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1. Introduction

Besides the discussion on time in book IV 10-14 of the *Physics* (in this essay this discussion will be called as “the argumentation of time”), Aristotle often discusses on time in his *Corpus*. For example, we can regard book VI as a part of his argumentation of time because the book, containing discussion on continuity of magnitude, change, and time, and introducing and solving the paradox of Zeno, clearly offers Aristotelian views on time. No doubt it is necessary to refer the discussion in book VI when we read the argumentation of time in book IV.

Generally, we may expect the philosophical consideration of time more than the argumentation of time in *Physics*. Concept or idea of time and temporality is connected with vast issues—concept of change, that of perception and sensation, that of aspect and modality, and “living” in the existential sense.¹ But in order to understand his philosophical discussion, it seems unnecessary and needless to refer to the argumentation of time in *Physics*, since it is unobvious how the argumentation contributes to constructing his philosophical system. While Aristotle asks, in the theory of time, whether time exists or not, and what is the nature of time,² and offers “number of change with respect to the before and after” as the definition of time, he seldom refers to this definition except for the argumentation of time.³

This essay does not aim to clarify the contribution of the argumentation of time to Aristotle’s whole system of philosophy, but aims to offer the reason why the contribution seems so obscure. Examining the contribution will turn our attention to the term τὸ νῦν, the now or present. But the term remains unclear. This essay reexamines and tries to elucidate clear its ontological status from the perspective of spatialization of time, and potentiality and actuality.

2. Aristotelian Category and the Argumentation of Time

In the claim “being (ὄν) is said in several ways,” which is one of the central Aristotelian doctrine which we often find in the *Corpus*, we can find an idea of time or temporality. Consider the concept of actuality and potentiality; for Aristotle, they have no definition but should be understood by analogy,⁴ so that we have to explain by example such as “seeds are in potentiality, trees are in actuality,” or “seeds are actually seeds, but potentially trees.” In this sort of proposition we can find an idea of temporality; it is easy to rephrase “seeds are actually seeds, but potentially trees” as “seeds are seeds in present, but will be trees in future.” Further, the distinction *per se* (καθ’ αὐτὸ) and *per accidens* (κατὰ συμβεβηκός) seems to implicate temporality. Socrates is dark-skinned *per accidens* but not *per*

se, because he remains Socrates himself even if he comes to be pale in the future or he was once pale in the past.

An idea of time or temporality is obvious in the term ποτέ, “when” or “at some time,” one of the Aristotelian categories.⁵ But Aristotle gives no explanation of this category in *Categories* and the book Δ of *Metaphysics*. It is the same in the case of the category of πού, “where” or “at some place.” We can expect a detailed explanation of the category of πού in his other works, especially book IV 1-5 of *Physics*, where he discusses place (τόπος). Actually, the definition of place, “the first unchangeable limit of that which surrounds,” seems to offer a strict answer to the question “where X is.”⁶ If so, the discussion on place in the *Physics* complements the Aristotelian concept of category.

We may also expect the same role for book IV 10-14 of *Physics* in the case of “when”; the proper answer to the question “when X is” is given when we grasp the definition of time. Let us confirm from the reference to “when” or “at some time” in the argumentation of time.

‘At the same time’ is a time defined in relation to the now: e.g. ‘Troy fell at some time’, ‘the deluge will occur at some time’—the time must be finite in relation to the now. Therefore there will be a certain quantity of time from now to that, and there was [from this] to the past one. (*Phys.* IV 13, 222a24-29)⁷

Here Aristotle explains “at the same time” as a kind of time connected with the “now.” Though it is not sufficiently clear what he wants to affirm, it can be paraphrased as follows. When we asked “when Troy fell,” we can reply “it was 3,000 years ago.” Similarly, asked “when the deluge will occur,” we can say “it will be 100 days later.” Thus, “3,000 years” and “100 days” are examples of time, which is characterized as number of change. An appropriate reply to the “when” questions are given by applying time from the now or the present as the origin.⁸

If this interpretation is correct, the argumentation of time in *Physics* suggests how we are to reply to the “when” question, and therefore provides an understanding of the Aristotelian categories.

