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DOSSIÊ: ESTILO E FUNDAMENTO NA FILOSOFIA PRÉSOCRÁTICA | DOSSIER: STYLE MATTERS IN PRESOCRATIC PHILOSOPHY

Melissus' and Zeno's Deductive Speech

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Abstract: This paper explores the prosaic deductive style developed by Melissus and Zeno. It first emphasizes the authors' use of a systematic and reduced vocabulary solely dedicated to a priori deduction. In a second time, the paper delves into the systematic role of reductio ad absurdum in their reasoning and distinguishes several kinds of reductio employed by the authors. Through this analysis, the study shows how Melissus and Zeno not only developed and systematized certain aspects of Parmenides' style but also introduced original features that significantly influenced the philosophical writing style.

Keywords: Melissus, Zeno, style, deduction, reductio.

1. Introduction

Parmenides is universally recognised as a groundbreaking philosopher not only for the content of his thought, but also for his innovative use of deduction. It is, of course, difficult to compare Parmenides' way of reasoning with his predecessors', since we have very few texts from them.[1] But we find nothing like Parmenides' tight and strictly argued reasoning in previous Presocratic texts. This is especially the case for his fragment B7-8:[2] each of his claims is justified through an *a priori* argument that usually relies on the impossibility for not-being to be said or thought.

This new method is still combined, however, with more traditional stylistic characteristics.[3] For first, Parmenides wrote in verse and used Homeric style and lexicon.[4] As is usual in epic poetry, he presents his thought as revealed by a divinity who gives it authority. Moreover, he refers many times to other kinds of supernatural entities like *Ananke* or *Moira* to justify his claims.[5] These mythical elements do not take the place of deductive reasoning, but they rather appear complementary to it: Parmenides'

[1] We might find deductive reasoning also in Xenophanes' work (this is the claim of Finkelberg, 1990, p. 155-157), but this requires quite an interpretative effort and a strong reliance on the testimonies, since the fragments themselves are very short and do not provide clear examples of demonstration.

[2] I use the fragment numbering of Diels and Kranz (1951-2). All translations of fragments and testimonies are mine.

[3] Against Kirk, Raven, and Schofield (1983, p. 265), who strangely claim that "his subject-matter is of the most prosaic order" and "his diction [is] far from poetical".

[4] See the precise lexicographical analysis of Coxon (2009, p. 7-12), who emphasises that "the 150 surviving lines of Parmenides contain an average of only one non-Homeric word in every three verses" (7).

[5] See B8.14, 30-31, 37. In all these passages, those entities prevent the reasoning from taking a certain path.

way of truth (*Aletheia*) is both supported by the strength of the arguments and the authority of the divine entities who participate in its exposition. One may defend this use of the divine as important to Parmenides' reasoning, whether to impress the origin of his knowledge[6] or to persuade his audience, but also consider it as superfluous, a remnant of ancient ways, since the deductive reasoning is sufficient to prove his point.[7] His followers, Zeno and Melissus,[8] appear to have adopted the second approach.

Indeed, all this poetic and mythical apparatus disappears in their texts.[9] For first, both thinkers wrote in prose: their treatises might constitute our first developed example of philosophical prose– depending on their respective chronology with Anaxagoras.[10] Second, neither of them refers to any kind of divinity nor uses the lexicon of revelation, at least as far as our fragments and testimonies go. The fragments we have (10 for Melissus, two of which are quite long, and 4 for Zeno) are sober, with no use of imagery, metaphors, or any other stylistic aspect that would remind of Parmenides' epic poetry.[11]

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[6] This is the case, for example, of Tor (2017), who insists on the role of the divine agency and of a divine part of human beings for knowledge: "Parmenides describes to us an interaction with a divine power through which he was able to attain knowledge which he could not have attained independently of that interaction" (p. 223).

[7] Cf. Sedley (1999, p. 114): "There is no question in her discourse being mere divine revelation: every step towards the truth is hard won by argument." More harshly, Barnes (1982, p. 122) claims that "it is hard to excuse Parmenides' choice of verse as a medium for his philosophy" (similarly Guthrie, 1965, II: 4).

[8] I use "follower" in a very broad sense here, meaning thinkers who continued Parmenides' investigation of being, not necessarily disciples who agreed with him or tried to defend his thought against attacks–I will return to this issue concerning Zeno.

