combines both approaches is not an option for us. If we adopt a transformative approach to the study of the powers of the soul, we must adopt it for all the powers of the soul. If we adopt such a transformative approach, the nutritive powers present in plants, animals, and human beings are not going to be one and the same power. Rather, they will differ *in essence* from one another because they are embedded in a larger system of powers in which the presence of the highest power modifies the other ones. In this scenario, we will have a nutritive power that is *essentially* different in the case of plants, nonhuman animals, and

⁴⁵ I borrow this expression from Geert Keil (KEIL-KREFT 2019: 7). The ultimate origins of this language are to be found in contemporary discussions of rationality (most notably in the philosophical work of John McDowell). For an introduction to two alternative models to understand how reason interacts with the other cognitive powers, namely the additive and the transformative model, I refer the reader to BOYLE 2016: 527–555.

⁴⁶ *DA* III 7, 431a5–14. An in-depth analysis of this stretch of text can be found in CORCILIUS 2011: 117–143.

human animals. Indirect evidence that the nutritive power is a different kind of power in animals and plants comes from the observation that the presence of this power at the outset of a generative process gives rise to different kinds of things in animals and plants. It is only in the case of human and nonhuman animals that the exercise of the nutritive powers results in the production of the specific parts of the animal and a whole organism that is equipped with the capacity to have pleasurable or painful feelings as well as appetitive desires. In this respect, an animal or human fetus is not the same as a plant even when it is living a merely vegetative life.⁴⁷

This last observation forces us to rethink how we ought to take the account of the nutritive soul advanced in *DA* II 4. In this stretch of text Aristotle is not concerned with the nutritive power as is present in plants. Nor is he concerned with this power as it is present in animals. Rather, he speaks of nutritive power in a more general way. But since there is absolutely no evidence that Aristotle thinks of animals and plants as two species under one and the same genus, we cannot take this account to be equivalent to a generic account of the nutritive power as if the same nutritive power were common to animals and plants. Instead, we should consider it *an abstract account* that has to be filled in with the relevant details as we move on, and indeed forward, with our investigation. The relevant details will not be supplied in the context of Aristotle's research into the soul; rather, they will be provided only when we turn to the study of the different forms of perishable living beings – namely, when we finally engage in separate studies of animals and plants.⁴⁸

⁴⁷ Klaus Corcilius comes to the same conclusion by exploring a different line of argument. He argues (in CORCILIUS 2015: 38–49 and 2021b: 22–23) that in animals the nutritive soul is *teleologically subordinated* to the perceptual soul. By his lights, the relation envisioned by Aristotle is one of *teleological nesting*. It is open to us to apply either a teleological approach or a transformative one to the powers of the soul. What matters is that for Aristotle the nutritive and the perceptual powers of the soul do not work as independent modules in perishable living beings: rather, they are *operationally fused* in animals. But this also means that we no longer have the same nutritive power when this power works as an integral part of a cognitive soul.

⁴⁸ The nutritive power of the soul has been the object of intense scrutiny lately. This comes as no surprise if we keep in mind that the methodology adopted for the study of this power is subsequently employed for the study of the higher (cognitive) powers of the soul. On the methodology adopted in *DA* II 4, see JOHANSEN 2012: 93–106 and CORCILIUS 2021b: 13–34. There are special problems with the nutritive power of the soul. Most notably, it is not immediately obvious how nutrition, growth, and reproduction can be manifestations of one and the same power of the soul. For recent attempts to address this large question, I refer the reader to JOHANSEN 2012: 106–115; COATES-LENNOX 2020: 414–466 (abridged in LENNOX 2021b: 2–20); and GELBER 2022: 104–121.

