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JACQUELINE TUSI

Strategies of Exegesis of Zeno's Works in Plato and Aristotle

1. INTRODUCTION

Plato's *Parmenides* undoubtedly represents an enigma. Not only is the overall interpretation of the dialogue difficult, but the connection between the different ideas is also far from evident. Moreover, Plato's handling of his predecessors, like Parmenides and Zeno, often creates further controversy among modern scholars. The aim of my paper is to focus on this latter point and search for possible strategies of exegesis of Zeno's work in Plato. A comparison between Plato's and Aristotle's reading of Zeno's philosophy will then shed light on which of Zeno's arguments Plato himself integrates in the *Parmenides* and on how he does so.

Our understanding of the philosophy of Zeno of Elea encompasses many diverse opinions. In general, most scholars agree that it is not easy to discern what principle of organization Zeno followed in his works, but this is mainly due to the poor quality of literary records. The extant writings of Zeno contain less than two hundred words. Furthermore, controversy between different interpretative opinions often springs from the question of the credibility of Plato's testimony in the *Parmenides*, for it neither matches with the portrayal of Zeno in the *Phaedrus*, nor with Aristotle's testimony in the *Physics*. These interpretative difficulties may be overcome in many ways, but here we will deal with only one problem: why do Plato and Aristotle report different readings of Zeno's philosophy?

The historical references show that Zeno was best remembered for a series of paradoxes and antinomies about movement on the one hand, and unity and plurality on the other. Most of these arguments were taken up, revised and adopted by many other thinkers like Plato himself, Aristotle,[1] Xenocrates,[2] Heraclides Ponticus,[3] the Megarians[4] and the Sceptics.[5] Sadly his book has not survived, and we are not even sure whether he wrote one

[1] *Phys.* book 4 and 6.

[2] Cf. Aristotle's *De Lin. Insec.* 968a18f.

[3] The author seems to have written many books about physics, including one against Zeno, Πρὸς τὰ Ζήνωνος α', DL V 87.

[4] See Diodorus Cronus who refers to some of Zeno's arguments in order to deny the reality of motion: Sextus Empiricus, *Adversus mathematicos* 10,48; 10,86; 10,113–10,117.

[5] The atomists like Leucippus and Democritus or the sophists Gorgias and Protagoras must also have drawn inspiration from Zeno.

book or several.[6] Consequently, what we know about Zeno's philosophy is second-hand and the temporal distance between the original text and the written records we possess is quite great. The paradigmatic case is that of Simplicius, from whom we have a less complicated account of Zeno's thought[7] than we find in Aristotle, but who wrote a thousand years after Zeno's death.[8] So from a historically-critical perspective, the situation at hand demands a careful rereading of some of the surviving texts.

Yet, the disappearance of Zeno's writings puts us in a difficult interpretative situation. For not only it is not clear whether he wrote one or more books, but it remains equally puzzling whether the paradoxes of motion and the arguments about unity and plurality were based on a common methodology and systematic groundwork. If we take a closer look at the beginning of the *Parmenides*, we do not get a truly useful answer for the missing systematic account, but we can at least get an idea about what Plato took to be one of the most important features of Zeno's arguments. For, the reader of the *Parmenides* is told about Socrates' wish to discuss "the first hypothesis of the first argument" (τὴν πρώτην ὑπόθεσιν τοῦ πρώτου λόγου, 127d6-7). This in fact implies that Zeno's book was composed of many proofs against the existence of plurality on the basis of conflicting consequences at the end of a proof. But how many ὑποθέσεις and λόγοι against plurality did Zeno write? This question remains unanswered. On the one hand, Plato choses to discuss only one[9] argument, namely that the plurality of things does not exist, because many things cannot be similar and dissimilar at the same time. This argument contains two conflicting hypotheses, a. 'many things are similar' and b. 'many things are dissimilar'. And he decides to do so in order to ascribe the 'no plurality view' to Zeno. On the other hand, Aristotle and the Aristotelian tradition not only mention Zeno's polemic against plurality,[10] but also report four different arguments against movement:[11] 'The dichotomy argument',[12] 'The Achilles',[13]

[6] Suda even mentions several titles of Zeno's work, DK 29 A 2, but it is not common to take this information to be correct. Most modern scholars assume that Zeno wrote only one book, namely the one that Plato mentions in the *Parmenides*.

[7] It is not clear whether Simplicius possessed Zeno's whole script or a collection of some antinomies.

[8] The same goes for John Philoponus who in his commentary to Aristotle's *Physics* reports on Zeno's philosophy.

[9] Proclus even assumes that Zeno wrote 40 λόγοι.

[10] *Soph. El.* 182b22; Alexander ap. Simplicium *In Phys.* 138,3 (DK 29 A 22); Simplicius *In Phys.* 138,29 (DK 29 B 2); Simplicius *In Phys.* 140,34 (DK 29 B 1); Simplicius *In Phys.* 140,27 (DK 29 B 3).

[11] *Phys.* Z 9, 239b9 (DK 29 A 25).

[12] *Phys.* Z 9, 239b11 (DK 29 A 25); *Topics* Θ 8, 160b7 (DK 29 A 25); *Phys.* Z 2, 233a21 (DK 29 A 25); *Phys.* Θ 8, 263a15–18, b3–9.

[13] *Phys.* Z 9, 239b14.

'The Arrow',[14] 'The Moving Rows'.[15] A closer look demonstrates that Aristotle wrote about two further paradoxes, 'The Space'[16] and 'The Grain of Millet'.[17]

In this regard, Aristotle is more comprehensive than Plato himself, as he gives an extensive account of the thoughts of his Eleatic predecessor. In fact, the group of paradoxes of motion, which Plato does not mention explicitly although he writes about motion in the second part of the *Parmenides*, is the reason why Zeno gained his popularity. However, we must not make hasty judgments about Plato's intentions concerning Eleatic philosophy. Given the fact that we are completely dependent on second-hand transmission, the question arises how accurately Zeno's thoughts were reported by Plato and Aristotle. To answer these questions, we shall first take a closer look at Plato's portrayal of Zeno in the *Parmenides* and *Phaedrus* before comparing the two different dialogues with Aristotle's *Physics*. The aim of this comparative study is to stimulate ideas for possible interpretation of Zeno's philosophy as a preparatory exercise for a better understanding of the Eleatic influences on Plato's *Parmenides*.

