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The Use of Dialectics in *Physics* I.2

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1. Introduction

In *Physics* I.2, Aristotle initiates his investigation of nature by examining what kind of principles his predecessors supported. He presents a division of their various claims (184b15-22): that there is only one principle, either unmoved (the Eleatics Parmenides and Melissus)¹ or moved (the Ionian thinkers), or that there are several, in limited number (Empedocles) or unlimited (Democritus and Anaxagoras). Aristotle's aim in *Physics* I is to show that the principles are neither one nor unlimited, but in a limited number, more precisely three, i.e. substance, form and privation—a claim he will demonstrate from *Physics* I.5. This explains why he first dedicates some time to criticise the position of the Eleatic monists, in *Physics* I.2-3, and of Anaxagoras' infinite entities, in *Physics* I.4.

However, at the beginning of his study of Eleatic monism, Aristotle mostly presents reasons *not* to examine it. I quote the text in length since a large part of my analysis will lean on it:

T1. **a.** Now, investigating whether being is one and unmoved is not investigating nature. For just as the geometer has nothing to say to one who rejects his principles, but it is the task of another science or a science common to all, so it is for the one who studies principles. For there is no principle any more if there is only one thing that is one in this way. For a principle is the principle of one or several things. **b.** And investigating whether it is one in this way is exactly like discussing dialectically (διαλέγεσθαι) any other thesis of those who argue for the sake of argument (like the Heraclitean thesis or if someone says that being is a single man) or like resolving (λύειν) an eristical argument like the one that is in both Melissus' and Parmenides' discourses. For these [arguments] both assume

¹ Aristotle does not use any equivalent of the name “Eleatics”, but he clearly regards Parmenides' and Melissus' thought as similar enough to be examined in common. For a defence of this view, see Brémond 2017, 37–41.

false premises and are invalid. (...) **c.** Let us assume that in nature, either all or some things are moved: it is clear by induction. But we should not resolve (λύειν) everything at once, but only everything that is drawn falsely from the principles. For example, the geometer should refute the squaring by means of segments but not Antiphon's. **d.** Nevertheless, since they talk about nature, even though they do not happen to deal with physical issues,² it may be good to discuss them dialectically (διαλεχθῆναι) for a bit. For the inquiry has some philosophical interest. (I.2 184b25-185a20)³

Aristotle claims that the Eleatics deny the very principles of physics, and that it is not possible, consequently, for the physicist to discuss with them. He clarifies this affirmation through an analogy with geometry: “just as the geometer has nothing to say to one who rejects his principles”—in T1.c, he gives the example of Antiphon and his squaring of the circle—the physicist cannot dialogue with the Eleatics. It is not just that he should not talk to them because it is useless, but he cannot even engage in such a discussion, since he does not have any common ground with the opponent. Hence, “it is the task of another science or a science common to all” to examine the Eleatic claim.

At the end of the passage, though, Aristotle proposes to “discuss them dialectically (διαλεχθῆναι) for a bit”. This is the second appearance of the verb διαλέγεσθαι in the passage (after T1.b). This had led most critics to deduce that Aristotle claims here that he will use dialectics (instead of physics) to counter the Eleatic claim.⁴ However, most of them do not draw conclusions on the way in which Aristotle will proceed, and they study the chapters of *Physics* I.2-3 independently of any reference to dialectics.⁵ The article by Clarke 2018 is representative of this reading: after noticing that Aristotle is going to use dialectics against the

² The edition of this passage raises a difficulty concerning the place of the comma: one puts it either after the negation, and Aristotle claims that “even though they do *not* talk about nature, they raise some physical issues”, or before the negation, which leads to my translation. The issue goes back to Antiquity: Alexander of Aphrodisias, according to Simplicius, adopted the first reading, and Porphyry the second one. I agree with Pellegrin 1994 and Crubellier 2019, 86–88 on the second reading: Aristotle means that the Eleatics apply their discourse to nature, even if they do it in a non-physical way. This reading finds some support in my text T2.

³ All translations are mine.

⁴ See Irwin 1988, 67, Bolton 1991, 14–15, Wieland 1992, 107, Clarke 2018, 63, Crubellier 2019, 62–63. Ross 1936, 461 thinks that it is rather the task of first philosophy, based on T1.a, where Aristotle talks about a science—since dialectics is no science. However, Aristotle only mentions science within the analogy with geometry, where he is referring to mathematics. See the remarks of Crubellier 2019, 62, and especially his enlightening parallel with *Metaphysics* E.1 1026a23-27.