4 Vital Heat in Animals and Plants

In *DA* II 4 Aristotle establishes the following, general theorem: *every perishable living being possesses some [internal, natural] heat*.⁴⁹ Although offered in the context of the research into the soul, this theorem does not contribute to the theory of the soul but rather to the study of animals and plants. Moreover, it contributes to the study of animals and plants insofar as they are both forms of perishable living beings. For this reason, it is quite tempting to make this theorem the cornerstone of Aristotle's science of living beings. And yet Aristotle shows no inclination whatsoever to build an entire science of perishable living beings upon this truth. Instead of making this theorem the starting point of his study of perishable life, he mentions it only at the end of his account of the nutritive soul and only as a sort of afterthought.

One might object that this is just as it should be. In his *De anima* Aristotle is not concerned with perishable living beings but with the soul as a principle of perishable life. In other words, his task is not to build a science of living beings but only to provide a theoretical foundation for such a study. But when Aristotle returns to this theorem in the context of his study of animals and everything that has a share in life (his *Parva naturalia*), he does not appear to have changed his overall attitude toward this principle. Aristotle does not build his entire science of perishable living beings upon it. This conclusion is unsurprising: if Aristotle's goal were to use this theorem as a cornerstone for his entire project, he would not have relegated it to the end of his project of the *Parva naturalia*, where his primary focus remains after all on animals.⁵⁰

The idiosyncratic approach I labeled "*first animals, then plants*" finds some confirmation in Aristotle's treatment of the nutritive soul. Let us recall how the theorem that all perishable living beings possess some internal heat is secured in *DA* II 4. According to Aristotle, each power of the soul is to be studied by looking at how it is discharged. Moreover, each power is discharged by engaging in a certain activity, which is in turn related to a certain object. Aristotle refers to this object as the correlative object.⁵¹ The nutritive power of the soul is no exception to the rule; this power too must have a correlative object. This object is nourishment (τροφή).⁵² The link Aristotle establishes between the nutritive power of

⁴⁹ Aristotle, *DA* II 4, 416b29. ⁵⁰ See Chapter 2, Sections 3 and 4.

⁵¹ Aristotle, *DA* I 1, 402b15; I 5, 411a4; II 4, 415a20; II 11, 424a11.

⁵² *DA* II 4, 415a23. I follow the standard reading of this passage, which is now challenged in COATES-LENNOX 2020: 416–466 (the argument is abridged in LENNOX 2021b: 3–19). While it is true that the

the soul and its correlative object explains why a considerable part of *DA* II 4 is devoted to clarifying what is meant by “nourishment.” This term is intrinsically ambiguous since it can be used to refer to either *concocted* or *unconcocted nourishment*.⁵³ Concocted nourishment is the outcome of the digestive process. As such, it is nourishment that has been assimilated and is ready to be allocated to the various parts of the perishable living body. By contrast, unconcocted nourishment is equivalent to external nourishment prior to undergoing any digestive process. The theorem that all perishable living beings possess some internal, natural heat is derived from the observation that external nourishment is the starting point of the whole nutritive process. This external nourishment must become like the nourished body before it can be allocated to its different parts, so this nourishment must undergo some change in order to be assimilated by the perishable living being. The assimilation of the external nourishment to the nourished body requires concoction, which is envisioned by Aristotle as a kind of cooking. But concoction so understood entails the presence of some internal, natural heat in the perishable living body. This heat is the agent responsible for acting on the external nourishment.⁵⁴ While this internal, natural heat plays an indispensable role in Aristotle’s causal account of how nutrition takes place, its presence alone does not suffice for the explanation of nutrition. The action of this heat is controlled and shaped by the nutritive power of the soul. Aristotle illustrates this point with the help of the example of the hand and the rudder. Both the hand and the rudder are required for navigation to take place. The hand is a moved mover whereas the rudder is a moved thing. But both the hand and the rudder require the additional presence of an unmoved mover that controls how navigation takes place. This is the expert knowledge embodied in the pilot whose hand moves the rudder.⁵⁵ When we ponder

Greek τροφή can be used to refer to the activity of nutrition, I am not persuaded by the attempt to read a reference to the activity (nutrition) rather than the relevant object (nourishment) in this passage. In their joint article, Coates and Lennox go on to reject the identification of the correlative object with nourishment. By their lights, the correlative object must be prior in definition to the nutritive power if Aristotle wants to avoid any circularity in the definition of the nutritive power. At the very least, Aristotle seems to be aware of the problem of circularity since his definition of the nutritive power does not make any reference to the correlative object. According to Aristotle, this power is the power to preserve that which has it (*sc.* the perishable living being) insofar as it has it (*DA* II 4, 416b17–18).