2. Zeno's Portrayal in the *Parmenides*

To start with Plato, where did his interest in Zeno come from? According to the *Parmenides*, Plato's whole understanding of Zeno's philosophical position derives from the ambition to systemize the ideas of his predecessors by attributing to Parmenides and Zeno the ontological view that only unity, and not plurality, exists. Through the mouth of Socrates Plato represents the articulation of Parmenides' view that had as its premiss the assumption that "The whole is one" (ἓν εἶναι τὸ πᾶν, 128a8-b1), whereas Zeno's position corresponds to "There is no plurality" (οὐ πολλά εἶναι, 128b2). Yet, Plato's Socrates is in a comfortable position at this point as he reserves the easier discussion with Zeno for himself, while wanting to pass on the difficult debate with Parmenides to others. This becomes clear in the passages 127d6-130a2 in which Socrates engages in a philosophical exchange with Parmenides' favourite pupil. Zeno does not put up a challenge, but is only a passive disputant. The sole exception is when Zeno defends his motives for writing a work in defence of Parmenides' philosophy (128b7-e4). But how does the difference between Socrates and Zeno reflect the main problems of the dialogue and its further conclusions?

Plato's Socrates is demonstrating Zeno's general method of generating antithetical consequences from certain philosophical assumptions. In our

[14] *Phys.* Z 9, 239b30–3, 5–9 (DK 29 A 27); DL IX 72.

[15] *Phys.* Z 9, 239b33 (DK 29 A 28); Alexander ap. Simplicium *In Phys.* 1016, 14.

[16] *Phys.* Δ 3, 209a23–25, 210b32; Eudemus *Phys.* fr. 42.

[17] *Phys.* H 5, 250a f.

case, we are dealing with the proposition that the plurality of things exists. Zeno is trying to give strong evidence against this view by proving that it leads to contradictory results. If the plurality of things exists, the antithetical character of its consequences emerges when considering the following context. People usually think that things appear to be like and unlike and that they do so at the same time. We often say a thing A is like or similar to a thing B, but that it is unlike or dissimilar to a thing C. Consequently, one and the same thing A seems to possess not only different but opposite properties. It is supposed to possess simultaneously the property x (= being like) and the property $\neg x$ (= being unlike or dissimilar). But this is obviously a contradiction. Therefore, the conjecture that the plurality of things exists is not valid according to Zeno.

As a reply to Zeno's dilemma, Socrates proposes the theory of Forms (128e6-129a1), a theory we already know from the *Phaedo*. If "a Form of Likeness itself" (αὐτὸ καθ' αὑτὸ εἶδός τι ὁμοιότητος, 128e6-129a1) as well as its "contrary" (ἐναντίον), namely a Form of "Unlikeness" (ἀνόμοιον), exists it seems unproblematic to admit that all the things which come "to partake" (μεταλαμβάνειν) of Likeness "come to be alike" (ὅμοια γίγνεσθαι, 129a4) and those things which partake of Unlikeness come to be "unlike" (ἀνόμοια). Yet, to give a solution to Zeno's dilemma, it is necessary to draw a further consequence: one and the same concrete thing, like Socrates or Zeno, not only can participate either in Likeness or Unlikeness, but can also partake of both Forms at the same time. We saw earlier that Zeno himself was unable to accept this outcome (127e1-128a3).

One of the biggest puzzles to emerge from the above lines is the following. Throughout the discussion about the problematic status of like and unlike things, Zeno speaks about things "*being* like and unlike" (ὅμοιά τε *εἶναι* καὶ ἀνόμοια, 127e2), whereas Socrates employs the expression "*becoming* like and unlike" (ὅμοια *γίγνεσθαι* [...] ἀνόμοια, 129a4-6). Both parties seem to refer to the same philosophical difficulty, namely the need to explain whether or not one and the same thing can partake of opposite attributes. As we saw above, Zeno answers this question in the negative, Socrates in the affirmative. Does Zeno accept Socrates' solution to this dilemma? Further, what about the difference between "being" (εἶναι) and "becoming" (γίγνεσθαι)? Why does Zeno speak about being and not becoming like and unlike? Before giving some possible answers to these questions, we should first take a closer look at Plato's portrayal of Zeno in the *Phaedrus*.

3. Zeno's Portrayal in the *Phaedrus*

We saw bevor that Plato's whole understanding of Zeno's philosophical position seems to rely on the idea that the latter supported the 'no-plurality' view. This ontological assertion is understood as providing a fur-

ther support for Parmenides' monism. However, for a more satisfactory understanding of Zeno's philosophy, we must also look at the *Phaedrus*. There, Plato presents Zeno as "the Eleatic Palamedes" (τὸν Ἐλεατικὸν Παλαμήδην, 261d6), because of his notorious rhetorical talents. Based on these two dialogues, the following questions arise: What do Zeno' rhetorical practices in the *Phaedrus* consist of? Are they compatible with the 'no-plurality-view' in the *Parmenides*?

To begin with the first question, it is clear from the *Phaedrus* and *Parmenides* that Zeno was a master at refuting specific assumptions, although in the context of the first work, it seems less plausible to infer that he could do so only because he had an ontological basis, namely the 'no-plurality view'. For, in the *Phaedrus*, the protagonists broadly discuss not only ascertaining the truth of things, but also the role of rhetoric and its relation to truth. The dialogue reveals the following: Zeno's rhetorical capacities do not result from the 'no-plurality-view' but from his preeminent mastery of the so called ἀντιλογική whereby he deceives his audience about the truth of things. To justify this idea, let us first take a closer look at the relevant passages of the *Phaedrus* where the enigmatic figure of Zeno is portrayed.

