

Some Future Contingents and Aristotle¹

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Aristotle argued that particular statements about the future were neither true nor false. I reject this claim, arguing that implicit to such a theory is an untenable theory of time. Whilst developing a theory of time was not Aristotle's intent, I believe his view does entail an ontology that is questionable at best. Once we have sorted out an acceptable theory of time, the only reasonable conclusions about all statements is that they are true or false. That we do not know whether our statements about the future are true or false is an epistemological problem. This claim is aimed at those (not necessarily Aristotle) who wish to adopt Aristotle's view today.

Introduction

In chapter 9 of *De Interpretatione*, Aristotle argues that some statements about the future are neither true nor false. His conclusion relies upon the distinction between the law of the excluded middle and the law of bivalence. The law of the excluded middle holds that for any x , x either exists or it does not. The law of bivalence holds that for any statement s , s is either true or false. Aristotle thought bivalence did not apply to the future: contingent statements about future events are neither true nor false. I will argue that bivalence *does* apply to statements about the future. That we cannot recognise this, reflects an epistemological problem. I will reject Aristotle's claim that statements about the future are neither true nor false, because it relies on an untenable philosophy of time.²

¹ I would like to thank Chris Mortensen and an anonymous referee for their helpful suggestions and input.

² The focus of this paper is on the ontological commitments of Aristotle's claims, rather than the reasons he had for making these claims. Furthermore, I am not interested in showing how or why Aristotle's argument goes wrong. Rather I am merely interested in looking at his conclusions in light of recent developments in the Philosophy of Time. As such, this paper is not interested in criticising Aristotle for holding such views, but only in showing that we have no reasons for agreeing with him.

Aristotle and the sea battle

Suppose there is a sea battle tomorrow. Aristotle thinks we cannot say of that battle whether side A or side B is victorious. Whilst Aristotle thinks that the law of bivalence applies to the present and past, statements about the future are neither true nor false. Since the sea battle would be in the future if it occurs, we cannot say who

will be victorious. But, Aristotle thinks it is true that there will, or will not actually be a sea battle tomorrow: the law of the excluded middle still applies. This distinguishes Bivalence from the law of the excluded middle: bivalence only applies to the present and past, the law of the excluded middle applies to the past, present *and* future.

Suppose that there will be a sea battle between A and B tomorrow. Either A will win, or B will win. The law of the excluded middle means that only one of these states of affairs occurs. Now suppose that bivalence applies to statements about this sea battle. If A wins, proposition P “Side A is the winner”, is true. If Side B wins, proposition P, “Side A is the winner”, is false. Aristotle thinks that this implies that determinism is true, and hence rejects bivalence.

Aristotle (384–322 BC).

Suppose this battle occurred this morning and side A won. If determinism is true then

it was true before the battle that A wins the sea fight. If it was always true to say that “Side A is the winner” then it seems impossible that side B should be victorious. “All, then, that is about to be must of necessity take place” (Aristotle, *De Int.* 9, 18b15).

Aristotle thinks this claim untenable. It seems strange to say that the outcome of the battle was determined three thousand years ago, not by the actions of the sides on the day. Aristotle believes that if determinism were true, we would not need to deliberate about actions. We could predict actions ten thousand years before they occur.

For a man may predict an event ten thousand years beforehand, and another may predict the reverse; that which was truly predicted at the moment in the past will of necessity take place in the fullness of time (Aristotle, *De Int.*, 18b30).

Aristotle believes that predictions do not make the predicted event occur, or not occur, they have no causal efficacy. However, actions and deliberation unlike predictions do have causal efficacy. If we can deliberate about the future, then it is

not true of future events that they necessarily will or necessarily will not take place. In some cases there *are* real alternatives. Where we deliberate between two actions, either is possible. Aristotle believes determinism is false. I do not want to take issue with Aristotle here, merely set out his reasons for claiming that bivalence does not apply to certain statements about the future.

Aristotle believes that determinism follows from the claim that the laws of bivalence and the excluded middle hold for past, present *and* future statements and events. If determinism is to be rejected, Aristotle is faced with a harsh choice, reject the law of excluded middle, or reject bivalence, where the future is concerned. He chooses to reject bivalence.

Everything must either be or not be, whether in the present or in the future, but it is not always possible to distinguish and state determinately which of these alternatives must necessarily come about (Aristotle, *De Int.*, 19a25).

But Aristotle never explains why he rejects bivalence in favour of the law of the excluded middle, though he does give us hints: “that which is must needs be when it is, and that which is not must needs not be when it is not” (Aristotle, *De Int.*, 19a20).