[9] One may mention the use of Achilles in Zeno's second paradox on movement, but he only plays an illustrative role.

[10] These chronological matters are very obscure. Diogenes Laertius puts Zeno's acme in 464-461 (IX.29) and Melissus' in 444-441 (IX.24), and on his account, Anaxagoras would be born around 500 and have his acme around the same time as Zeno (II.7). These elements are, however, notably unreliable.

[11] Sedley (1999, p. 125) suggests, in the case of Melissus, that this could be due to his Ionian public, which would be used to ordinary physical language. This analysis

Their style is not just characterised by its prosaic aspects, which they share with Anaxagoras and many later thinkers. For we find in Zeno and Melissus' texts a very particular kind of discourse that they partly inherited from Parmenides and partly developed in their own way. One might first characterise it as a strictly deductive reasoning. On this aspect, the contrast with the variety of discourses we find in Anaxagoras' texts is particularly striking. Let us consider the latter's longest fragment, i.e. B12. A first part presents an argument that shows that the Intellect must be pure and separated from the rest, with sentences connected with γὰρ: its demonstrative style may be paralleled with Melissus' or Zeno's. But then, he turns to a rather descriptive section, which spells out some characteristics of the Intellect. The last section of the fragment is narrative and develops how the world was generated from an initial movement of rotation. We find no such descriptive or narrative passages in Melissus' and Zeno's fragments.[12] This is certainly partly due to their strictly ontological topic, while Anaxagoras and other pluralists were also interested in physics and cosmogony. In any case, this systematic use of deduction rather than any other kind of discourse makes their prose very distinctive. On this aspect, they are faithful followers of Parmenides in the first part of his poem–the second one, dedicated to physics, being more descriptive.

Their originality does not stop here, though. For their reasoning does not consist in any kind of deductive argument, but they only use a distinctive type of reasoning, which I will call, like others before me, *reductio ad absurdum* (*reductio* for short). It consists in taking as a premise a claim, show that it leads to impossibilities, and deduce that the opposite claim is correct–I will nuance this rough description

hardly applies to Zeno, who, like Parmenides, originates from Elea. For an analysis of this secularisation of discourse in Melissus' texts, see Mansfeld (2016, p. 73-75).

[12] One might find an exception in Melissus' B8, where he spends some time describing several kinds of change that appear to us, for example the way iron is rubbed by a finger. But this description serves his demonstrative purpose, i.e. to show that the way we perceive the many beings contradicts his claim that being is unchanging.

for the case of Zeno. On this aspect, they distinguish themselves not only from contemporary pluralists, but also from Parmenides. For despite some antecedents in Parmenides' poem, as we will see, this kind of reasoning was only fully developed and systematised in Zeno's and Melissus' works.

In this paper, I will try to emphasise what characterises Zeno's and Melissus' style, both in its prosaic aspect and its argumentative form, not only in regard to Parmenides', but also to other Presocratic philosophers who wrote in prose. I will first focus on their prosaic style, in particular the lexicon of proof they developed (section 2), then on their use of *reductio* (section 3 for Zeno and 4 for Melissus). I will show that although they inherited some of their characteristics from Parmenides' poem, they developed and systematised them in their own way, hence developing a very innovative and efficient argumentative style.

2. The Vocabulary of Proof

I will examine some lexicographical features of Zeno's and Melissus' fragments and show how those are indicative of their way of reasoning. This analysis has its shortcomings in the case of Zeno, for whom we only have four fragments, but the comparison with Melissus' ten fragments, which probably constitute a major part of his treatise,[13] should allow to draw some conclusions.

Their texts are first characterised by the scarcity of the vocabulary they use. Concerning Melissus, while his fragments contain roughly 750 words, he uses around 160 different words (if one counts as one word the variously declined and conjugated forms), many of which have the same root (one would count around 130 different roots). If one excludes the pronouns and various particles from this counting, he only uses 28 different nouns, 38 verbs and 31 adjectives. Moreover, more than one third of his lexicon, the half for

[13] Harriman (2019, p. 219-222) goes as far as to claim that we have most of Melissus' treatise and that we can reconstitute a continuous text from our fragments.

the adjectives, only appears in B8, which uses several concrete examples and consequently diversifies Melissus' usual lexicon. Hence, most of Melissus' reasoning rests on a very restricted vocabulary. As for Zeno, he uses around 65 words in his 200 words fragments. One might also underline the remarkable similarity between the vocabulary of these two authors: Zeno uses very few words that cannot be found in Melissus' fragments, most of which have to do with his particular interest in magnitude and the connexion between parts (with words like ἀπέχω, αὐξέω, μεταξύ, προέχω…), while Melissus mostly focusses on the issue of change, in particular in his two longest fragments, B7 and B8.