In 259e-262c, Socrates, together with Phaedrus, discusses the problem of whether or not rhetoric relies upon a precise knowledge of the truth or "the true nature" (τὸ ἀληθὲς, 259e5) of things (259e-262c). Phaedrus claims not to have heard such a proposition. Instead, he reports a different opinion, namely that an orator need not "learn what is really just" (τὰ τῷ ὄντι δίκαια μανθάνειν, 260a1-2), "good or noble" (ἀγαθὰ ἢ καλὰ, 260a3), but only what "will seem so" (ὅσα δόξει, 260a3) to the crowd. The intellectual activity of the rhetorician is therefore reduced to "persuasion" (τὸ πείθειν, 260a4) as opposed to telling "the truth" (τὸ ἀληθές). The archetypal orator who possesses the outstanding talent to persuade other people is not identified with Nestor, Odysseus,[18] Palamedes, Gorgias, Thrasymachus or Theodorus,[19] as the interlocutors first suggest, but with Zeno, the Eleatic Palamedes. Bearing in mind that Thrasymachus of Chalcedon was, according to Plato's testimony, an extremely provocative rhetorician,[20] it is astonishing that he is not able to replace Zeno as, to a certain extent, *the*

[18] With Nestor and Odysseus Plato refers to the immense value of the epics of Homer who was considered to be the father of philosophy and wisdom.

[19] Little is known about Theodorus of Byzantium who lived in the fifth and fourth centuries B.C. Plato calls him "the most excellent Byzantine artist of the words" (τόν γε βέλτιστον λογοδαίδαλον Βυζάντιον ἄνδρα: *Phaedrus* 266e4–5). Aristotle ranks him among those who had advanced the art of rhetoric, *Soph. El.* 183b2. Suda describes him as a sophist.

[20] See *Phaedrus* 267c7–d2, *Rep.* 338c, 339b, 343c: As far as Thrasymachus' political attitude is concerned, it is not clear whether the views Plato attributes to him are historically accurate. It might be that Plato took him to have had influence over the decision-making of the contemporary society through his teaching and writings and was therefore worth discussing.

orator. Even more surprising is that Gorgias of Leontini, one of the best-known orators and sophists of the fifth century B.C. who served Plato as a model for his most bitter attacks against the art of sophistical controversy, cannot compete with the Eleatic Palamedes. Why is this so? Does Plato have an evaluative criterion for the identification of the best orator? To gain further information about Zeno's outstanding position let us again return to the *Phaedrus*, where Socrates talks about the art of rhetoric in general and Zeno's skill in particular.

First, Phaedrus had pointed out that an orator, in order to show his rhetorical talents, need not know or learn the truth about things, but rather what appears to be so. Consequently, successful rhetorical speeches are not to be identified with λόγοι about true things but rather with discourses about how things appear. Hence, according to the opinion expressed by Socrates' interlocutor, a good orator does not so much possess the art of telling the truth as the art of persuasion. For these reasons, it comes as no surprise that Socrates is not satisfied with this picture. Arguing for his own understanding of good rhetoric, he affirms that it is necessary to examine the "speeches" (λόγοι) or rather "the art of speeches" (ἡ τῶν λόγων τέχνη) of a "rhetorician" (ῥητορικός). Plato, through the mouth of Socrates, wants to suggest that an orator must know the truth of things in order to deliver a good and noble discourse as opposed to mere persuasive words (259e). For, his ulterior motive is to provide a draft of a philosophical rhetoric, which aims to awaken and stimulate the rational potential of human beings. Man should not simply be reduced to his ability to produce opinions or persuasive discourses, but rather be uplifted by means of his faculty of intelligence.

The further analysis starts with the assumption that "the art of rhetoric" (ἡ ῥητορικὴ τέχνη) is to be understood as "a guidance of the soul through speeches" (ψυχαγωγία τις διὰ λόγων, 261a8). The Greek word ψυχαγωγία usually stands for a verbal flattery, an enchantment or an enticement through which souls are led or attracted.[21] Hence, it is closely linked to the discussion about the art of "persuasion" (πειθώ) and can be described as a result of rational demonstration and affective enchantment. Plato himself seems to have had the idea to redefine the ordinary meaning of psychagogy, which often has manipulative or abusive connotations, in order to give an account of philosophical rhetoric. As we have seen, human souls intrinsically have a noble objective, namely to achieve knowledge of things with the help of true λόγοι. Anything that hinders this intellectual pursuit – as it appears to have been the case for the previous practice of

[21] In Greek mythology, Hermes is known as the "spiritual director" (ψυχοπομπός), who conducts the shadows of the mortals into the netherworld.

ψυχαγωγία[22] – should be first analysed and then eliminated. Yet, there is a puzzle. For it is utterly impossible, as Socrates himself admits, to produce "conviction" (πειθώ) on the basis of a systematic art, if the person who knows the truth about things understands nothing about rhetoric (260d3-7). This means, not only that the speaker, who wants to produce good and noble discourses, needs to know the truth about things, but also that the person who in fact knows the truth needs to know the art of rhetoric as well. In other words, a good orator must possess the truth about things, and this means also the truth about rhetoric. This is the reason why Socrates emphasizes the idea of exposing the rational force of the λόγοι "in the courts of law" (ἐν δικαστηρίοις, 261a8), "in ordinary life" (ἐν ἰδίοις, 261a9) or "in things of minor as well as of great importance" (ἐν σμικροῖς τε καὶ μεγάλοις, 261a9). He is keenly interested in acquiring information about the success of powerful speakers. How does Socrates reveal the rhetorical power of the λόγοι?