⁵ This is not the case for Crubellier 2019, who gives some importance to the reference to dialectic. However, he is clearly uncomfortable with the possibility for the chapter to be *only* dialectic, as we will see.

Eleatics (63), he never mentions dialectics again in his analysis of the text.⁶ This approach may find justification in two weak understandings of what dialectics consists in: either that it amounts to a discussion of the opinion of other thinkers, or that it is just a general investigation, as opposed to a science-specific one. In both cases, Aristotle would not provide us with much information when he says that he will discuss the Eleatics dialectically: on the first reading, it would just amount to claim that he will examine their thought, on the second one, it would repeat his affirmation that he cannot handle them as a physician. In this paper, however, I will try to show that Aristotle refers to a stronger conception of dialectics that is coherent with the *Topics* and the *Sophistical Refutations* (*SE*). For it should be noted, as few critics did, that this use of διαλέγεσθαι is far from common in Aristotle's work: indeed, as far as I would see, Aristotle never uses this verb outside the *Organon* and *Rhetoric* to describe the approach he adopts.⁷ My hypothesis will be that this use of dialectics is justified by his characterisation of the Eleatic reasoning as “eristical” (T1.b), and that these methodological considerations shed some light on the way in which he refutes the Eleatics in *Physics* I.2-3.

I will first examine the reasons why Aristotle characterises the Eleatic reasoning as eristical (section 2), then turn to why he uses dialectics against Parmenides and Melissus and what this means for his method (section 3), and finally indicate in my last section how we can see dialectic at work in his attack on the Eleatics in *Physics* I.2 (section 4).

2. The Eleatics as Eristics

According to T1, there are two reasons why it is impossible to discuss the Eleatic claim that “being is one and unmoved”. First, the Eleatics reject the principles of physics (a. and c.), and second, their arguments are “eristical”, i.e. they “assume false premises and are invalid” (b.). Actually, as we shall see, both reasons imply that the Eleatics are eristics.

⁶ Cf. Carter 2018: “[Clarke’s] main weakness with respect to the volume’s aim is that, despite noting that Aristotle says at 185a19-20 that he will ‘do a small amount of dialectic’ in examining the Eleatic position (p. 63), in his own analysis of these arguments, Clarke ignores this unusual admission, and takes Aristotle’s arguments to be metaphysical”.

⁷ We find the most interesting occurrences of διαλέγεσθαι in *Metaphysics* Γ 1006b7-9 and 1007a19-20. However, in these passages, Aristotle does not use the verb to refer to the method he uses to refute Gorgias, but he stresses that his rejection of the principle of non-contradiction makes *discussion* in general impossible because the words would not mean anything: “If the words have no meaning, discussion (τὸ διαλέγεσθαι) with one another is destroyed (1006b8-9).” In other passages, Aristotle uses the verb to refer to articulate language (for example the impossibility for animals to talk in *Historia animalium* 535b3-4), or to describe the practice of dialecticians (as distinct of his own), like in *Metaphysics* 1004b20-21 or *Nicomachean Ethics* 1144b33.

Just as for διαλέγεσθαι, Aristotle's use of ἐριστικός is far from banal. Indeed, the adjective only appears four times in Aristotle's work outside the *Organon* and the *Rhetoric*, among which once in our text T1 and once again to qualify the Eleatic reasoning in *Physics* I.3 186a6.⁸ Moreover, in the *SE* themselves, the Eleatic claims are considered as one of the main examples of eristical arguments: Melissus is mentioned three times, just as Zeno, which is more than any other thinker in the treatise.⁹ Hence, it is not an accusation Aristotle often makes of his opponents, but its use to criticise the Eleatics is quite specific.¹⁰

This accusation of being eristical is justified by both reasons Aristotle enunciates in *Physics* I.2 to reject the Eleatic claim. For there is, according to the *SE* 11 171b7-12, two ways for a deduction to be sophistic and eristic (συλλογισμὸς ἐριστικὸς καὶ σοφιστικὸς): to present an apparent deduction that is not correct, and to contain a paralogism, which means that the reasoning is not relevant to the investigation in question. We find a similar distinction in *Topics* I.1 100b25-101a17, except that Aristotle restricts there the term "eristical" to the first kind of reasoning and prefers to call the second one only "paralogism". He further specifies in the same passage that a deduction is eristical either because its premises are only apparently endoxic, or because the conclusion does not follow from the premises: this corresponds to the two accusations he makes toward the Eleatic argument in T1.b. Therefore, it appears that according to T1, the Eleatic thesis that being is one and unmoved fits every criterium for being eristic: it is a paralogism, uses false premises and does not conclude validly from them.