⁵³ Aristotle, *DA* II 4, 416 b3–9.

⁵⁴ Aristotle, *DA* II 4, 416b28–29: “It is necessary for all nourishment to be able to be concocted, and it is heat that affects concoction, which is why each ensouled being possess [some internal, natural] heat.”

⁵⁵ For a recent discussion of this image, see COATES-LENNOX 2020: 433–435.

this doctrinal point, we see why Aristotle argues for the necessary co-presence of the nutritive soul and some internal, natural heat. The latter is the tool by which the soul acts on the external nourishment.

And yet making the presence of heat in the living body contingent upon the need of the organism to process unconcocted nourishment is potentially problematic.⁵⁶ Aristotle maintains that plants do not concoct their nourishment, but they take in nourishment already concocted from the soil.⁵⁷ We must conclude that all the natural processes related to the preparation of nourishment in the case of plants must take place in the soil. The latter is, as it were, their stomach. At first sight, it is tempting to explain away this textual tension by arguing that the theoretical pronouncements made in the context of the research into the soul are not binding for Aristotle. In other words, it is tempting to posit that Aristotle has changed his mind or at the very least qualified his position as he has moved away from his research into the soul and turned to his study of perishable living beings. But it does not take long to find the same claim in the context of the study of animals. For instance, the presence of the internal, natural heat is explicitly linked to the need of the living organism to process external nourishment in *PA* II 3. More importantly, this claim is not restricted to animals, but it is explicitly extended to plants.⁵⁸

If Aristotle has not changed his mind on this doctrinal point, we must deal with this textual tension in some other way. My proposal is that the necessary co-presence of the nutritive power of the soul and some internal, natural heat is to be explained by means of the argumentative strategy we have seen at work in the *Parva naturalia*.⁵⁹ In other words, this co-presence is first established for animals and then it is extended to all perishable living beings. In this scenario, the co-presence of nutritive soul and natural heat cannot be necessary on the hypothesis that the perishable living being has to be able to concoct the relevant external nourishment. We are required to find an alternative source of hypothetical necessity that works for plants. We can restate this point with the help of the following question: why do perishable living beings such as plants need natural heat if they do not need it to bring about any physical change in the nourishment drawn from the soil? Aristotle does not address this question directly. Still, it is possible to offer an answer on his behalf. While the natural heat present in the plants

⁵⁶ To the best of my knowledge this point has not been noted in the secondary literature on *DA* II 4.

⁵⁷ *PA* II 10, 655b28–656a3. This passage is discussed in Chapter 2, Section 5.

⁵⁸ Aristotle, *PA* II 3, 650a2–8. ⁵⁹ See Chapter 2, Section 4.

does not bring about any physical change in the nourishment drawn from the soil since the latter is already concocted, this heat is required for the preservation of the basic properties of the concocted nourishment. Recall that the nourishment drawn from the soil through the roots is some sort of warm moisture that is then distributed to the rest of the plant. In this scenario, the natural heat present in the plant does not serve to concoct the external nourishment; its presence is nonetheless necessary to maintain the basic properties of the concocted nourishment as it is distributed to the periphery of the living organism (branches and leaves).⁶⁰