With this question we come to our second point, which concerns Zeno's rhetorical know-how. Keeping in mind the important role of the right ψυχαγωγία, Socrates examines the specific tasks and actions of the protagonists in the main state institutions by asking his interlocutor whether or not it is true that, e.g., the "adversaries" (ἀντίδικοι, 261c5) in the law courts "contradict each other" (ἀντιλέγουσιν, 261c5) about what is "just" (δίκαιον) and "unjust" (ἄδικον). Phaedrus agrees to this. To this evidence, Socrates adds that when an adversary in a lawsuit argues "artfully" (τέχνῃ, 261e10) in favour of one or another position, he "will make" (ποιήσει) the same thing "appear" (φανῆναι) to the same audience just and unjust, as he pleases (261c10-d1). The same rhetorical practice can be observed "in popular assemblies" (ἐν δημηγορίᾳ, 261d3), Socrates adds, where the city approves "the same law at one time to be good, at another again just the opposite" (τὰ αὐτὰ τοτὲ μὲν ἀγαθά, τοτὲ δ' αὖ τἀναντία, 261d3-4). Yet, if rhetoric has a central role to play in the law courts and assemblies, is it a surprise that it must also have left its mark on the field of philosophy? An equivalent discourse structure, similar to the artful reasoning of adversaries in the law courts, is actually found in Zeno's philosophy, as Socrates points out (261d6-8): "Don't we know that the Eleatic Palamedes speaks so artfully that to his audience the same things *appear* [*φαίνεσθαι*] to be similar and dissimilar both one and many, and again both at rest and moved?"

[22] Psychagogy as a rhetorical practice had its established place in sophistry. It is Gorgias' achievement to have perceived the emotional power of the *logos* that produces certain desired results. His famous definition of the rhetoric as "craftsman of persuasion" (πειθοῦς δημιουργός) indicates the enigmatic relation between a speech and its impact on the motivation of action. For more information about Gorgias and psychagogy see SEGAL, C.P.: *Gorgias and the Psychology of the Logos*, in: HSCP 66 (1962), 99–155; ASMIS, E.: *'Psychagogia' in Plato's 'Phaedrus'*, in: IllinClSt 11 (1986), 153–172 and HEITSCH, E.: *Argumentation und Psychagogie. Zu einem Argumentationstrick des Platonischen Sokrates*, in: Ph. 138 (1994), 219–234.

This being so, the rhetorical practice in Zeno's philosophy calls for much further research as it implies at least two important aspects: the appearance of things and opposites.

(i) The Appearance of Things

To begin with the first factor, we already saw that Socrates attributes to Zeno the thesis that denies the existence of many things on the basis of a contradictory consequence: if many things exist, "they must *be* both like and unlike" (δεῖ αὐτὰ ὅμοιά τε *εἶναι* καὶ ἀνόμοια, *Parm.* 127e2), but this is impossible, as one and the same thing can never have two opposite attributes. Compared to what Socrates says about Zeno in the *Phaedrus* (see above), the argument seems to be quite different. From a critical point of view, it is in fact not the same to assume a. 'the being of things' and b. 'the appearance of things', given that 'being' means something different than 'appearing', both for Plato and the Eleatics. Hence, if the historical Zeno maintained position a, as the *Parmenides* suggests, why then does Plato attribute to him position b in the *Phaedrus*? The answer to this question remains uncertain. What seems to be more relevant, however, is that the Eleatic Palamedes has various roles in both dialogues. While Zeno is portrayed in the *Parmenides* as a talented thinker, whose intention is to defend his teacher against critical voices, his guest role in the *Phaedrus* consists in showing an incomparable mastery of "the art of making contradictory statements" (ἡ ἀντιλογική), by being able not only to assimilate all sort of things into anything whatsoever, but also to bring to light the same practice in those who try to hide it (261d10-e4). In opposition to the *Parmenides*, the *Phaedrus* underlines the negative side of Zeno's rhetorical capacities, which leads to the unsatisfactory result of generating "deception" (ἀπάτη, 261e6). For, the one who can argue on opposite sides will not teach his audience what a thing actually is, but rather deceive him by leaving the truth about things in abeyance. This might be the reason why Zeno's position in the *Phaedrus* is not to talk about things *being* but only *appearing* similar or dissimilar.

(ii) Opposites

Regarding the second factor, namely opposites, Zeno's rhetorical ability should not simply be reduced to a social technique of cunning persuasion or of speaking in an elegant way in the interest of enchanting his audience, although the *Phaedrus* seems to suggest this. For the relevant question in the present context is not so much whether he can deceive his listeners but rather what his *techne* of his persuasion consists in. In the case of the

sophist Gorgias of Leontini[23] we can say that the force of his *logoi* works directly upon the *psyche*. The *dynamis* of his persuasive words form, model and manipulate the soul like a powerful drug, one that markedly increases attention, but weakens the power of judgment. Segal summarises Gorgias' rhetorical art as follows: "Thus the *techne* of Gorgias rests upon a 'psychological' foundation: it is at least assumed that the psyche has an independent life and area of activity of which the rhetor must learn and which to some extent he must be able to control."[24] In other words, the more Gorgias knows how to influence his listeners' psychological states, the less likely it is that the audience will be able to resist his words. How does the situation present itself in the discourse of our character? What is the *techne* of Zeno's *logoi*?