3. Present and Now

Even if the argumentation of time contributes to his philosophy as a whole in the way mentioned above, there remains an obscurity regarding the now or the present. As a matter of fact, Aristotle scarcely gives much explanation. The now or the present must be the core of philosophy on time, if we stand on the A-series of McTaggart and regard the past, the present, and the future as an essential aspect of time. Aristotle, however, does not leave much consideration for them. Further, he never asks what the past is, what the present is, and what the future is. His opinion on the present is fragmental and even problematic because the term τὸ νῦν needs interpretation. (Hereafter “the now” is used for the expression τὸ νῦν). But if philosophy of time needs the understanding of the present, we should clarify how Aristotle grasps the present by looking at his position in *Physics*.

It is well known that Aristotle uses the now in two ways. The first is “the present,” which is located in time series. The second is “the instant.” In the second meaning, it stands for “the now in past,” “the coming now,” and so on. Although Aristotle himself emphasizes that the first is essential,⁹ some scholars have pointed out the first derived from the second.¹⁰ Then, how to connect these two meanings?

To begin with, let us review two characteristics which these two meanings share.

a) Instantness

Aristotle refuses that there exist minimal and atomistic parts which are divisible and constitute time. He gives proof in the book VI 2 of *Physics*.¹¹ In his proof, the now, which is analogous to geometrical point but non-temporal, means “the instant.” He shows another proof in book VI 3 of *Physics* that the present is instantaneous.¹² The proof, depending on the divisibility of time, shows the present has retrenchability (named by Owen);¹³ if the present were divisible, we divide it by both sides of the past and the future.¹⁴

Perhaps we can see that the reason why the present is instantaneous is not simple, that “the instant” and “the present” shares the name of τὸ νῦν. It is proven by retrenchability of the idea of the present based on the continuity of time derived from continuity of geometrical line.

b) Analogy to change

As mentioned above, Aristotle never seeks understanding of the past itself, the present itself, the future itself. What is more, he seldom speaks of the past and the future with the concept of events.¹⁵ His argumentation of time is mostly based on analogical relationship, correspondence of magnitude, change, and time, and that of point, changing thing, and the now. For example, when he is introducing the definition of time, he explains the continuity of time by pointing out that change *follows* (ἀκολουθεῖν) magnitude, and time *follows* change.¹⁶ Also, the analogical relationship is the reason of the ontological interdependency of time and the now; time does not exist without the now, and the now does not exist without time.¹⁷

Further, Aristotle applies this type of analogical relationship to the case of the now as the present. The application seems important since for him it is the clue to the solution to the paradox of the now, which he introduces in the beginning of the argumentation of time. Roughly speaking, the paradox argues that the present remains one and always differs.¹⁸ He tries to solve the paradox by using the idea of the unity and difference of the moving thing (φερόμενον).¹⁹ The moving thing is, as moving thing (ὁ ποτε ὄν), one and same, but differs in the respect of place; Coriscus is one and same but “Coriscus in the Lyceum” and “Coriscus in the market place” differs, as sophists say. Applying the argument to the case of the present, the present is one and the same, but differs in the same way as “the now when Coriscus is in the Lyceum” and “the now when Coriscus is in the market place” differ. For Aristotle the present differs if we associate it with a status of a certain moving thing, but it remains one and same when we regard it simply as the entity between the past and the present.

From the explanation given above, we can point out the characteristics of Aristotle’s the argumentation of time as follows.

Firstly, Aristotle is one of the pioneers who spatialize time, since he connects line-point and time-the now. If we would treat a geometrical entity such as line and point as the entity which exists in the space, he opens a method of philosophical consideration of time; time, the instant and the present can be represented as spatial entity.

Secondly, some may regard his explanation of the unity and difference of the present as application of Aristotelian homomorphism, especially when they interpret the term ὁ ποτε ὄν as *substratum*.²⁰ This interpretation would lead us to understand that the present which keeps unity is matter, and the

present which always differs is composite of matter and form. But it seems inadequate because he does not assume the present would get any form. It is just that the present does correspond to a status of a certain moving thing or changing thing.