Focussing on Melissus' text, his restricted lexicon is indicative of his innovative way to demonstrate. First, it focusses on the predicates of being that are under consideration. For Melissus' work mostly consists in demonstrating various attributes of being: that it is one, unlimited, eternal, unmoved, etc. In Melissus' fragments, those attributes are repeatedly referred to during the demonstration, and always in the same way–by contrast with Parmenides, who tends to use different words for the same characteristic of being.[14] The main ones are ἕν (10 occurrences), ἄπειρον (6), ὁμοῖον (7), ἀίδιον (3) and οὐ κινούμενον (4).

This scarcity is not just indicative of a simplification of the demonstration that a systematic use of the same lexicon allows, but also of Melissus' particular way of arguing. For he always uses attributes of being he previously demonstrated to argue for new ones. Contrarily to Parmenides' fragment B8, where every predicate of being is demonstrated separately, mostly by relying on the impossibility of not-being,[15] in Melissus' thought, the reasoning

[14] McKirahan (2008) calls those various terms "notionally equivalent", for example "all together" (ὁμοῦ πᾶν), "whole" (οὖλον) and "complete" (τέλειον), or unique (μουνογενές) and one (ἕν).

[15] Cf. Sedley (1999, p. 122), who only regards one argument as derived from another premise, i.e. the impossibility of change that is proven from the impossibility of generation. McKirahan (2008) has a more nuanced position: he indicates that some predicates are demonstrated through the opposition of being and not-being, but others thanks to new claims that have been previously

constitutes a progressive chain, where each new element depends on what he previously demonstrated.[16] The chain has one single link at a time up to fragment B6: Melissus shows in B1 that being is always, in B2-4 that since it is always, it is unlimited, and in B5-6 that since it is unlimited, it is one. From fragment B7, it complexifies into a tree, because Melissus provides several arguments for one predicate and reversely relies many times on the same predicate to demonstrate several new attributes of being. For example, in B7 he shows that being does not suffer because 1) everything cannot suffer continually, 2) its power would lessen if it suffered and 3) it would not be similar to itself but something would be added or subtracted. And the impossibility of addition and subtraction is both used to prove that being cannot be rearranged and that it cannot suffer. Despite this complexification, Melissus' system remains particularly economical, with a clear chain of reasoning that ultimately rests on his first demonstration in B1 concerning the eternity of being–I will discuss his arguments in section 4.

Melissus structures this demonstrative chain thanks an important use of causal particles, which constitutes another distinctive characteristic of his style, which he shares with Zeno. New sentences are clearly connected to the previous ones and usually presented as their justification (with γὰρ, 22 occurrences for around 65 sentences)[17] or their conclusion (with τοίνυν, 7 occurrences, or οὖν, 6 occurrences). One may contrast this quantitative analysis with Anaxagoras' fragments: for a superior number of texts (around 970 words for Anaxagoras, 750 for Melissus), he only uses γὰρ 17 times and οὖν twice.

established in B8. He concludes that "Parmenides does indeed employ the practice of using previously proved results in proofs of subsequent claims, but not nearly to the degree that is sometimes believed" (p. 218).

[16] This chain of reasoning is well schematised in Harriman (2019, p. 223-227). Aristotle already underlined this particularity of Melissus by claiming in *Physics* I.2 185a11-12 that "once an absurdity is given, the rest follows".

[17] Γὰρ also plays an important role in Parmenides' poem, particularly in fragment B7-8, where it appears 15 times.