We saw before that Zeno can make things appear similar and dissimilar without showing the real nature or truth of the subject of argumentation. That this way of arguing leads necessarily to deception comes as no surprise. But it also represents a challenge for critical philosophical voices, even though, at the wider institutional level, conflicting statements were nothing unusual. On the contrary, one of the most significant features of rhetorical practice within different institutional bodies was the interplay of opposites. In the context of the law courts and popular assemblies, which are used as examples in the *Phaedrus*, it is the contrast between the two juridical notions "just" (δίκαιον) and "unjust" (ἄδικον) or the ethical "good" (ἀγαθόν) and bad that is brought into play at relevant points throughout the process of decision-making. In the case of Eleatic philosophy, Zeno behaves in a similar way towards his opponents, although the outcome is far more serious. Socrates lists the following pairs of opposites: "similar" (ὅμοια) and "dissimilar" (ἀνόμοια), "one" (ἕν) and "many" (πολλά), "at rest" (μένοντά) and "in motion" (φερόμενα) (261d6-8). Instead of discussing the last two pairs of opposites 'one and many', 'at rest and in motion, he points out that it is especially the usage of the opposition between ὅμοια and ἀνόμοια that displays Zeno's "art of making contradictory statements" (ἀντιλογική, 261d10). For, this way of disputing is not only performed in law courts and popular assemblies, but governs "as it seems" (ὡς ἔοικε) "all speaking" (πάντα τὰ λεγόμενα, 261e1). And this is the crux of the matter: the decisive factor in determining whether and to what extent Plato takes Zeno to be *the* orator is above all his vertiginous ἀντιλογική which can be used in any imaginable field of application. Whoever wants to practice rhetoric in its most effective way cannot ignore the Eleatic power of speaking. To say it more pointedly: Zeno's rhetorical *techne* consist in producing deception or confusion about the truth of things by "making anything

[23] The succeeding considerations about Gorgias' *techne* follow the very useful article of SEGAL: *Gorgias and the Psychagogy of the Logos*.

[24] SEGAL: *Gorgias and the Psychagogy of the Logos*, 105-106.

similar to anything, concerning things that can be made so and people in front of whom it can be done" (261e3-4).

4. Aristotle's Zeno in the *Physics*: The Paradoxes of Motion

Let us now consider Aristotle's report concerning the Zenonian paradoxes of motion in the *Physics*. For this purpose, not all the reported paradoxes of motion will be considered but only the following three: a. 'The dichotomy argument', b. 'The Achilles' and c. 'The Arrow'.

a. 'The dichotomy argument' (Z 9, 239b11-13):

> πρῶτος μὲν ὁ περὶ τοῦ μὴ κινεῖσθαι διὰ τὸ πρότερον εἰς τὸ ἥμισυ δεῖν ἀφικέσθαι τὸ φερόμενον ἢ πρὸς τὸ τέλος. - "The first says that motion is impossible, because an object in motion must reach the half-way point before it gets to the end."[25]

This paradox is known among scholars as 'The Stadium' although Aristotle never mentions a stadium. Rather, he uses the term ἡ διχοτομία whenever he refers to the problem of the division of a length into lesser lengths. It is therefore more correct to speak of 'The dichotomy argument' than 'The Stadium'.

Aristotle relates the first paradox of motion in book Z (VI) of the *Physics*. It can be put as follows. Motion is impossible, because the moving body must arrive at the half-way point before it completes the whole course. Furthermore, before a travelling object can reach the half-way point it must first reach a point halfway between the start and the half-way point. This process can be repeated ad infinitum. The aim is to argue that the object can never move at all, or rather that motion cannot even exist.

Regarding our interpretative intensions, the brief explanation above does not yet include a complete summary of the dichotomy argument, which involves repeated division in two. As a matter of fact, the paradox can be read and understood in many ways. One might, for example, argue against Zeno that motion is possible as it is a well-known phenomenon of our common experience.[26] Yet, if appearances can be deceptive, they cannot prove the existence of motion and we are still left with an unsolved paradox. Aristotle himself develops a different reading. Earlier in the *Physics* (Z 2, 233a21 f.) he gives one refutation[27] of the problem in question. In order to do so, he combines the paradox of motion with another of Zeno's

[25] Translation Lee, Henry D.P.: *Zeno of Elea.* A Text, with Translation and Notes, Cambridge: University Press 1936, 43.

[26] Cf. Simplicius: *On Aristotle's Physics* 1012.22.

[27] As to the question of whether Zeno's paradoxes can be refuted at all cf. e.g. Antonopoulos, C.: *The Tortoise is Faster*, in: SJPh 41 (2003), 491–510 and Ferber, R.: *Zenons Paradoxien der Bewegung*, 5–31 who both answer the question in the negative. A more cautious answer is given by Peijnenburg, J./Atkinson, D.: *Achilles, The Tortoise, and Colliding Balls*, in: HPhQ 25 (2008), 187–201.

argument which he puts in an abstract form: τὸ μὴ ἐνδέχεσθαι τὰ ἄπειρα διελθεῖν ἢ ἅψασθαι τῶν ἀπείρων καθ' ἕκαστον ἐν πεπερασμένῳ χρόνῳ (Z 2, 233a22-23). In this context, Aristotle distinguishes two kinds of infinite sections, an infinitely divisible section on the one hand, and an infinitely extended section on the other. He then continues with his explanation that Zeno was right in arguing against the possibility of arriving at an infinitely extended section, but that he was wrong in assuming that it is impossible to traverse an infinitely divisible section within a finite time.

What is initially striking here is the fact that Aristotle takes Zeno's philosophical problems very seriously. Even before refurbishing the paradoxes of motion he points out that he is willing to solve the puzzlement they generate despite the difficulties (Z 9, 239b10-11). This, in fact, can be understood as an indication that Aristotle takes these paradoxes to be true philosophical problems as opposed to purely rhetorical exercises. On this latter point, we know from Diogenes Laertius (9, 25) that the skeptical philosopher Timon of Phlius, for example, called Zeno "double-tongued" (ἀμφοτερόγλωσσος) because of his tremendous rhetorical abilities. It might be that the reason for this characterization goes back to earlier thinkers like, for example, Plato or others who were all aware of and wrote about Zeno's astuteness. Another possibility could be that Timon, unlike us, was in possession of Zeno's entire works, where the skills in question were reflected and could therefore give such a controversial portrayal. However that may be, Aristotle in his *Physics* focuses on the key issues of the philosophical implications of the dichotomy argument and he makes no hints about any rhetorical stylization.