One may wonder which claim of the Eleatics, from monism and immobilism, is concerned with those accusations. Even though Aristotle does not develop this point in T1, it is evident that immobilism goes against the principles of physics, since physics is a study of beings that are capable of movement. In a passage of *On Heavens*, Aristotle stresses that the thesis of immobility might be worth discussing outside of physics, but has no place within a physical investigation:

⁸ Actually, this passage is the same one, with some small differences, as T1.b. Many editors delete one or the other occurrence. For a discussion of the editorial issue, see Brémond 2017, 487, n. 29.

⁹ *SE* 11 172a8-9, 24 179b18-21 and 33 182b25-27 for Zeno, 5 167b13-16, 6 168b35-37 and 28 181a27-29 for Melissus. Cf. Dorion 1995, 53–55: "les Éléates sont cités, nommément, plus souvent que les Sophistes" (54 n. 1).

¹⁰ However, I agree with Crubellier 2019, 64 (and similarly Quarantotto 2019, 91, n. 7) that Aristotle's accusation concerns the arguments but not the intentions of the Eleatics: for eristics are not just defined as those who use eristical arguments, but also as people who try to win a discussion at any cost (*SE* 11 171b24-26). But Aristotle underlines in T1.b that the intention makes no difference in the method of investigation: whether the thesis is supported "for the sake of argument" or the argument is just eristical, one should tackle it in the same way (against Quarantotto, who claims that they "deserve a different treatment to those who put forward theses merely for the argument's sake").

T2. Some of them completely reject coming to be and perishing, for they say that no being comes to be nor perishes, but that it just seems so to us—for example those around Melissus and Parmenides, who, although they speak well about the rest (εἰ καὶ τᾶλλα λέγουσι καλῶς), should not be regarded as talking as physicists (φυσικῶς). For the fact that some beings are ungenerated and completely unmoved rather belongs to another, prior investigation than physics (ἐτέρας καὶ προτέρας ἢ τῆς φυσικῆς σκέψεως) (*On Heavens* III.1 298b14-20).

According to this text, the thesis that there is something “ungenerated and completely unmoved” may be correct, but not in the context of physics: it belongs to a “prior investigation”—here, Aristotle most probably refers to first philosophy or theology, which deals with eternal and unmoved entities. Therefore, the Eleatics commit a paralogue when they claim that being is unmoved within a physical context, but their deduction is not presented as logically invalid.¹¹ In *Physics* I.2, Aristotle does not argue against immobilism but just posits the existence of movement as a principle of physics that is known by induction (T1.c).¹²

Monism, on the other hand, is clearly presented as eristical in both ways. For first, it contradicts the principles of physics, as Aristotle says in T1.a, because if there is only one thing, there can be no distinction between the principle and what it is the principle of.¹³ But in T1.b, Aristotle also claims that the thesis that “it is one in this sense” amounts to an eristical argument because it has false premises and is invalid. In any case, this is the thesis he will focus on.

One may wonder, finally, why Aristotle regards the Eleatic claim as eristic: what does the error in the Eleatic reasoning consist in? He specifies this point when he introduces his refutation of Parmenides:

T3. And one resolves [Parmenides’ argument] by showing that it is both false and inconclusive. False because he holds the premise that being is

¹¹ On the arguments Aristotle attributes to the Eleatics against generation and movement, see Brémond 2017, 45–47.

¹² He makes a similar move in *Physics* VIII.3 253a32-b5, but still provides an argument against immobilism in 254a23-30, i.e. that one cannot hold the opinion that everything is unmoved, because an opinion is itself a kind of movement. This argumentative strategy is quite analogous to the one Aristotle develops in *Metaphysics* Γ.4 against Gorgias.

¹³ This accusation actually makes monism improper to any kind of science, inasmuch as science is a study of principles: this explains why Aristotle also rejects monism in *Metaphysics* A.5 986b10-17, since first philosophy also deals with causes.

said absolutely, while it is said in many ways, and inconclusive because, if we supposed that there are only white things, even if white only had one meaning, white things would still be many and not one. (*Physics* I.3 186a23-27)

Aristotle reconstitutes the following reasoning:

1. Being is said absolutely.¹⁴
2. There are only beings.¹⁵
3. Therefore, being is one.¹⁶

He agrees with the minor premise, but he intends to show 1) that the major premise is false, i.e. that being is said in many ways and not absolutely, and 2) that even if the two premises were true, it would not follow that being is one.

As we could see, Aristotle does not call the Eleatic claim “eristical” just to point out that it is a poor argument, but the whole of T1 constitutes a description of the various ways in which their argument is eristical. And this description corresponds to the definition of eristics Aristotle gives in the *Topics* and *SE*.