Having rejected bivalence Aristotle feels free to reject determinism. Determinism was only adopted because of the conjunction of the law of the excluded middle and bivalence. Remove this conjunction and the problem may be resolved. We may think it the easy option, but also the most reasonable one.

Future events like sea battles either will or will not occur, so the law of the excluded middle applies. Aristotle claims that it is true of events that they either occur or do not occur. But this is not true of our beliefs about events. The law of the excluded middle remains, but the law of bivalence is rejected. Recall the above quote.

Where we deliberate between two actions, either is possible. Everything must either be or not be, whether in the present or in the future, but it is not always possible to distinguish and state determinately which of these alternatives must necessarily come about (Aristotle, *De Int.*, 9, 19a25).

Should we allow a follower of Aristotle this escape? I think not, for it relies on an untenable philosophy of time.³

The open future

Anyone wishing to adopt Aristotle’s claim requires a qualitative difference between the future and the past. Such a qualitative requires a particular metaphysics of time.⁴ Let us try to build this metaphysics by first claiming that if there is to be a

³ The point is also epistemological, since Aristotle here talks about our inability to talk about, determine, or *know* which case occurs. This does not rule out determinism, since determinism being true is compatible with our belief that it is false.

qualitative difference between the future and the past, then there must be some privileged moment in time that distinguishes between the two. This is the moment when the future changes from being unreal to being real.⁵ Since there must be a difference between the future and the past, the past must also be real. Call this moment the “now”.

The “now”, it is supposed, moves from the past into the future, though we have no clear understanding of how this occurs. One view is that existence moves from the past into the future through the “now”. This occurs much in the same way that a wave moves across the surface of the sea.⁶ This rather rough analogy gives us an idea of what *might* be involved, but any attempt to develop such an analogy beyond its rough state has proved problematic.⁷ Attempts tend to focus on events *changing* from being future, to being present,⁸ but no account of a mechanism for this change has been provided.

Given this problem, how might the “now” work? Events “move” in some way from being in the future, to being present to being in the past. They do this because existence moves from the past, into the present and into the future. But we need to be clear here, events themselves do not move, but their ontological status does. Saying an event moves gives the impression that events move like a car moves. Rather saying an event moves is a deflected way of saying that the event *is* future and *will become* present.⁹ Future events become real when the “now” confers existence on them. This is the now of our experience. Call this the dynamic view of time. There are many versions of the dynamic view but the one most aligned to Aristotle’s position here is the open future: whereby the past is fixed, the present confers existence and the future is open. Aristotle believes that past tensed statements are true or false, but future tensed ones are neither true nor false. The best way to explain this is to say that the past is fixed, but the future open. Aristotle claims at the opening of Chapter 9, that in “the case of that which is or which has

⁴ Dyke, 2003, has identified a tendency in many of the arguments about time to move from facts about language to facts about ontology. It has to be noted that this was not Aristotle’s concern. If Dyke is correct, and I think she is, then the correct move is to develop our ontology *and then* ask what that ontology says about our linguistic expressions. Aristotle is concerned with the truth of propositions, whereas I am concerned with the truth-conditions of these propositions. I believe these are the crucial questions; they may not have been Aristotle’s concern, but anyone wishing to adopt his view should give an account of the ontology behind such a view.

⁵ By real or unreal I mean that something is real if it exists, unreal if it does not exist. A ghost is unreal since they do not exist (if they do not) whereas the Earth is real, since it exists.

⁶ See Maudlin, 1992, for this claim.

⁷ See Smart, 1949, for a concerted attack on this analogy. Markosian, (1993) makes an attempt to develop the analogy but he soon turns to linguistic, not ontological means to do so.

⁸ See Lowe, 1998, for this general strategy.

⁹ It is for this reason that McTaggart argued that time requires there to be two series; one that incorporates the movement of time, and one that incorporates the stability of events in an order of occurrence: 1958 comes after 1957 and before 1959 for example.

taken place, propositions, whether positive or negative, must be true or false" (Aristotle, *De Int.*, 18a25). Compare this with his claim in the following paragraph that "that which is predicated of it [an individual (event)] relates to the future, the case is altered" (Aristotle, *De Int.*, 18a30).

Other types of dynamic views include presentism, where only the present is real. But since according to presentism the past and the future are both unreal, there is no qualitative difference to do the work for Aristotle. The open future view gives us the required qualitative difference between the present and the past, both real, and the future, which is unreal. However, I will argue that the dynamic view in all of its forms makes no sense. There are several arguments against the dynamic view but I will focus on just two, one analytical, one scientific.