What further conclusion can be drawn from this summary of the paradox? The debate about the interpretation of Zeno's dichotomy argument and his other paradoxes has a long history, one that has left its mark from antiquity up to recent times. For our purposes, however, it is necessary to take a much broader view by including some of the relevant aspects. Accordingly, only two major topics will be briefly discussed: Zeno's philosophical aims and the existence of motion for Aristotle.

Regarding the first point, it is often argued that Parmenides' poem is the elementary prerequisite for understanding Zeno's goals:[28] if there is just one way of truth where reality or being is one, timeless and unchanging, then nothing else can truly exist. Therefore, any other presuppositions about the world must be false and belong to the way of opinion. Bearing this in mind, Zeno's dichotomy argument can be interpreted as a simple illustration of the impossibility of motion, a phantasm belonging to

[28] Cf. GEMELLI MARCIANO, Maria Laura: *Die Vorsokratiker. Parmenides. Zenon. Empedokles.* Griechisch-lateinisch-deutsch. Auswahl der Fragmente und Zeugnisse. Übersetzung und Erläuterungen, Bd. 2. Düsseldorf: Artemis & Winkler 2009, 123–125; BICKNELL, P.J.: *Zeno's Arguments on Motion*, in: ACl 6 (1963), 81–105.

the world of appearances. As such, our sensory faculties lead us to deceitful conceptions through which we are necessary plunged into absurdity. Hence, the reader must stick to Parmenides' way of truth and refuse to belief in spurious and impossible phenomena.

If this interpretation is correct, then Aristotle's alternative conception of motion must be considered. One of the main reasons why Aristotle argues against the impossibility of motion is the fact that motion is according to him the fundamental phenomenon of nature. Although the science of nature is not the highest science or what Aristotle calls *"first philosophy" (Met.* 1026a27-31*)* it includes almost all there is to know about the world. Consequently, motion is part of our world and its analysis is not merely a pseudo-science, but rather a 'second philosophy' with its own scientific value.

b. 'The Achilles' (Z 9, 239b14-18):

> δεύτερος δ' ὁ καλούμενος Ἀχιλλεύς· ἔστι δ' οὗτος, ὅτι τὸ βραδύτατον οὐδέποτε καταληφθήσεται θέον ὑπὸ τοῦ ταχίστου· ἔμπροσθεν γὰρ ἀναγκαῖον ἐλθεῖν τὸ διῶκον ὅθεν ὥρμεσεν τὸ φεῦγον, ὥστε ἀεί τι προέχειν ἀναγκαῖον τὸ βραδύτερον. – "The second is the so-called Achilles. This is that the slowest runner will never be overtaken by the swiftest, since the pursuer must first reach the point from which the pursued started, and so the slower must always be ahead."[29]

This argument is called 'The Achilles', sometimes even 'Achilles and the Tortoise' although the tortoise does not appear in the text. Instead, it should be noted that Achilles represents "the quickest" (τὸ τάχιστον) runner, while the tortoise correspondingly stands for "the slowest" (τὸ βραδύτατον). As Aristotle points out, the second paradox turns on much the same considerations as the first. It depends on a process of division but differs from the previous argument in that the successive lengths are not divided into halves (Z 9, 239b18-20). Or as Lee puts it: "The successive subdivisions stand to each other not in the ration of 1/2 but of tortoise speed/Achilles' speed."[30]

What type of puzzles are we dealing with here? One aspect of the paradox can be understood as follows: suppose Achilles, a fast runner, is chasing a slow competitor, for instance a tortoise. The starting conditions though are not the same, as the tortoise begins to crawl a little further forward. The chase begins and every time Achilles reaches the position where the tortoise was, the tortoise has already moved a little bit further. While Achilles is covering the new distance, the tortoise crawls still farther to a new position, maintaining a small but stable lead. And so by covering distances that decrease in a given proportion ad infinitum – the quicker runner must first run one half, then an additional one fourth, then an ad-

[29] Translation LEE: *Zeno of Elea*, 51.

[30] LEE: *Zeno of Elea*, 76.

ditional one-eighth, etc. –, the slowest runner can never be overtaken by the quickest. For, although Achilles can narrow the gap between him and his competitor, he can never actually overtake the tortoise at any point.

Is 'The Achilles' a new challenge to the existence of motion? We saw in the previous discussion that the dichotomy argument serves as a starting point for a negative evaluation of the existence of motion on the basis that a moving body can never even start moving. 'The Achilles' instead intends to show that a faster body can never overtake a slower one that has a small lead, for the faster runner, Achilles, must traverse an infinite series of lengths before he reaches and overtakes the tortoise. With this in mind, we can sum up the argument as follows: if motion or change is not possible, then change of position exemplified in the second paradox must equally be impossible.[31] Aristotle himself disagrees with this result, as he strongly believes that Zeno's reasoning is specious and therefore should not be left unchallenged. His refutation, similarly to the rejection of the first paradox, consists in arguing that the quickest runner can indeed overrun the slowest provided that the swiftest has to cover finite as opposed to infinite distance. Now, if the difference between the first and second argument is minor and simply relies on the fact that in 'The Achilles' the successively given lengths are not divided into halves, but that the position of the tortoise, which marks the finish, is perpetually receding, then the second paradox cannot be a new challenge for the existence of motion. Or as Barnes puts it: "The Achilles paradox is merely a twopenny coloured version of the Dichotomy."[32] The argument refers to a different phenomenon but relies on the same presupposition that a moving body cannot move ('The dichotomy argument'), or rather that a moving body can never reach its goal ('The Achilles').

Another way of showing the relevant dependence of the first argument on the second is the following: The idea that motion is impossible reduces any other phenomena, which depend upon it, to an inexistent feature of the world. In the case of the second paradox, the simple assumption of two different runners, one being the swiftest, the other the slowest, is intended to make the reader believe that the phenomenological world is illusory. For, if we examine the external preconditions of the scenario given above, the slowest courser has a small lead over the swiftest, we shall see at once that it has at least one illusory peculiarity. For example, how can we speak about the quickest or the slowest courses if the existence of different velo-

[31] . This conclusion goes back to Bicknell's interpretation (*Zeno's Arguments on Motion*, 98) of 'The Achilles'.