Reflecting on the asymmetry that exists between plants and animals may contribute new arguments to a recent debate on the *per se* object of the nutritive power. The primary *per se* object of this power seems to be concocted rather than unconcocted nourishment because this is the only kind of nourishment that is immediately relevant in the case of plants.⁶¹ But this identification creates a new problem: we are no longer able to define the correlative object without reference to the power of the soul and its distinctive activity. This may not affect Aristotle's ability to define the nutritive power of the soul, since this power is not defined with reference to its object. Recall that Aristotle defines the nutritive power as the power to preserve that which has it (*sc.* the perishable living body) insofar as it has it.⁶² At this point of his argument, Aristotle has already downgraded the correlative object to the role of a necessary condition for the activity of nutrition to take place. And yet it remains true that we are no longer able to make good sense of Aristotle's original claim that the correlative object is prior in account to both the activity and the power of the soul.

5 **Taking Stock**

The main point I would like to take away from my highly selective discussion of *DA* II 4 is this: the first and most important step made in the context of the Peripatetic study of living beings is the observation that life takes many forms. In the sublunary world, it manifests itself in the form of plant and animal life (with human life as a special kind of animal life). This is implicitly acknowledged where we are told that the most natural

⁶⁰ I am adopting a suggestion made in KOROBILI 2021: 153–167. She argues that the natural heat that is present in plants serves as a sort of receptor and accumulator of the heat drawn from the soil along with the concocted nourishment they absorb through their roots.

⁶¹ I side with Johansen on this point. See JOHANSEN 2012: 104–106.

⁶² Aristotle, *DA* II 4, 416b17–18.

function of living beings is to produce another like oneself, *whether an animal, another animal, or a plant another plant* (ζῷον μὲν ζῷον, φυτὸν δὲ φυτὸν).⁶³

When Aristotle and Theophrastus speak of animals and plants, they never assume that animals and plants constitute a single form of life. Quite the opposite: they approach the study of perishable living beings via separate studies of animals and plants. This suggests that both take animals and plants to be different kinds of perishable living beings. Whether there is unity, and how much unity there is, remains an open question at the outset of the *Meteorology*, where Aristotle outlines an ambitious research program in natural philosophy that ends with a reference to animals and plants. When we look a bit more closely at the two *corpora* of writings Aristotle and Theophrastus have left us on the topic of animals and plants, we see that the unity they are able to secure is surprisingly limited. This observation goes some way toward explaining why they felt no need to coin a term equivalent to “biology.” While they are committed to the view that nature makes no leap, they are also committed to the view that there are at least in principle two kinds of perishable living beings that ought to be studied separately. Gradualism is fully compatible with the claim that there are two kinds of perishable living beings. Furthermore, a commitment to gradualism does not entail that there is a single domain of investigation – namely, perishable living beings. There is no textual evidence that Aristotle and Theophrastus invoke gradualism to establish that perishable living beings are a single investigative domain.⁶⁴

Animals and plants do not constitute a genus for Aristotle and Theophrastus. But this does not mean that they are not able to develop a science of perishable living beings. The title of this book makes it clear that, at least in my view, there is such a science even if animals and plants are not subsumed under a single genus. Aristotle and Theophrastus have not left us two disconnected, or only loosely connected, studies of animals and plants; rather, they have passed down to us two carefully coordinated investigations. They have also devised a conceptual tool they both use: analogy. Arguably, analogy is the single most important explanatory resource employed by Aristotle and Theophrastus. Analogy helps them

⁶³ Aristotle, *DA* II 4, 415a26–29.