First the analytical argument. The analytic claim is based on the premises that if time is dynamic, our understanding of that dynamism ought to be simple and clear. An analytic test might hold that our explanation should be clear, rationally obvious and fits within an acceptable logical structure. It turns out that our understanding of time, if a dynamic view is adopted, is confusing at best, and confused at worst.

Take some event, *e*. We say *e* is either past or present or future. It is not possible for *e* to be past *and* present *and* future. But it turns out that event *e* *is* past *and is* present *and is* future. This is a contradiction, one that McTaggart (1908) thought showed that time could not be dynamic.

We could say that event *e* attracts different tensed statements simultaneously and that this dissolves the contradiction. Event *e* is "said to be present", "said to be future" *and* "said to be past". Since the talk here is about linguistic expressions, event *e* it turns out *is not* simultaneously past, present *and* real. This escape however is not allowed, since we then ask which of these statements about *e*, is true. If all three are true, then they are only, it seems to me, true because of the state-of-affairs that they describe. Since they describe three contradictory states-of-affairs, the contradiction is reintroduced. We can only remove the contradiction if we divorce our language from our ontology. But our ontology underlies our language in ways that such a divorce ignore. Think for example, of a simple claim, "it is hot". If the place referred to by the "it" is not hot then this statement is false; if it is hot, then this statement is true. The truth of the statement is determined by the state-of-affairs.

Another response here is to claim that *e* is not past *and* present *and* future simultaneously in the way that I have construed it. Every event is either past *or* present *or* future. We say of event *e*, that *e* *is* present, *was* future and *will be* past. McTaggart gives two reasons why such a claim cannot be made.

First, we are trying to explain time. Our explanation needs to remove the possibility of events being simultaneously past, present and future. So we say that these predicates apply successively. But this invokes time. To ensure that event *e* is either past *or* present *or* future rather than past, present *and* future, we have used succession; a temporal concept. We have assumed the existence of time to prove the existence of time, and this begs the question. If we are to prove the existence of time, we need

independent reasons to derive a conclusion. Introducing the conclusion as a premiss of the argument would beg the question.

Second, we might try and remove the contradictions of the first time by employing a second time series to remove the contradictions in the first time series. Take time *t* to be the time when event *e* occurs. Time *t* is past, present *and* future. To avoid this we introduce a second time series such that we say of time *t* that it is present at time *t*₁, past at time *t*₂ and future at time *t*₀. The trouble is that for each moment in this second time series, take *t*₁ for example, our three predicates apply simultaneously to that moment. This means that to remove the contradictions in our second time series we require a third time series. But such a move merely pushes the problem up a level. We are entered into an infinite and vicious regress.

So analytically there is a problem for a claim that there is a “now” that distinguishes between the past and future. The claim that there is involves a contradiction: events are past, present and future. The claim that time is dynamic fails the analytical test. To turn briefly to science to develop criticisms against concerns that are not Aristotle’s. These concerns are central to anybody who wishes to follow Aristotle’s view however.

I have claimed that to distinguish between the past and future we need a universe wide moment, the “now”. Anything simultaneous to event *e*, exists because it is caught in this privileged moment. But the Special and General Theories of Relativity (GR) show that there can be no universe-wide moment of simultaneity. To say that two events, *x* and *y*, are simultaneous we need to invoke a frame of reference within which that simultaneity holds. However, there exist other frames where *x* and *y* are not simultaneous, and these frame *are just as legitimate*.

To see how this works take a frame of reference where *x* exists *then* *y* exists, call this frame, *F*. In frame *F*, *x* exists but *y* is future, so non-existent. But there is a frame where *x* and *y* are simultaneous, call this frame *G*. We cannot distinguish between *F* and *G*, since both are legitimate Frames of Reference in GR, so both readings are correct. This means that we cannot infer the non-existence of *y*, merely because it is not simultaneous to *x* in Frame *F*. Coincidentally there is a frame where *y* is present, but *x* is past, Frame *H*. This means simultaneity cannot confer existence in the way that we think the “now” does.

We have three frames where existence is spread out across the past, present and future, *but there is no qualitative difference between the three times* (and frames). This means that the notion of simultaneity, needed for a universal “now” is really only local. The “now” has no ontological status. Furthermore, there is no qualitative difference between the past and the future.