[32] BARNES, Jonathan: *The Presocratic Philosophers*, London: Routledge & Kegan Paul 1982, 274. Compare also KIRK, Geoffrey Stephen/RAVEN, John Earle/SCHOFIELD, Malcolm (eds.): *The Presocratic Philosophers. A Critical History with a Selection of Texts*. Second Edition. Cambridge: University Press 1995, 272: "As Aristotle comments (239b24–5), the Achilles is simply a theatrical version of the Stadium."

cities implies the existence of motion? Even if in a work such as the *Physics*, which avoids more specific references, Aristotle almost always puts Zeno's arguments in an abstract form, we are sure that we are dealing with more than one misleading description. For not only the conclusion of the second paradox is illusory, but the setting of the argument as well.

c. 'The Arrow' (Z 9, 239b30-33):

> τρίτος δ' ὁ νῦν ῥηθείς, ὅτι ἡ ὀϊστὸς φερομένη ἕστηκεν. συμβαίνει δὲ παρὰ τὸ λαμβάνειν τὸν χρόνον συγκεῖσθαι ἐκ τῶν νῦν· μὴ διδομένου γὰρ τούτου οὐκ ἔσται ὁ συλλογισμός. – "The third is just given above, that the flying arrow is at rest. This conclusion follows from the assumption that time is composed of instants; for if this is not granted the conclusion cannot be inferred."[33]

(Z 9, 239b5-9):

> Ζήνων δὲ παραλογίζεται· εἰ γὰρ αἰεί, φησίν, ἠρεμεῖ πᾶν [ἢ κινεῖται] ὅταν ᾖ κατὰ τὸ ἴσον, ἔστιν δ' αἰεὶ τὸ φερόμενον ἐν τῷ νῦν, ἀκίνητον τὴν φερομένην εἶναι ὀϊστόν. τοῦτο δ' ἐστὶ ψεῦδος· οὐ γὰρ σύγκειται ὁ χρόνος ἐκ τῶν νῦν τῶν ἀδιαιρέτων, ὥσπερ οὐδ' ἄλλο μέγεθος οὐδέν. – "Zeno reasons fallaciously for he says that if everything is at rest whenever it occupies a length equal to its own length, *and if the moving body is always in a position equal to its own length at the instant*, then the moving arrow is not in motion. But this is false. For time is not made up of indivisible instants, any more than any other magnitude is made up of indivisibles."[34]

The third paradox is difficult to understand, not only because the details of the argument are uncertain, but also because Aristotle's summary is very condensed. Despite these constraints, the argument can be paraphrased as follows: suppose someone is observing a moving object, for instance a flying arrow. To say anything at all about the object in question, we must, according to Zeno, take for granted that everybody is either at rest or in motion. If a thing is in motion, it must be in a different mode of existence than when it is at rest. Now, if Zeno defines an unmoving object as occupying a space equal to itself, and a moving object as occupying a space equal to itself at any given instant, then the flying arrow is motionless. This paradoxical situation relies upon the following two assumptions: first,

33 Translation LEE: *Zeno of Elea*, 53.

34 Translation BICKNELL: *Zeno's Arguments on Motion*, 99. Note that Bicknell as well as other interpreters point out that this passage of Aristotle's *Physics* is corrupt and therefore causes translation difficulties. A first obstacle is the word ἢ κινεῖται after πᾶν which makes the text difficult to translate. As Bicknell continues to explain, authors like Ross and Zeller simply excise it from the text as a gloss. A second textual difficulty goes back to the meaning of κατὰ τὸ ἴσον that Bicknell translates twice as 'equal to its own length', although in the Greek text it only appears once after ὅταν ᾖ but not before ἐν τῷ νῦν. This is why he italicises the crucial sentence where the missing κατὰ τὸ ἴσον still appear in the translation. In contrast, Lear translates κατὰ τὸ ἴσον as 'is against what is equal' by pointing out that "the Greeks notoriously had difficulty working out a concept of space [...]", LEAR, J.: *A Note on Zeno's Arrow*, in: Phron. 26 (1981), 91.

time is defined as being composed of indivisible instants; second, at any given instant a moving body is said to occupy a given space. From these two presuppositions it follows that whenever we observe a moving arrow occupying a given space, we observe it during an instant as being at rest, and, since there is no other time apart from the instants that make up time, the arrow never moves. Therefore, the basic challenge of the third paradox seems to be the idea that motion must occur in the present if it can exist at all.[35]

Regarding problems related to the notion of presence or, more generally, the notion of time, it is notorious that Aristotle expresses his refutation of Zeno's third argument by stating that the definition of "time being composed of indivisible instants" (ὁ χρόνος ἐκ τῶν νῦν τῶν ἀδιαιρέτων) is fallacious. Therefore, we have to retain that the object of the argument is not whether to accept Zeno's conclusion, but rather to point out the need for a different and more accurate account of the notion of time, which Aristotle develops in the fourth book of his *Physics*. When all the available evidence for the existence of movement and its relation to time or duration are carefully analyzed, it seems almost certain that time or duration cannot be illusory, for we are conscious of duration and we are sure that moving objects can be observed.