⁶⁴ Pace REPICI 2000: 39, who takes Aristotle’s commitment to gradualism as her starting point for the claim that for Aristotle there is a single investigative domain (perishable living beings) rather than two (animals and plants).

track non-trivial similarities that exist between these two domains and build a science of perishable living beings in the absence of a genus.⁶⁵

Let me elaborate on this point by returning to Aristotle's theory of scientific explanation with a focus on *APo* II 17, which opens with the question whether it is possible for the cause of the same attribute not to be the same – but to be different – for all its relevant subjects.⁶⁶ The question is formulated in very general terms, so its relevance to our discussion is not immediately obvious. But it can be rephrased in a way that makes it relevant to us. Being alive is an attribute that is predicated of relevantly different things. Animals and plants are among those things, so the question arises whether it is possible for the cause that explains why being alive belongs to both animals and plants to be different. Aristotle answers this question in two steps. He first concentrates on what he takes to be his paradigmatic case. When we explain something per se, rather than in an accidental way or by means of a sign, we come to a negative conclusion: it is not possible for the same attribute *A* to be explained by a different cause for *C* and *D*.⁶⁷ Rather, the relevant cause of why *A* belongs to *C* and *D* must be not only the same but also the most appropriate because it must provide an explanation at the right level of generality. We can call this cause *B*. This conclusion marks the end of the first part of Aristotle's answer. It confirms that in order to explain something in common for animals and plants, we need to establish the salient features performing the role of *B*. But we have already seen that there are very few cases where Aristotle is able to reach this result.

And yet as soon as Aristotle has reached this negative result, he goes on to consider cases where the epistemic requirements outlined above are not so stringent. Analogy is one of them.⁶⁸ When we employ analogy, we are no longer dealing with one and the same attribute belonging to different subjects. Rather, we are dealing with *different attributes* belonging to different subjects. And yet, with the help of analogy, we can establish some non-trivial similarities. We can say, for instance, that *A* is to *B* as *C* is to *D*. This amounts to saying that *A* holds the same place or plays the same role with respect to *B* as *C* holds or plays with respect to *D*. Aristotle does not furnish any example in *APo* II 17. But we can easily supply one on his

⁶⁵ A good introduction to the topic of Aristotle's theory and use of analogy can be found in RAPP 2021: 9–37.

⁶⁶ Aristotle, *APo* II 17, 99a1–2. I would like to express my gratitude to Lucas Angioni, who first pointed out to me the importance of what Aristotle says in this difficult and generally neglected chapter for my overall argument.

⁶⁷ Aristotle, *APo* II 17, 99a3. ⁶⁸ Aristotle, *APo* II 17, 99a15–16.

behalf: the mouth is to animals as the roots are to plants. In this example we have different bodily parts playing a functionally similar role in animals and plants. To be sure, we can restate this point by saying that both the mouth in animals and the roots in plants serve as the entry points for nourishment. But by saying this we are not trying to capture a putative common part over and above the mouth in animals and the roots in plants. Rather, we are trying to achieve two distinct but related results. First, we are connecting two separate domains (animals and plants) without glossing over their differences. Analogy is especially useful in this respect because it does not reduce, let alone remove, the complexity of the natural world; rather, it gives us a way to map and so to understand it. So much for the first result. Let us now turn to the second, which is as important as the first. When we make recourse to analogy in the way suggested above, we are exploring one domain (plants) in the light of another (animals).

This second result deserves a few words of elaboration. Analogy is fully compatible with the presence of symmetrical relations. For instance, I can say that 2 is to 4 as 4 is to 8. But I can also say that 8 is to 4 as 4 is to 2. The order in which the two pairs of *relata* are introduced is not important because this analogy is based on a symmetrical relation. Analogies of this sort are not especially interesting in the context of the Peripatetic science of perishable living beings. By contrast, analogies based on asymmetrical relations do a great deal of explanatorily work. The relations are asymmetrical because one pair of *relata* is taken to be the central case. Consequently, the direction of the explanation always goes from this central case to the peripheral ones. Let us return, for a moment, to our original example. For Aristotle, the mouth in animals is the paradigmatic entry point for nourishment. Aristotle develops an idea of what it is for something to be an entry point for nourishment by studying animals. He then extends this idea to plants by establishing that the roots are the entry point for nourishment in plants. As a general rule, the direction of explanation is from animals to plants rather than vice versa.⁶⁹

