

# Summary of Chapter Two of Aristotle's First Book on Physics

By Timo Schmitz, *Philosopher*

In Chapter 1, Aristotle made clear that knowledge means knowing what is inside. To know something, one must know what it is made of – the empirical contact with the thing as such is not enough to talk about knowing but one must grasp that-which-is-being in itself. Thus, Aristotle arises the question of the first element. What is the first element, the first cause? To find it, he suggests the deductive method.

What is deduction? Deduction means going from the whole thing into the small details. It means analysis through a dihairetic method, in which a thing is split into its elements, the being is separated in that-which-is-the-being. A common deductive method for proofs is the syllogism in its basic form MaP/ SaM/ SaP (see Schmitz, Timo: The basic form of a syllogism, self-published online article, 3 April 2017). If M is P and S is M, then S must be P as well. Or in other words, if S is part of M and M is part of P, then S must be part of P, too, since all M are P and therefore all S must fulfill this as well, otherwise we have a contradiction and the argument is wrong.

Aristotle already mentioned by side in Chapter 1, that there might be one or many, however, now he puts it in the spot. There either must be one or many. There is no alternative in between therefore tertium non datur. It is either one, or not one, and if it is not one, then it must be many. We can talk of a complete disjunction  $A \vee B$  (for the junctions see Schmitz, Timo: The junction of two propositions and their validity, self-published online article, 6 April 2017). If there is only one principle, then it must either be without processes or with processes. This again is a complete disjunction of the form  $A \vee B$ . The one without processes was claimed by Parmenides and Melissos, the other one was stated by Ionic Physikoi, such as Empedocles, Anaxagoras, Leukippos (Leucippus) and Democrit (see also Aristoteles: Physikvorlesung, übers. v. Hans Wagner, in: Aristoteles, Werke Bd. 11, hrsg. v. Hellmut Flashar, Berlin: Akademie-Verlag, 1983, p. 396).

There are either one principle (A) or many (B), and if A is the case it is either without processes (a) or with processes (b). Therefore, if A then a or b! If A and a, then Parmenides and Melissos were right, if A and b then the Ionic Physikoi were right. If there is not one principle, but many principles (which equals a diversification) then it is either limited ( $\pi\acute{\epsilon}\rho\alpha\varsigma$ )

or unlimited ( $\alpha\pi\epsilon\iota\rho\nu$  = that which is without a limit). So if B, then either c or d! This again is a complete disjunction. All in all we can say we have the following possibilities:  $(a \vee b) \vee (c \vee d)$ , which equals  $A \vee B$ . If c is the case then there must be more than one first principle, but not endlessly as much, it means more as one and less than unlimited. If d is the case then they are either of an identic genos, an unidentic genos; or they are in different or even opposite enantia. As Wagner (1983, p. 396) points out, Democritus saw the world as a pattern of an unlimited amount of qualitatively-contently the same atoms in an empty space. This means that they are always the same, but just differ in form and place. The identic genos here means that all of them have the same scheme, and unidentic genos means that their scheme is not identical. The latter one was introduced by Anaxagoras who says that the principles are of different quality.

So let’s put the options together:

$A \vee B$  – one principle or many principles

If A then  $(a \vee b)$  – without processes or with processes

If B then  $(c \vee d)$  – limited or unlimited amount

At first, Aristotle smashes the option of one principle which is without processes, as it means that the whole world is made out of one principle which can’t move. One who takes this thesis cannot get the ground of anything as it means that things are not separable. However, as things are able to change their forms, this option is already ruled out. This means that the thesis of Parmenides and Mellisos does not only prohibit the research on principles, but at the same time abolishes nature. Mellisos and Parmenides, thus – according to Aristotle – deny the existence of a nature and of principles, as everything is a non-moving oneness. The nature could not only move forward, but also not exist!