What credibility can Aristotle's report have if we bear in mind the textual difficulties? First, we are justified in saying that, though Zeno makes use of the argument of the alleged impossibility of the arrow moving, there is no clear passages in the *Physics* in which time defined as indivisible instants needs to be understood as a reference to Zeno's own conviction.[36] Taylor, for example, claims that Zeno's intention is not to make the reader believe that time is constructed of instants. Rather, his aim is to argue against his adversaries by using their own fallacious premises: "Zeno thus intends to *refute* the assumption which, as Aristotle said, is the presupposition of the argument, that 'time is constructed of instants'. This is not his own 'hypothesis', but that of the opponent. He, no doubt, held himself, like Parmenides in his poem, that duration, as well as volume, is really not divisible at all."[37] With regard to Taylor's argument, it can be assumed that Aristotle's concerns are not historical but rather philosophical. Instead of paying attention to an historically correct report of Zeno's own philosophical aims, he is keenly interested in refuting the conclusion of the "Arrow"

35 Another interpretation is given by OSBORNE, Catherine: *Comment mesurer le mouvement dans le vide? Quelques remarques sur deux paradoxes de Zénon d'Élée*, in: MOREL, Pierre-Marie/PRADEAU, Jean-François (eds.): *Les anciens savants*. Strasbourg: Université Marc Bloch 2001, 157–165.

36 Cf. BICKNELL: *Zeno's Arguments on Motion*, 100 who refers to BOOTH, N.B.: *Zeno's paradoxes*, in: JHS 77 (1957), 187–201.

37 TAYLOR, Alfred Edward: *The 'Parmenides' of Plato*. Translated into English with Introduction and Appendixes, Oxford: Clarendon Press 1934, 120.

argument. Hence, whether or not Zeno himself held that time consist of indivisible instants remains unanswered according to Aristotle's testimony.

5. Two Different Exegeses of Zeno's Philosophy?

As a final overview of Plato's and Aristotle's exegesis of Zeno's philosophy, let it be carefully noted what this comparative study shows. At first glance, it does not explain whether Zeno's antinomies about unity and plurality and paradoxes of movement were based on a common methodology and systematic groundwork, but it proves that Zeno's arguments represent a real challenge for Plato and Aristotle.

Plato sets out the argument (1) that the portrayal of Zeno in the *Phaedrus* as possessing tremendous rhetorical skills is an incomplete one and is open to the objection that it leads to a distorted perception, and (2) that it has the still graver fault of leading to a pure ἀντιλογική, an art of making contradictory statements without revealing the truth about things. It is certainly with reference to the *Parmenides* that Plato's interpretation of Zeno's philosophy becomes subtler because of the idea (3) that Zeno's philosophical abilities serve a certain purpose, namely to help his master Parmenides by arguing against his opponents. Zeno fulfills this task not by operating with paradoxes of motion, which Plato does not discuss explicitly, but by employing an antinomy between unity and plurality and its conflicting consequences.

Aristotle, unlike Plato, gives more importance to the paradoxes of motion, which he discusses in his *Physics*. With respect to Zeno's portrayal in general and the challenge of the paradoxes of motion in particular, Aristotle argues (1) that Zeno's arguments against motion must be taken seriously because they should be seen primarily as philosophical dilemmas, and not as rhetorical exercises. The main reason for this goes back to his general objective in the *Physics*, which is to show that motion is not an illusory experience but a fundamental phenomenon of the world. Thus, Aristotle can further argue (2) that the notion of motion must be reevaluated and interwoven differently with other phenomena that relate to it, as e.g. time.

The combination of these two apparently different exegeses of Zeno's writings must not yet be judged pointless or misleading. For, the main question is not whether Zeno developed two different philosophies, but rather why Plato, in the *Parmenides*, does not mention Zeno's famous paradoxes of motion. Even if there are possible answers to this question, any answer would remain highly speculative, as Rapp points out in his presen-

tation of Zeno's life and works.[38] Against Rapp, I think that possible answers can provide stimulation for a plausible interpretation of Zeno's philosophy and, as a further consequence, explain, for example, why Zeno's antinomy of unity and plurality is explicitly incorporated into the *Parmenides* but not the paradoxes of motion. One probable explanation of Plato's disregard for Zeno's paradoxes of motion is the following: in the first place, the *Parmenides* is not a dialogue about physical phenomena but rather about metaphysical concerns. Yet, motion as such plays a crucial role for Plato, since he talks about it extensively in the second part of his dialogue. However, the fact that he treats Parmenides and Zeno's notion of unity and plurality before writing about motion should catch one's reflection about the primordiality of metaphysical subject-matters with respect to physical phenomena. Indeed, Plato seems to stress the necessity of investigating metaphysical theories and developing new methods of examination and testing before concentrating on specific physical issues such as motion. Aristotle, by contrast, does pay attention to Zeno's paradoxes of motion because his concern in the *Physics* is to challenge any theory of motion that stands in opposition to his own account. The philosophical background of his work is the idea that motion is the fundamental phenomenon of nature which needs to be defended against all negative valuation. Although his testimony cannot be regarded as completely reliable, Aristotle's astuteness in picking a subject of paramount importance and his approaching Zeno's work in a spirit of scientific inquiry deserves high attention.

Finally, consideration of the two different exegeses on Zeno's philosophy makes it plausible that the paradoxes of motion may not have been in disagreement with the antinomies about unity and plurality. These exegeses simply belong to two different philosophical disciplines: the antinomy about unity and plurality exemplifies a metaphysical concern, whereas the paradoxes of movement belong to a discussion about the physical world.

[38] RAPP, Christof: *Zenon*, in: FLASHAR, Hellmut/BREMER, Dieter/RECHENAUER, Georg (eds.): *Ueberweg. Grundriss der Geschichte der Philosophie. Philosophie der Antike. Frühgriechische Philosophie*, Bd. 1/II. Basel: Schwabe Verlag 2013, 535.

Abstract
*The purpose of this research is to examine two apparently different interpretations of Zeno's philosophy and to understand why the appraisal of Zeno's arguments may take different forms. Unlike Aristotle, whose focus is on Zeno's paradoxes of movement as a background for his study of the physical world (*Physics*), Plato's aim is to alert the reader of the destructive consequences of the rhetorical technique of Zeno (*Phaedrus*). In addition, the discussion of Zeno's antinomy of unity and plurality, but not the paradoxes of motion, supports the idea that, in the* Parmenides*, metaphysical considerations prevail over the debate about physical phenomena.*