Thirdly, the present, at least for Aristotle, never moves or change. We can imagine, of course, the present moves as a mathematical point moves on a coordinate plane.²¹ However, we should pay much attention to his choices of words; when he discusses the difference of the now, he never uses “to move” and the likes, but “to differ” (ἄλλο καὶ ἄλλο, or ἕτερον καὶ ἕτερον).²²

Fourthly, it is why we can say the present always differs because the corresponding status of a moving thing always differs. If there were no moving or changing thing, and everything remained in the same status, the present would remain one and the same. In order to show there is no time without change, Aristotle introduces an anecdote about heroes who slept in Sardinia. They are not aware of the passing of time when they wake up since, according to Aristotle, they unite the former now and the latter now.²³ It happens because the heroes are not aware of any movement of changing thing.

Fifthly, although Aristotle definitely proceeds his consideration of time by the analogical relationship between magnitude-change-time and point-changing thing-now, in the context where he argues the unity and difference of the present, he might not think there is correspondence between point and the present. Of course, we can regard his examples, “the Lyceum” and “the market place,” as geographical *points*, and we can paraphrase the example as point A and point B. However, it does not like him to argue geometrically, unlike in the book VI of *Physics*. Perhaps we should pay attention to “in” (ἐν) in his expressions. This may remind us of his antecedent argumentation on place in book IV 1-5 of *Physics*. Every changing thing is “in” something. If any points have no extension, it is impossible for any changing thing to exist in any points in spatial sense.

It remains true to say Aristotle grasps the time and the present spatially, but it is a half-truth. There is change between line and time, and a changing thing between point and the now. Change and changing things are not reducible to geometrical entities, as he does not draw them by difference of points.

4. The Present, Intellect, Possibility

In order to illuminate Aristotle’s view of the present, let us ask him the following question.

Does the present exist *actually*?

Apparently, he would say “yes.” We can say this tree is tree actually, since this tree is a tree at the present. One man is actually a French-speaker since the man is talking French now. If the condition for the proposition “S is actually P” to be true is that “S is P at the present,” it seems true that the present exists actually as long as ‘the present is the present in the present’ is true tautologically.

But we need to contemplate. One mild doubt is this. We often use “actually” and “in actual” as the translation of ἐνέργεια and ἐντελέχεια. Following the original meanings, “the present exists actually” seems to mean “the present works,” “the present is in purpose” or “the present is in the goal.” But these sentences are bizarre. Since the present is not a substance or matter, it is a category mistake from Aristotelian viewpoint to predicate “to work.” Further, it is unnatural and a hardly

understandable claim that the present has some goal, and that the present is something completed. Therefore, even if he would approve the claim that the present exists actually, it may be because a certain changing thing, which is actually in a certain status, corresponds to the present. The doubt above suggests us to examine carefully the relationship between the pair terms potentiality and actuality, and time.

Here we consider the division of the past and the future by the present. Obviously agreeing that the present exists in the middle between the past and the future, Aristotle has a strange view of the present dividing the past and the future.

The now [*i.e.* the present] is a link of time, as has been said, for it links together past and future time, and is a limit of time, since it is a beginning of one and an end of another. But this is not manifest, as it is in the case of the point at rest. [The present] divides [time] potentially, and qua such, the present is always different, but qua binding together it is always the same, just as in the case of mathematical lines: [a point is] not always the same point in thought (τῆ νοήσει), for if one divides the line it is different in different cases, but inasmuch as [the point] is one, [the point] is the same everywhere. So too the present is on the one hand a division of time, in potentiality, on the other hand the limit and union of both [times]; the division and the unification are the same thing and in respect of the same thing, but their being is not the same. (*Phys.* IV 13, 222a10-20)

Though this is hard to comprehend, it seems important that the present divides the past and the future *potentially*. The claim eliminates the possibility that the present divides the past and the future *actually*.²⁴

The claim, however, is unconvincing. One can argue that we clearly distinguish between the past and future, so that the present divides them *actually*. If following the advice from Aristotle in *Metaphysics* Θ, we are to grasp the difference between actuality and possibility by analogy,²⁵ we must know the actual division of time. The division by the present must be the most knowable because the present must be the most apparent to us in temporal entity. Nevertheless, if the present never divides time *actually*, it is impossible for us to know what division of time is.