The last remark on the asymmetrical nature of analogy brings us back full circle to the methodological recommendation encapsulated in the catchphrase “*first about what is first.*” We are now able to better understand this recommendation. In the Peripatetic science of living beings we begin our investigation from animals, which are considered our central case, and

⁶⁹ I add “as a general rule” because the explanation sometimes goes in the opposite direction. We have already seen that Aristotle explains how hard-shelled animals reproduce (by his lights spontaneously) by invoking plant propagation as a model (*GA* III 11, 761b23–762a2). See Chapter 5, Section 2.

then move on to the study of plants. But the same strategy is adopted within the study of animals. Suffice it to recall that, according to Aristotle, all animals have a single controlling part serving as the seat of both the nutritive and the perceptual power.⁷⁰ For him, this bodily part is neither generally nor specifically the same in all animals; rather, it is the same only by analogy. While in blooded animals this part is the heart, in bloodless animals it is something that is functionally analogous to the heart. We do not have a name for this part, and we do not need one. We only need to see why bloodless animals must possess this part insofar as they are animals. Analogy helps us secure this result by allowing us to transfer a causal explanation established for one group of animals (blooded animals) to another (bloodless animals).

When we reflect on how Aristotle uses analogy, we see that analogy is not just a tool to find explanations that apply across large kinds of animals. It also has heuristic value to the extent that it opens new avenues of research as Aristotle progresses in his project of a systematic study of perishable life.⁷¹ On the one hand, analogy gives Aristotle a way to establish a truth that holds across various large kinds: all these kinds of animals – no matter how different they are from one another – must share something that is functionally analogous to a heart since this centralized organization of the living body is an essential feature present in all animal bodies albeit in different degrees of perfection. On the other hand, analogy gives Aristotle a first orientation in his investigation into each of these kinds of animals. It is uncontroversial, I hope, that establishing this general truth is only a first step into a full study of what is specific about each of these kinds of animals.

Analogy remains an indispensable tool also for Theophrastus. It would be difficult, if not outright impossible, for Theophrastus to engage in his systematic study of the wonderfully complex world of plants if he could not rely on the twofold assumption that animals and plants are analogous forms of perishable life, and one should use the more determinate and more organized form of life (animals) as a model in the study of the less determinate and less organized one (plants). Like Aristotle, Theophrastus adopts analogy to transfer some of the results reached in the study of one investigative domain (animals) to another (plants), as well as to make progress in the study of plants. Like Aristotle, he makes a particular large kind his starting point and central case. We have seen that, from a purely

⁷⁰ Chapter 2, Section 4.

⁷¹ The heuristic value of analogy is discussed in LLOYD 1996c: 138–159. It is also stressed in RAPP 2021: 9–37.

strategic point of view, trees play for Theophrastus a role equivalent to the role that blooded animals play for Aristotle.

Analogy allows Aristotle and Theophrastus to treat two separate domains such as animals and plants *as if they were a single nature* (ὡσπερ μιᾶς τινος φύσεως).⁷² This does not mean that there is in fact a single nature shared by animals and plants. To be as clear as possible: there are no essential items that animals and plants have in common. But Aristotle and Theophrastus can still engage in a study of them *as though* there were such an item. This is enough, I think, to create the conceptual space for a Peripatetic science of perishable living beings. I do not see evidence in their extant works that Aristotle and Theophrastus are able or willing to close the gap created at the outset of the *Meteorology* where two slots in Aristotle's research agenda are introduced: *animals* and *plants*. But this does not mean that they do not have the idea of a science of perishable living beings. Rather, Aristotle and Theophrastus pursue such a science by giving full attention to what is specific about each of the two kinds of perishable living beings. Analogy proves to be especially useful in this context because it does not reduce, let alone eliminate, what is specific but rather gives Aristotle and Theophrastus a way to place it in a larger explanatory context.

⁷² Aristotle, *APo* II 14, 98a23.