3. Dialectics Against the Eleatics

At the end of T1, as we saw, Aristotle claims that he will discuss the Eleatics “dialectically” (διαλεχθῆναι); the verb also appears in T1.b, where it characterises the kind of discussion one may have when dealing with a paradoxical claim like the one of the Eleatics. This choice of method is coherent with the recommendations of the *SE* concerning both kinds of eristic reasoning. For first, dialectic is general enough to be above particular sciences. Hence, it can deal with paralogism, because it does not assume the principles of any science¹⁷

¹⁴ I read “being is said absolutely” as meaning that there is only one way for something to exist. Aristotle alternatively claims that being “only means one thing”, for example in *Physics* I.3 186a32-34. I take this second premise to be roughly equivalent (but, of course, not identical) to the first one: since there is only one way for a being to exist, the word “being” can only have one reference (I will come back to this point in section 4.1). For a stronger distinction between these two premises, see the interpretation of Quarantotto 2019, 96–98. Castelli 2018 has a position that is closer to mine.

¹⁵ This premise allows distinguishing the Eleatic position from the atomists’: if nothing exists beside being, like not-being or void, there can be no separation between beings, and hence no multiplicity.

¹⁶ Aristotle summarises the argument as “everything is one if being means one thing” in I.3 187a1-2. In the *Metaphysics*, however, he focuses on the minor premise: “for [Parmenides], considering that there is no not-being beside being, thinks that there is necessarily one thing, being, and nothing else” (A.5 986b28-30).

¹⁷ See *SE* 9, 170a36-39: “And concerning the refutation that is specific to each science, it is the task of the scientist to investigate whether it looks like one without being one or, if it is a refutation, why it is one. But it

but only uses for its reasoning premises the opponent admits. Second, the dialectician is, according to Aristotle, the most competent individual to identify incorrect reasoning.¹⁸ Therefore, dialectics shall be able to show in what way the Eleatic syllogism is wrong; Aristotle's claim in T1 that he will use dialectics is then consistent with his description of the issues the Eleatic claim raises, and with his description of dialectics in the *Topics* and *SE*. But since in those treatises, dialectics is not merely described as a very general discipline, but as a very specific method, it is to be expected that this method will be applied in the attack on the Eleatics. Let us then consider what it means to "discuss dialectically" a thesis.

The first characteristic of dialectics, as mentioned in *Topics* I.1, is to differ from scientific demonstration, because it takes *endoxa* as premises instead of principles that are certain. I will not enter here in the complicated issue of what Aristotle means by *endoxa*, but I will assume that they correspond to opinions that are broadly held. In *SE* 2, Aristotle distinguishes a further subdiscipline of dialectics, i.e. peirastics,¹⁹ which does not rely on *endoxa* but on "what the answerer thinks and what someone who pretends to have science necessarily knows"²⁰ (165b4-6). Therefore, the dialectician may use either commonly held opinions or any opinion the opponent may accept. In the case of the Eleatics, who are not inclined to follow what most people think, he will mostly use this second strategy, as we shall see. In any case, whether the dialectician uses *endoxa* or any opinion the opponent admits, he cannot pretend to prove the thesis he defends, since the truth of his premises is not guaranteed. Aristotle insists on this point in the following passage:

T4. Dialectics is interrogative, and if it gave proofs, it would give up interrogating, maybe not everything, but at least what is first and the proper principles. For if this principle were not granted, [dialectics] would have nothing more from which it could argue dialectically against the objection. (*SE* 11 172a17-21)

is the task of dialecticians to investigate the refutation that proceeds from common principles and falls under no discipline."

¹⁸ See *SE* 9 170b8-11: "It belongs to the dialectician to be able, through common notions, to grasp in how many ways [the refutation] arises, whether it is a refutation or an apparent one, and whether it is dialectical or apparently dialectical or peirastical."

¹⁹ See *SE* 8 169b25, which explicitly states that "peirastics is a part of dialectics", and 11 171b9. In other texts, like *SE* 2, Aristotle considers the two disciplines separately.

²⁰ I.e. the rules of deduction. On this second type of premises, cf. *SE* 11 172a25-27: if the opponent cannot see the relationship between the premises and what follows from them, he proves himself ignorant.

Dialectics can be used against the Eleatics precisely because contrarily to physics, it does not rely on the principles that they deny for its deduction; the counterpart is that it cannot hope to prove that being cannot be one.