The reasoning is not just structured by connective particles but also by a new lexicon of modality. The logical necessity of the conclusion is stressed using verbs like χρὴ (5 occurrences), δεῖ (2 occurrences), or οὐ δύναιτο (3 occurrences), and other terms like ἀναγκαῖον/ἀνάγκη (3 occurrences) and οὐκ ἀνυστόν (3 occurrences).[18] Ἀνάγκη, which also appears three times in Zeno's fragments, is particularly interesting: the term is also used by Parmenides three times, two of which refer to a personified necessity (B8.30 and B10.6), analogous to Μοῖρα (B8.37) or Δίκη (B8.14).[19] Those personifications are most certainly a way to refer to the logical necessity of the reasoning,[20] but this use remains different from the purely secular one of Melissus and Zeno. We might find a more neutral use of ἀνάγκη in B8.16-17, where Parmenides claims that "it has been decided, like a necessity, to leave this [way] unthought and unnamed" (κέκριται δ' οὖν, ὥσπερ ἀνάγκη / τὴν μὲν ἐᾶν ἀνόητον ἀνώνυμον). It should be noted, however, that ἀνάγκη is used in a comparison, which might indicate that Parmenides considered this use as metaphorical. In Melissus' and Zeno's texts, ἀνάγκη becomes a standard way to express the logical necessity of a conclusion. Similarly, ἀνυστόν is used once by Parmenides, in B2.7, to characterise the knowledge of not-being as "impracticable" (on the translation of Laks and Most, 2016) and becomes in Melissus' fragments a standard way to refer to impossibility.

As we could see, Melissus and Zeno develop a new prosaic style that is entirely dedicated to deductive reasoning. They take up some of Parmenides' expressions but systematise their use to constitute a standard lexicon of arguing.

[18] By contrast, Anaxagoras uses χρὴ twice and οὐκ ἂν δύναιτο and ἄνυστον once.

[19] We find a similar use of Ἀνάγκη in Empedocles' fragment B115.1, where he mentions the "decree of Necessity" (Ἀνάγκης χρῆμα).

[20] Cf. Coxon (2009, p. 296).

3. Zeno's Use of *Reductio*

Zeno was well known in Antiquity for using paradoxical reasoning, in the form of a *reductio ad absurdum*, which he applied to ontological claims like "there are many beings" and "there is movement".[21] More specifically, we may distinguish two kinds of *reductio* that are particular to Zeno. The first one consists in showing that the hypothesis leads to claiming one thing and its opposite: if X, then both Y and not-Y.[22] We may call this kind of argument an "antilogy". Already Isocrates and Plato regarded antilogy as typically Zenonian:

> Zeno, who tried to demonstrate that the same things are possible and again impossible (Isocrates *Praise of Helen* 3)…[23]

> Don't you know that the Eleatic Palamedes had such a technique of speech that it seemed to his public that the same things are like and unlike, one and many, and again at rest and moved (Plato *Phaedrus* 261d)?

> What do you mean, Zeno, by "if beings are many, then they must be both like and unlike, and that is impossible, because the unlike cannot be like nor the like unlike" (Plato *Parmenides* 127e)?

Reductio of this kind indeed concludes his main fragments: in B1, he claims that "if they are many, they are necessarily *both* small and big" (μικρά τε εἶναι καὶ μεγάλα), and in B3, he shows that if beings are many, they are both limited and unlimited.

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[21] On Zeno's paradoxes, see Sattler (2021).

[22] Cf. Köhler (2015, p. 34-35).

[23] One should note that, in this case, Isocrates presents a modal antilogy, which is quite different from a non-modal one. We find no such opposition between possible and impossible in Zeno's fragments (as we shall see further on, he does not even mention that his paradoxes lead to an impossibility). One may wonder whether Isocrates' testimony indicates that he did or Isocrates was a bit imprecise here and just wanted to refer to the usual kind of antilogies.

Antilogy appears an innovation of Zeno:[24] we find no trace of it in Parmenides' fragments,[25] and Melissus does not use it either. This might explain why Aristotle, according to Diogenes Laertius (VIII.57), called him the "inventor of dialectic", if one understands by "dialectic" opposite discourses that contradict each other,[26] and why the cynic Timon of Phlius qualified him as "double-tongued" (ἀμφοτερογλώσσου).[27] We find a similar description of Zeno as a champion of contests in Plato's *Phaedrus*, where he compares him with Palamedes, who would have invented the game of dice. Those testimonies imply that Zeno was already considered by fourth-century philosophers as the inventor of a specific kind of reasoning which consisted in opposing two arguments.