The reason why we may find the claim unconvincing lies in the difficult explanation in the quoted text, which tries to explain the division of time by the present using a geometrical argument as analogy. The explanation perhaps aims to show, like the solution discussed in the previous chapter, the unity and difference of the present.²⁶ The burden of the explanation is that the two roles of the present, namely, dividing the past and the future, and uniting them, are analogical to a geometrical point which divides a line and unites lines. But a recondite assertion by Aristotle is “[a point is] not always the same point in thought, for if one divides the line it is different in different cases, but inasmuch as [the point] is one, [the point] is the same everywhere” (222a16-17).²⁷ Perhaps the meaning seems that when we divide a line at voluntary points, the points dividing must differ, but if we regard them not as particular points but just geometrical points, they have no difference and are one. But even if we granted this paraphrase, we need further interpretation in order to connect this assertion to his claim that the present divides the past and the future potentially.

It is worth noting that on dividing line Aristotle puts a restriction *in thought* (τῆ νοήσει), since it seems to imply that dividing line *actually* differs from dividing *in thought*. Further, it may imply A)

the present never divides time *actually*, but B) it divides *in thought*.

A) will lead us into rather poor interpretation; we can think the present certainly divides the past and future *actually*, but Aristotle does not. For him the past, the future, and the present compose of united time. His attitude can indicate not only that the past and the future is not essential for time, but also that arguing on the past and the future has nothing to do with philosophical consideration of time.

B) will lead us into the ontological status of the present in Aristotelian philosophy. Since the division of time by the present is analogical to that of a line by a point, the division of time is made *in thought*.²⁸ We can confirm this by the following reasons. Firstly, the division of time is not obviously a sort of division of material entities. Secondly, as Aristotle argues that since what has capability to count is only intellect (νοῦς) in our soul there is not time without a soul,²⁹ he seems to regard time as a kind of intellectual entity. If so, and if only intellect can divide the time by present, it could be natural to think the present itself is an intellectual entity for him. Thus, the present never changes or moves, and it is inadequate to apply actuality or potentiality to the present and the now directly.

5. "In Time"

While in the argumentation of time we often meet analogy between line-point and time-the now, there is a claim without analogy; his argument of "in time" (ἐν χρόνῳ).

It may be natural to say "a point in a line," and also "T₁ in this time period." We are accustomed to substitute the temporal expression to spatial and geometrical ones. In contrast, Aristotle gives more technical analysis on "in time" in the book IV 12 of *Physics*; he is grasping "in time" by analogy not with "in line" but with "in number." When we apply to ordinal physical objects, "in time" is equivalent to "being measured by time."³⁰ In this sense, all perishable and changeable objects are "in time," but everlasting things and propositions such as "diagonal is incommensurable" (regardless of whether valid or not) are not "in time."³¹

If we are to apply Aristotle's analysis to the now and the present, they will not be "in time." For, firstly, the now is, being analogical to geometrical point, immeasurable by time, and secondly, the present is, being *always* one and *always* differing, everlasting.

Aristotle, however, affirms that the now is "in time."

And since time is a number, the now and the before and everything of that kind are in time in the way in which the unit and the odd and the even are in number. (*Phys.* IV 12, 221a13-15)

His argument, based on the view that time is a sort of number, is far from clear. For it is doubtful that the relationship between the now and time is similar to that between number and unit, odd number, and even number, since neither is the now the unit of time, nor a particular form of time. We may seek an appropriate interpretation of the passage before the quoted text where Aristotle explains the meanings of "in number," and choose "something belonging number" (τοῦ ἀριθμοῦ τι) as the relationship between the now a time; the now is in time because the now belongs to time. But it remains inarticulate.

One possible interpretation is that his argument relies on the assumption that time is separated by two "nows."³² The now belongs to time as limits of time. If this reading is correct, Aristotle images "in

time” not in the same manner as “ T_1 in this time period,” generally say, as the now exists *inside* time, but as the now(s) exists at the limits of time. Further, Aristotle may assume that the present is “in time,” not because it exists *inside* time but because it exists as the limit of time, between the past and the future.