The ambition of Aristotle's attack of monism is further reduced by his claim that he will only "resolve" (λύειν) the Eleatic argument (in T1.b, T1.c, and again in T3). In *SE* 18 176b29-30, Aristotle makes the following distinction between λύειν and ἔλεγχειν: the first one only constitutes "an exposure of the false syllogism that shows on which question the falsity happened",²¹ while refutation (ἔλεγχειν) proves that the opposite thesis is true.²² As underlined by Rossi 2017, 215–16, Aristotle develops in *SE* 18 176b29-36 that there are two ways to resolve an argument: either by attacking the premise as incorrect or by showing that the deduction is invalid—which is indeed what he explicitly announces in T1.b.²³ These parallels shed some light on Aristotle's project in *Physics* I.2-3: he will not prove that monism is false, but he will show that the Eleatic reasoning does not hold, in particular that their premise that being is said absolutely cannot be accepted, and that their deduction that being is one is invalid.²⁴

Finally, dialectics consists in an attack of an opponent in the context of a discussion, not in the didactic exposition of a thesis. Its specific method is famously developed in *Topics* VIII: two opponents defend opposite claims, and one will ask the other questions in order to make him contradict himself. Therefore, dialectics suppose some kind of a discussion with an opponent who should try to support (whether sincerely or not) the opposite claim. Again, if one applies this to *Physics* I.2-3, it first means that the Eleatics (or people who support the Eleatic claim) are Aristotle's main target—a point many critics reject, claiming that Aristotle mostly tries to comfort the opinions of those who already disagree with monism.²⁵ Second, if Aristotle's method is to be dialectics, he has to engage in some kind of dialog with the Eleatics. This might seem inapplicable since the *Physics* is not a dialectical discussion on the model that is presented in *Topics* VIII, but an exposition of Aristotle's claims. However, I will try to show in the next section, by focusing on the rest of *Physics* I.2

²¹ Cf. *SE* 24 179b18-26.

²² On this important distinction, see the precise analysis of Rossi 2017, 213–19, who stresses that resolution is directed toward the argument and refutation toward a thesis.

²³ Cf. Rossi 2017, 221.

²⁴ See a similar analysis in Crubellier 2019, 63, contrarily to Quarantotto 2019, 89 who claims, without much justification, that *Physics* I.2 is an ἔλεγχος and *Physics* I.3 a λύσις. Strangely, Crubellier still claims that "Aristotle's aim is to prove that the thesis of the immobilist monists is false". He thinks that this objective is reached because Aristotle puts the "burden of proof" on the Eleatics: hence, if they cannot prove that being is one, it shows that they are many. This can hardly be considered as a "proof" that beings are many, though.

²⁵ See Irwin 1988, 68–70: "Aristotle does not want to prove to the Eleatics themselves that they are wrong; he wants to prove to believers in common sense that they need not be taken in by the Eleatics" (68).

(for the sake of brevity and simplicity, I will leave aside the difficult chapter I.3), not only that the Eleatics are the main target of Aristotle's argument, but also that he found a way to establish some form of dialogical discussion in order to refute them. Taking this dialectical aspect into account will, as I hope to show, allow us to better understand the discussion of being Aristotle presents there.

4. A Dialog with the Eleatics

4.1 Asking about the Meaning of "Being" and "One"

Aristotle starts his attack on the Eleatics with a discussion of the meaning of "being" and "one" they use:

T5. The most appropriate start of all, since "being" is said in many ways, is to *ask*: in what sense do they say that all things are one? Are all things substance or quantity or quality? And then are all things one single substance, for example one man, one horse or one soul, or a quality that is one, for example white, hot or something similar? For all these are very different and *impossible to claim*. (*Physics* I.2 185a20-27)

His aim will not so much be to disambiguate their notion of "being" and "one", as it clearly appears in what follows, but to show that whatever conception of being and one they have, it will prove incoherent with their radical monism. This is how I understand his claim that "all these are 'impossible to claim'": not so much that no one could support this thesis (as we will see, Aristotle is very short of demonstrating that in the arguments that follow), but that it is impossible to claim *for the Eleatics*: whatever they mean when they say that "being is said absolutely", it cannot lead to their conclusion that being is one but on the opposite shows the exact opposite.

Aristotle's method consists then in "asking" the Eleatics questions about their conception of being and one, and in taking every possible answer into consideration. For every answer, he will show that it leads to inconsistencies with their main thesis, i.e. radical monism. This approach is consistent with dialectics as we described it: it does not consist in refuting monism as such, but in making the opponent contradict himself by asking him

questions and relying on the answers he gives.²⁶ Hence, in this passage, dialectics is adapted to a non-dialogical context in quite a clever way: instead of relying on the answer the opponent actually gives (since he is not present), Aristotle proposes to tackle every possible answer he might give, and provide a resolution for each one.