Despite this innovative character, Zeno's antilogies may still find their origin in Parmenides' thought, more specifically in the radical opposition between being and not-being he develops in fragment B2, especially if one interprets it as the first expression of the principle of non-contradiction. This reading is supported by many critics, in line with Kahn (1969, p. 707-708), but others, like Palmer (2009, p. 68-69), claim that Parmenides did not support this principle. This issue depends much on how one understands the third way Parmenides describes in fragment B6, according to which "to-be and not-to-be are the same and not the same": is it a way one cannot consider coherently, precisely because it constitutes a violation of the principle of non-contradiction, or does Parmenides accept it as the only

[24] Barnes (1982, p. 186) is right to underline that Zeno is not the inventor of *reductio*, but we can make him the inventor of antilogy as a way to induce *reductio*.

[25] Cf. Palmer (2009, p. 197): "while we have seen that Parmenides does employ tightly structured arguments, none prefigure Zeno's use of the specific *reductio* technique wherein contradictory consequences are derived from a single thesis targeted for refutation".

[26] This is, strictly speaking, not Aristotle's definition of dialectic as starting from *endoxa*, but it may be drawn from his description in *Topics* VIII of dialectical contests, where two contesters support opposite theses.

[27] *Fragment* 819.1 in Lloyd-Jones and Parsons (1983).

possible way to explain the world as it appears, in which case he would not support the principle of non-contradiction?[28]

One does not have to settle on an interpretation of Parmenides, or even of Zeno's reading of his poem, to consider that Parmenides' poem inspired in some way the antilogical arguments. For in the first part of the poem, the two ways of B2 are presented as the necessary object of a decision (κρίσις in B8.15): in the *Aletheia* at least, contradiction is not accepted. It seems, then, that according to Parmenides there was a certain kind of thinking, which he attributes to the mortals in B6, according to which the same thing is X and non-X. And he regarded at least as a better approach the one that avoided this cohabitation between being and not-being. Henceforth, Zeno can be seen as turning this kind of mortal speech into a systematic way of reasoning in order to produce *reductio*: when one claims that there is movement and multiplicity (as the mortals do), one has to assume that beings are both X and not-X. But we find no similar use of contradiction to reject a specific claim in Parmenides' text. Therefore, even though Parmenides might have inspired him in laying some emphasis on the issue of contradiction, Zeno is the one who used it as an argumentative tool.

The second kind of *reductio* constitutes the core of the famous arguments against movement that Aristotle summarises in *Physics* VI.9, i.e. infinite regress. Indeed, those arguments show that it is impossible to go from one point to the other by infinitely dividing space or time and showing that at every step, there is still an infinite time or space to cross.[29] In particular, in the first argument (called the

[28] The interpretative option one adopts depends on how one fills the lacuna at the end of B6.3: Parmenides would either claim that one should "avoid" (εἴργω, on Diels' proposition) the way of the mortals, or on the opposite that he will "start" (ἄρξει, on the edition of Cordero, 1984, 168-175) with the way of being and then examine the one of the mortals.

[29] Sattler (2021, p. 164) suggests that some of the arguments against movement may be understood as antilogies: for example, the dichotomy would indicate that the distance to be crossed is both limited and unlimited. Aristotle does not formulate the arguments in this way, though. Concerning the argument on place, she identifies it as an infinite regress (p. 165).

dichotomy), a moving object must first reach the half of his trajectory, and then half of the remaining distance, etc., so that it will never reach the end. Similarly, in the famous Achilles argument, Achilles must always first reach the place where the one he pursues was, then the place he reached in the meantime, etc. In both cases, the mover should indeed cross an infinite number of points to reach its destination. Therefore, the infinite division of space allows constructing *reductio*. Aristotle attributes to Zeno a similar kind of regress argument concerning place in *Physics* IV.1 209a23-25: if what exists is in a place, a place should be in some place, which should in its turn be in some place, and so *ad infinitum*.