6. Does Aristotle Spatialize Time?

This essay has considered Aristotle’s view on the now and the present, but their outline still appears obscure rather than clear. One possible reason is that Aristotle does not spatialize time competently. Of course we find the analogical argument where he treats time analogical to geometrical line. However, it must be impossible to paraphrase his argument in spatial terms. He seems not to try, and not to believe in, spatializing matters concerning time.

In the other hand, although it is likely for Aristotle to spatialize time *partly*, he never believes we can reduce time to space.³³ It seems moderate to interpret that when he tries to explain two aspects of change, i.e. spatial extension and temporal extension, he applies the understanding of the former to the latter.

We should remember that in his analogy there is change-changing thing between line-point and time-the now, and we cannot understand the flow of time or the flow of the present by applying a geometrical or spatial concept. For him, the flow of time may not be unique attribute of the present and time, but may rely on the epistemological fact that we perceive changing things. Moreover, if the present is an intellectual entity, the flow of time may be an idea which comes from our illusion due to correspondence of the now and an actual status of a certain changing thing.

Aristotle does not leave us with any active consideration of the now and the present. It must be the reason why it is difficult to judge how the argumentation of time contributes to his philosophical system.

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Notes

1. The term “καίρός” in the *Nicomachean Ethics* is a good example for the knot of time and “living.”
2. *Phys.* IV 10, 217b31-32.
3. *Phys.* VIII 1, 251b12 and *DC* I 9, 279a14 are a few references.
4. *Met.* Θ 6, 1048a35-b9.
5. *Cat.* 4, 1b26. *Met.* Δ 7, 1017a17. It is worth noting that when he argues good is said in as many senses as being in *Nicomachean Ethics*, he chooses χρόνος instead of ποτέ (*EN* I 6, 1096a26). The rewording shows there is a strong connection between “when” and time.
6. Morison, 4-6.
7. English quotations from *Physics* are taken from Hussey’s translation, but are slightly changed.

8. Some may argue that there is another type of reply, such as “Troy fell in 1200 B.C.” This answer with the calendar era including number, is not accurate. It is not what Aristotle wants to say in the quotation because calendar era does not include any reference to the now or the present.

9. *Phys.* VI 3, 233b33-34.

10. Owen, 301-303. Hussey, xlv., Waterlow, 104 ff.

11. Esp. *Phys.* VI 2, 232a23-233a12.

12. Esp. *Phys.* VI 3, 234a7-19.

13. Cf. Owen, 307-314.

14. But Inwood wonders if Aristotle’s proof is succeeded (Inwood, 161-163).

15. One famous exception is the sea-battle example in *On Interpretation*.

16. *Phys.* IV 11, 219a12-13.

17. *Phys.* IV 11, 219b33-220a6.

18. *Phys.* IV 10, 219a11-30.

19. *Phys.* IV 11, 219b12-33.

20. Ross, 611. Sorabji, 48.

21. Cf. Sorabji, 49.

22. ἄλλο καὶ ἄλλο in *Phys.* IV 10, 218a10. 218a12. ἕτερον καὶ ἕτερον in *Phys.* IV 10, 218a12.

23. *Phys.* IV 11, 218b24-27.

24. Apostle, 266.

25. *Met.* Θ 6, 1048a35-b9.

26. Hussey, 170.

27. The Greek text, οὐ γὰρ ἡ αὐτὴ αἰεὶ στιγμὴ τῆ νοήσεως· διαιρούντων γὰρ ἄλλη καὶ ἄλλη· ἢ δὲ μία, ἡ αὐτὴ πάντη, needs interpretation because the subjects of ἄλλη καὶ ἄλλη, μία, and αὐτὴ are omitted. Ross (608-609) and Hussey (49) suggest that those of ἄλλη καὶ ἄλλη and αὐτὴ are “a point,” but that of μία is “the line.” But as long as Aristotle here makes analogy between a point and the now, I think it is appropriate to choose “a point” as the subject of μία.

28. Massie, 323.

29. *Phys.* IV 14, 223a21-29.

30. *Phys.* IV 12, 222b32-221a18.

31. *Phys.* IV 12, 221b3-7, 221b24-25, 222a3-9.

32. *Phys.* IV 11, 219a29-30.

33. Another fundamental question is this: Does Aristotle have the concept of space as we have?

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