The questions will address the different meanings of “being” and “one”. This kind of investigation, again, corresponds to the recommendations of the *Topics*. For the Eleatic reasoning is considered as a case of homonymy,²⁷ and Aristotle specifies that in such cases, one should resolve the argument by making distinctions. One might criticise Aristotle for relying on his own categories, like substance and quality, which the Eleatics would probably not accept. But according to Aristotle, the categories do not constitute a doctrine of his, but correspond to the nature of things and of language. For this reason, he claims in *Topics* I.9 that the ten categories are evidently what terms refer to in a dialectical proposition.²⁸ He also thinks that one should especially put them to use when confronting homonymy.²⁹ Whether one considers this move as acceptable or not, Aristotle is there again coherent with his advice in the *Topics*.

However, one might find him guilty of *petitio principii*. For, as we saw, the Eleatic premise consists in claiming that “being” is said absolutely and only means one thing. But in T5, Aristotle assumes from the beginning that “being is said in many ways”. It would be strange, however, for Aristotle to fall into such an obvious mistake, against which he warns in the *Topics*.³⁰ Not only does this interpretation make Aristotle’s attack extremely weak, but it is also incompatible with his claim to present a dialectical resolution. A solution consists in distinguishing between two ways in which being can be “said in many ways”, one that the Eleatics deny and another that they could accept. I think that the best reading consists in separating the linguistic aspect from the ontological one.³¹ Aristotle presents as a starting point for his resolution the premise that “being” is said in many ways in language, while the

²⁶ A dialectical question is supposed to take the form of a question that can be answered by “yes” or “no”. Although Aristotle does not formulate his questions in that way, since he makes a list of the possible answers, such questions are possible: instead of asking, “is everything a substance or a quantity?” he may ask, “is everything a substance?” and in case of a negative answer, “is everything then a quantity”, etc. Aristotle precisely describes this process in *Topics* VIII.2 158a14-24.

²⁷ In *SE* 7 169a22-25, Aristotle claims that “being” and “one” are terms for which homonymy is common since “it is not easy to make distinctions”.

²⁸ 103b27-29: “It is thus clear that what refers to the ‘what-it-is’ refers either to substance or to quantity or to quality or to one of the other categories.”

²⁹ *Topics* I.15 107a3-17.

³⁰ *Topics* VIII.13 162b34-163a13.

³¹ Cf. Crubellier 2019, 70–71, who proposes a solution similar to mine, by claiming that Aristotle examines “being” and not being as such.

Eleatic premise is “being is said absolutely”, i.e. there is only one sense of being that is instantiated. In other words, the Eleatics may accept that one understands several things under the word “being” (if one opens a dictionary, one will find several entries for “being”), but they consider that there only exists one kind of being, which means that only one of these meanings applies to something existing and has a real reference, while the other meanings would refer to nothing. Aristotle is then asking the Eleatics which of the possible meanings of “being” their being would relate to. He will do the same for the attribute of unity.

We saw how Aristotle engages in a dialectical discussion with the Eleatics by asking them what they mean with “being” and “one”. He will then have to show that any answer to his questions will lead to something “impossible to claim”. I will now briefly examine the deduction he offers and focus on how he heavily relies on the Eleatic claims in order to refute them, which entails the use of *ad hominem* arguments.

4.2 *Ad Hominem* Arguments

Aristotle first examines the possible answers to the question: what kind of being is everything? He does not list all the possibilities, i.e. the ten categories and their combinations (substance/quality, substance/quantity, etc.), but only the most likely ones.

T6. **a.** For if there is both substance and quality and quantity, whether they are apart from one another or not, beings are many. **b.** If everything is quantity or quality, whether there is a substance or not, then it is absurd, if indeed the impossible can be called absurd. For nothing else than substance is separable: everything is predicated of a subject, i.e. the substance. **c.** But Melissus says that being is infinite. Therefore, being is some quantity. For infinity is in quantity, and it is impossible for a substance or a quality or an affection to be infinite, except accidentally if they are at the same time also a quantity. For the definition of infinite relies on quantity, not on substance nor quality. Thus, if there is substance and quantity, being is two, not one. If it is only substance, it will not be infinite, it will not even have magnitude—since then, it would be a quantity. (*Physics* I.2 185a27-b5)

There are three possible answers to the question, “what is being”:

- a. Being is both substance and quality and/or quantity.
- b. Being is only quality or quantity.

c. Being is only substance.