Infinite regress also plays some role in our fragments: in B1, Zeno claims that any extension will have "some part of it that is distinct from another", which implies that there will always be another magnitude it will be distinct from. And in fragment B3, he claims that there will always be something intermediary between two things.[30] Zeno explicitly formulates the principle that governs infinite regress arguments in B1: "it is equal to say it once and to keep saying it; for no such thing will be the last one." One should note, however, that in B1 and B3, infinite regress is not presented as absurd in itself, but it is used in the service of an antilogical argument: Zeno shows, on the one hand, that the many things would be unlimited, with the regress argument, and on the other that they are limited.

Hence, Zeno developed at least two kinds of *reductio* arguments, both of which are original: there is no trace whatsoever of infinite regress in Parmenides' thought, and as we saw, even though antilogical arguments might rest on the principle of non-contradiction as it is exposed by Parmenides, Zeno was the first to use them for *reductio*. The aim of these *reductio* is disputed: [31] did they aim to defend positive theses, as Plato says in the *Parmenides* 127e,[32] or did

[30] Philoponus also attributes to Zeno the following argument (*In Phys.* 80.25-27): "if being is not one and indivisible, but is divisible into many things, nothing would be genuinely one. For if the continuous is divided, it will be divided ad infinitum."

[31] See a useful presentation of the debate in Rapp (2013b, p. 532-533).

[32] On this reading, see Vlastos 1975, McKirahan (1999, p. 134-137).

Zeno simply try to present paradoxes without drawing any conclusion from them?[33] I will not enter into this complex discussion here, but in any case, the argumentative features Zeno developed, with the systematic use of antilogy and infinite regress, will be used as a good way to refute a thesis by many later thinkers, and constitute a major innovation in the history of argumentation.[34]

4. Melissus' Use of *Reductio*

Like Zeno, Melissus makes a systematic use of *reductio ad absurdum*, but in his case, it is clearly employed to demonstrate positive theses.[35] Hence, he aims to prove that being has a certain property by demonstrating that if it had the opposite property, it would lead to an absurdity. These demonstrations all adopt a similar counterfactual structure: if X, then Y, Y is impossible, therefore not-X.

We also encounter two kinds of *reductio* in Melissus' fragments, both of which differ, however, from the one's Zeno uses. Let us consider two examples. First, in B1, our first fragment, Melissus speaks as follows:

> What was always was and always will be. For if it came to be, there would necessarily have been nothing before it came to be. Hence, if there was nothing,[36] nothing could ever come to be from nothing.

We have here a clear example of *reductio*: Melissus demonstrates that being always was because if it was not always but came to be, it would lead to an absurdity. For if being came to be, there would be

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[33] Cf. Barnes (1982, p. 186): "He never makes the characteristic move of *reductio*, the inference to the falsity of the hypothesis." This anti-Platonic reading was particularly developed by Solmsen (1971).

[34] Cf. Solmsen (1971, p. 141): "In the devising of new methods and argumentative techniques he remains a pioneer; here lies his main achievement."

[35] Cf. Rapp (2013a, 581-582).

[36] I adopt the lesson τοίνυν. The best manuscripts have τύχοι νῦν, which makes no sense. Cf. Brémond (2017, p. 524, n. 455).

nothing before its generation, and there can be no generation from nothing. In this case, the *reductio* leads to the contradiction of the very hypothesis under consideration: the generation of being would destroy the condition for any generation, i.e. that there is something from which generation would proceed–Melissus inherited this premise from Parmenides. Hence, Melissus demonstrates a predicate of being by examining the opposite hypothesis and showing that it is self-contradictory.

We find another kind of argument in his fragments, for example in B6:

> If it were (unlimited),[37] it would be one. For if they were two, they could not be unlimited, but they would have limits one toward the other.

We have the exact same structure as in B1: first, Melissus states his thesis, then he takes the opposite possibility into consideration, and finally he shows that it leads to an impossibility. He implicitly concludes that the thesis is established. There is a difference, however, with the previous case: in this fragment, the opposite thesis is not self-contradictory or even absurd in itself, but it contradicts a claim that Melissus already established. For he just demonstrated, in fragments B2-4, that being is unlimited: hence, if multiplicity leads to a limitation of being, beings cannot be many. As we saw, this kind of argument is possible due to Melissus' construction of a strict chain of reasoning: every predicate of being is demonstrated from the previous one. Therefore, Melissus can rely on what he previously established to show the impossibility of the hypothesis and demonstrate that the opposite one must be true.