As next Aristotle rules out the possibility that everything might be one at all. He says that talking about the first cause as one is as usefull as chitchat. The reason why it cannot be one is the basic idea that it needs at least a ‘twoness’ to differ among things. Even further, the idea of a oneness has an eristic character as of Arsitotle. An eristic charcter means that one forms the thesis only to argue, not because one really tries to prove something (see <https://www.britannica.com/topic/eristic>, retrieved on 5 August 2017).

As a result, we can say that everything must be with processes as we can see empirically. Here, Aristotle leaves the deductive method for a second, but tries to prove his argument through an induction (epagogé). He says, it must be with processes, because our experience

teaches us that the world is always moving, so any idea which rejects it, already cannot be true. The proof for this is the fact that the world is always changing, for instance during the seasons and that plants and trees are alive and develop.

However, even though Aristotle already rejected the ideas of Parmenides and Melissos, he wants to further take a look at them.

As the term that-which-is-being is too broad one has to ask whether 'the being in everything' such as 'the being in everything is one' shall be understood as (C) substance, (D) quantity, or (E) quality. If C is the case, then one has to ask whether it is one substance (e) – such as a thing itself; one quality (f) – such as a characteristic of something. However, Aristotle thinks that nothing of it makes sense. If  $(C \wedge D \wedge E)$  is true, then we already have a many. However, if it is either  $D \vee E$ , but no C, then one just has non-sense. Thus, one needs substance, so quality and quantity cannot stand for themselves. This means, **one needs substance as everything else just can be understood as predicate of it**. Melissos further states the unlimitedness of that-which-is-being and thus it must be quantity. If it is however, just quantity then what is it made of – therefore, there must be a second thing which actually is the first thing (the substance), however, at this point, it cannot be one anymore. If it is just a quality, we already have two problems: a quality is something like warm and cold, and as they can change, they show the existence of processes, but as something cannot be warm or cold for itself but need a substance where it can be referred to, it cannot be one alone anymore. If something is unlimited in space and time, then the substance can't stand for itself anymore, since quantity is a part of unlimitedness, and thus one has 'two' again. However, if only substance is existent, then it can neither be unlimited, nor it has a size, nor any other characteristic. It should be mentioned by the way that substance, quantity and quality are the first three categories of Aristotle, the first defines the being, the second defines 'how much', the third defines 'how in itself'. Therefore, Aristotle ruled out the option of both, Parmenides and Melissos, as one has at least two that-which-is-being.

Another problem is the broadness of the word 'the one'. Therefore, Aristotle asks for the category of the kind of an object, which is the eighth category, which is simply called 'Have' (cp. Weinrich, Harald: *Über das Haben – 33 Ansichten*, Frankfurt am Main: C.H. Beck, 2012). Aristotle shows, that there are three usages of the one, or the thing which it has – unity. It is (1) a continuity, (2) an indivisibility, and (3) a unity in its identity of being. The unity of continuity is not possible, since a continuity is always separable in parts, and thus in many. If 'the one' was a unity in the sense of indivisibility, then neither quantity nor quality would be possible. As a result it could neither be unlimited, nor limited, since something which limits

already is a separation. Even further, since the existence of quality and quantity were already shown, the unity of indivisibility as one is to be ruled out. If there was a unity in identity of being, then being good and not-being good are the same, since both bear the same identity. This goes back to the eighth category, where one thing must contain the thing of what is above, and thus a human-being must be a living being. If human-being and a living being is the same, then all living beings are the same and there is no difference between a human-being and a horse.

As a result, quantity and quality would be the same. The necessity of separating quantity and quality as own categories was shown already. Even further, Aristotle shows that other philosophers tried a lot to avoid that the one goes together to the many, by just avoiding that the one hits the many, but despite linguistic plays, the one as the one could never be found, as he suggests, since the attribution of substance to a quantity or quality already shows the existence of many, and rules out one. The problem therefore is that one thing always is part of more things and thus can’t be one, but can’t there be a unity and a many at the same time? One thing is one entity, it can be grasped as one, though at the same time it is many that joined it to the one!

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