The first two answers are quickly rejected. For if there are two kinds of being, then the Eleatics deny their own premise, i.e. that being is said absolutely, and conclusion, i.e. that being is one. Aristotle claims that the second answer is just impossible, for an attribute like quantity or quality is necessarily the attribute of something. Although it might not be certain that the Eleatics would accept this point, the most likely answer they would give is the third one: that being is substance.

However, Aristotle does not argue that it is impossible for being to be only a substance. Instead, he says that Melissus' thesis that being is infinite is incompatible with such an answer. For if being is infinite, it has a quantitative attribute, which means that there are at least two things, substance and quantity. This would also apply to Parmenides since, as Aristotle mentions just after (T7.b), he also attributed a certain quantity to being by claiming that it is limited. Hence, Aristotle shows that the Eleatics are indeed inconsistent with themselves, since, on the one hand, they claim that there is only one kind of being, on the other, they assume two of them when they say that being is limited or infinite.

This is clearly an *ad hominem* argument, which is only efficient insofar as Melissus and Parmenides committed the mistake to attribute spatial extension to being. Many critics try to avoid reducing Aristotle's demonstration against option c. to such a weak argument. For the Eleatics should just abandon their claim on being's extension, which is quite secondary compared to being's unity, in order to avoid the resolution. Clarke 2018, 66 tries to solve the issue by supposing that Aristotle has an underlying hypothesis, which he calls the "interdependence thesis": "substances depend for their existence on the existence of non-substances, while non-substances depend for their existence on the existence of substances." While the second part of this thesis is obviously true for Aristotle and it is explicitly claimed in T6.b, it is far from being the case for the first one. It is not evident at all, indeed, that according to Aristotle, substance cannot exist without any attributes; such a thesis could be at least problematic in the case of the first mover. More importantly, he says no such thing in T6: his case against the hypothesis that being is only a substance entirely rests on Melissus' claim that being is infinite.³²

The issue disappears, however, if one supposes that the text is not a refutation, but a dialectical resolution, and that it is not supposed to prove that monism is impossible, but only

³² Crubellier 2019, 72 proposes another reading: if being has no attributes, "the claim itself cannot be uttered", so that it is literally "impossible to claim". But he admits that "if this is what [Aristotle] intended, it is strange that the text contains no explicit indication to that effect".

that the Eleatic argument does not work. One may imagine that according to Aristotle, the Eleatics think that magnitude is a necessary condition for existence, and they cannot give up their claims on its extension.³³ He might even think that no one would ever assume a monism in which the one being has no quality nor quantity at all, and that he could thus always attack his adversaries in this way.³⁴ Nevertheless, he only rejects the Eleatics dialectically, without proving the opposite thesis but only by showing that they are incoherent. He provides no explicit indication that one could always refute monists in this way, even less that monism is impossible as such.

We find a similar kind of argument in the second part, where Aristotle examines how the Eleatics might have understood unity. He takes three meanings of “one” into consideration: “continuous”, “indivisible” and “one in definition”. Again, those are not all the possible meanings for “one” (especially compared to the list in *Metaphysics* Δ.6), but only the most plausible ones.

T7. Again, since “one” is also said in many ways, like “being”, we must investigate in what sense they say that the whole is one. “One” means either continuous or indivisible or what has the same definition and one what-it-is, like *methu* and *oinos*.³⁵ **a.** Then, if it is continuous, the one is many. For the continuous is infinitely divisible. (...) **b.** But if it means indivisible, there will be no quantity nor quality, and being will not be infinite, as Melissus says, nor limited, as Parmenides says. For the limit is indivisible, but not the limited thing. **c.** However, if all beings are one in definition, like a jacket and a coat, they will happen to hold Heraclitus’ doctrine. For it will be the same thing to be good and bad, and to be good and not-good, so that the same thing will be good and not-good, man and horse, and they will not say that beings are one but that they are nothing. (185b5-25)

The first two possibilities constitute a dilemma: either being is one in the sense of continuous, in which case it has many parts,³⁶ or it is one in the sense of indivisible, and it

³³ Indeed, Zeno claims that “if being had no magnitude, it would not be” (B1).

³⁴ This is the suggestion of Clarke 2018, 72.

³⁵ We lack a synonym of “wine” in English; therefore, I do not provide a translation of Aristotle’s examples here.