Consequently, we find two kinds of *reductio* arguments in Melissus' text: the first one indicates that the thesis opposite to the one he supports is self-contradictory, the second one shows that it

[37] Burnet (1892, p. 339, n. 55) completes the protasis by adding ἄπειρον, which is absent in the manuscripts. Most critics follow him, except Loenen (1959, p. 154-155) and Harriman (2019, p. 107-110) (although the latter supposes that it was suggested by the context).

contradicts something that was already established. The first kind of argument mostly appears in the first fragment, which would constitute the beginning of Melissus' reasoning,[38] and the following deductions are based on predicates of being that were previously established. The only other instance of the first kind of *reductio* lies in the demonstration of the impossibility of movement in B7:

> Nothing is void either. For the void is nothing. Then, what is nothing could not be. Neither is it moved. For it has nowhere to retreat to, but it is full. For if there was void, it would retreat toward the void. But since there is no void, it has nowhere to retreat to.

In this argument, Melissus shows that being cannot move because it should move toward a not-being. But not-being is not; therefore it cannot be a condition for movement. In this case, the demonstration does not rest on something that was already established, but on the absurdity of the hypothesis itself.[39] As in fragment B1, the condition for movement, i.e. the existence of not-being, destroys its very possibility, because it is nothing. Except this argument, all other demonstrations we have rely on a predicate of being that was previously established.

Hence, Melissus' whole demonstration consists in *reductio* arguments: he never proves directly that being *must* have some characteristic, but rather that it cannot have the opposite one. This is no complete innovation, since Parmenides also demonstrates many characteristics of being in fragment B8 in a similar way. A first example lies in his demonstration that being is ungenerated:

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[38] This question is disputed, because Simplicius mentions in his summary of Melissus' thought (103.15-16) another first argument, which would demonstrate that something must exist: "if there is nothing, how could one talk about it as if it were something?" Some critics, since Reale (1970), regarded this text as Melissus' first fragment, numbered B0 (see a discussion in Brémond, 2017, p. 130-131). In any case, B1 would not rely on B0, since it does not rest on the impossibility of not-being, but on the impossibility for something to originate from not-being.

[39] This is the case even if one accepts the authenticity fragment B0 (see previous note), which establishes that there cannot be nothing at all, not that not-being is nothing.

> For what generation would you seek it? How, where would it have grown from? I will not let you say nor think that it is from not-being, for it is not to be said nor thought that it is not. (B8.6-9)

The argument is quite similar to the one we just examined in Melissus' B1: if being came to be, it would be from not-being, which is impossible. More generally, one may note that Parmenides usually demonstrates a characteristic of being in B8 by showing that the opposite characteristic would imply the existence of not-being or a lessening of being, which are both impossible.[40] For example, he claims in B8.22-24 that being is homogenous (ὁμοῖον) because there cannot be less being here or there, or in B8.46-48 that it is similar to a sphere because its equality cannot be impeded by not-being nor by an excess or lack of being. Moreover, counterfactual arguments like the ones we find in Melissus' fragments necessarily rely on the principle of excluded middle, and ultimately on the principle of non-contradiction. As we saw, we can find the origin of this principle in Parmenides' poem.

However, we do not find in Parmenides' fragments the counterfactual structure with a hypothetical clause, the deduction of the impossibility of the hypothesis, and the conclusion that is typical of Melissus' fragments. This systematisation of the argumentative structure, just as the construction of a continuous chain of reasoning, are, therefore, an innovation.

5. Conclusion

As we could see, Zeno and Melissus developed a certain number of argumentative tools, which rest on a sober and strongly demonstrative lexicon. Both exclusively use *reductio ad absurdum*: they never prove a positive claim as such (we saw that in the case of Zeno, it is uncertain whether he intended to support a thesis at all), but they destroy the opposite one by showing, in various ways, that it leads to an impossibility. Even though we may find some aspects

[40] Cf. Harriman (2019, p. 228-229).

of their argumentative style in Parmenides' poem, it is Zeno and Melissus who developed and systematised them into argumentative weapons. Those innovations in style certainly did not have the reception they deserved in Antiquity–if one excepts Aristotle's claim that Zeno was the inventor of dialectics–and still need to be emphasised nowadays.

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