³⁶ This belongs to the definition of “continuity” according to Aristotle: “I call ‘continuous’ what can be divided in [parts] that are always divisible” (*Physics* VI.2 322b24-25).

cannot be infinite nor limited.³⁷ The Eleatics cannot hold that being has parts, since they think first that there is only one being, while the parts would constitute several beings, and second that this being is absolutely one, i.e. with no multiplicity within it.³⁸ The first answer is then incompatible with their own monism. The second one would contradict again another of their claims, i.e. being's infinity for Melissus and limitedness for Parmenides: Aristotle uses for a second time this *ad hominem* argument. For if being has any quantity, it is extended, and extension implies divisibility in parts.³⁹

The last answer is that being is one in the sense that all beings would have the same definition. Aristotle claims that in this case, all things, even opposites, would be the same, just as Heraclitus thinks.⁴⁰ I do not think that the issue with this view is that leads to an absurdity (even though Aristotle himself thinks that it is absurd). For the idea that things are both x and not-x, that is the opposite of the principle of non-contradiction, can be considered as a thesis, i.e. a "paradoxical claim of some well-known philosopher" (*Topics* I.11 104b19-20). Since the Eleatic claim is itself a thesis (104b22), one cannot simply reject it because it leads to another paradoxical claim. Rather, Aristotle should show that it contradicts what the Eleatics themselves think.

There are two reasons why they should reject this statement. First, it leads to the opinion that being is nothing at all. This conclusion appears incompatible with a fundamental Eleatic claim, i.e. the distinction between being and not-being and the complete rejection of not-being. Moreover, Parmenides criticises the mortals for "thinking that to be and not-to-be are the same and not the same" (B6), while according to Aristotle, unity in definition would entail claiming that "it will be the same thing to be good and bad, and to be good and not-good". Violating the principle of non-contradiction is then not just absurd as such, but absurd for the Eleatics, and they would have to reject this answer.

Moreover, Aristotle assimilates them with Heraclitus, i.e. the most opposite thinker: Heraclitus supposes a multiplicity in perpetual movement, while Parmenides and Melissus claim that being is one and unmoved. There is, I think, an element of provocation in

³⁷ Parmenides says that being is continuous (B8.6, 25) and indivisible (B8.22), Melissus just that it is indivisible (B10).

³⁸ While Parmenides does not explicitly say that being has no parts, Melissus rejects their existence in B9.

³⁹ Aristotle goes even further by saying that being could not have any quality either, but it is not evident at all why he claims that something indivisible cannot have any quality.

⁴⁰ The reason why he arrives at this conclusion is not evident: one could say that if being is one in definition, there would be no opposites, and more generally no distinct entities like man and horse.

Aristotle's dialectical strategy: by associating the Eleatics with Heraclitus, he could hope for his opponent to reject such a consequence.⁴¹

5. Conclusion

I hope to have shown that we can document in *Physics* I.2-3 how Aristotle applies in his scientific treatises dialectics as it is described in the *Topics* and *SE*. My thesis was that when Aristotle says at the beginning of *Physics* I.2 that he will discuss dialectically Eleatic monism, it is no mere reference to a very general debate, but it indicates the precise method he will rely on to “resolve” the Eleatic argument. This method is coherent in many ways with his conception of dialectics in the *Topics* and *SE*:

1. Aristotle does not provide a scientific demonstration of plurality but shows that the Eleatic argument does not hold.
2. He uses disambiguation against a sophistical argument based on homonymy.
3. He relies on questions and possible answers from the opponent.
4. He uses any premise the opponent would accept, which allows for *ad hominem* arguments.

Therefore, this text shows how dialectics might be applied within scientific treatises to refute opponents that are considered as eristics. This kind of resolution might be disappointing since it only proves that the adversary is incoherent, not that his thesis is false. However, it corresponds to the agenda of dialectics, and one should not try to find stronger arguments than the ones Aristotle provides.

Moreover, this use of dialectics provides an interesting solution to the issue of how one may discuss the first principles of science. Indeed, those principles are according to Aristotle “clear by nature” (*Physics* I.1) or “trustworthy in themselves” (*Topics* I.1), and he thinks that once one reaches them through induction, they appear as obviously true and would not be denied by any benevolent mind. But he does not conclude that one should just consider those premises as granted and, as a consequence, reject any discussion with those who question them: there should be a dialogue even with those who deny the first principles of science. However, a discussion with them appears impossible, since there is no common

⁴¹ Cf. Crubellier 2019, 76: “if Aristotle thought, as many modern commentators do, that Parmenides’ monism rested on a strong realistic interpretation of the PNC, he might have felt a special feeling of satisfaction in showing that this position ends up in the same paradoxes as those who straightforwardly rejected the PNC”.

ground on which it could rest. Dialectics provides a method to debate without having to assume any principle that might be rejected, since it only uses premises that the opponent would accept. Therefore, it allows Aristotle to defend his first principles even against those who support paradoxical views.

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