I have quickly looked at an analytical and scientific argument against the existence of the “now”. If such a moment is rejected, there is no moment in time to distinguish between an undetermined future and determined past. They are equally real. This is what we call the static view of time.

The static view entails that Aristotle is wrong when he concludes that bivalence

does not apply to future events. Such a claim relies on there being a qualitative difference, but no difference exists. The most that Aristotle could (now) claim is that we do not know whether there will be a sea battle tomorrow. That there will or will not be a sea battle is already determined. That we cannot make any judgement about this fact is a fault in our knowledge: in short, an epistemological fact.

Truth

How might this argument be fleshed out? First, propositions are objectively true. Take our sea battle tomorrow. The proposition P “Side A is the winner”, is made true by a state-of-affairs. The state-of-affairs being the defeat of side B by side A, and this exists in the world. This means that whenever someone says, thinks or believes that “Side A is the winner”, that tokening of the proposition is true. (P is true even if nobody in any culture at any time says or thinks it.) What makes my utterance that “Side A is the winner” true is a fact derived from the world itself.¹⁰

Some more needs to be said, I think, about this state-of-affairs claim. These state-of-affairs act as the truth-makers for our statements. Truth-makers are facts “*in virtue of which* sentences and/or propositions are true” (Mulligan, Simons and Smith, 1984:287, original emphasis). Since truth-makers are facts, they must exist if they are to make statements true. There are two ways to take this; first truth-makers are coincident with their statement, or second, truth-makers are coincident with the events described by the original sentence; the state-of-affairs acts as the truth-maker. This I will argue is the preferable option.

First we could say that truth-makers for statements exist when the statement is made. So my statement “there was a sea battle yesterday” is made today, so the truth-maker for this sentence exists today. One problem with this is that the sea battle occurred yesterday, *not today*. So what truth-maker for my claim exists now? We might respond here that currently existing evidence acts as the grounds for the truth of my statement. This seems reasonable about statements about sea-battles in the recent past. But what about claims about distant (in time) events such as “dinosaurs existed!”? The evidence for this claim is quite obscure, restricted to the fossil record and so on.

A second way to think of truth-makers is that events and objects themselves *act* as the truth-makers. As such my statement today that “there was a sea battle yesterday” is made true by the sea battle itself. There is no reliance upon presently existing

¹⁰ Some have argued that propositions etc., derive their truth-value from the moment of assessment (see, eg. McFarlane 2003, who argues that context of assessments must be involved in deriving the truth-values of contingent statements). If this is the case, then future contingents can neither be true nor false since the event they describe has yet to happen. But this is simply the problem restated. This solution ignores the theory of time which, as I have argued shows that the future *is as real* as the present and past. If so then the context of assessment only becomes relevant when assessing *how we know* about certain (future) events. This would be appropriate for a linguistic inclined philosopher. I argue that such a move is inappropriate for a metaphysician.

evidence as there is in the first case. This, it seems to me, is the more reasonable truth-maker theory and it is the one I now adopt.¹¹ One problem for such a view is that many statements are about distant (in time) events, such that the person making the statement has no direct access to the truth-maker. This problem indicates that the problems about such statements are epistemological, not ontological.

Having adopted this second conception of truth-makers we can return to Aristotle's claim that statements about the past and present are either true or false. For this to hold there must be some fact of the matter about the past (or in the past as I am now claiming) to make statements such as "there was a sea battle yesterday and side A won" true or false. There must be some state-of-affairs in the world to act as a truth-maker for my tokening of this statement true. Similarly, statements about the present, such as "it is now raining" is made true or false by the state-of-affairs of it raining today.

These rules apply to past and present tensed statements, so why not to future tensed statements? Aristotle's claim that they do not apply to the future relies on there being a qualitative difference between the past, the present and the future. But since there is no difference to do this work, Aristotle's claim is undone. There is no ontological difference between past and future states-of-affairs, such that statements about the past are true or false but those about the future are neither. If past tensed statements are true or false, so are future tensed statements true or false. The law of bivalence applies equally.

Take a statement "there was a sea battle yesterday and Side A won" this is made true or false by some state-of-affairs that existed yesterday. Take a comparable statement "there will be a sea battle tomorrow and side A will be victorious", this statement is either true or false, and this is decided by some state-of-affairs that exists tomorrow. Since there is no ontological difference between the two states-of-affairs we cannot claim, as Aristotle does, that bivalence only applies to the past and present. It applies to them all or to none of them. We must I believe, conclude that Aristotle is wrong: bivalence does apply to statements about future-contingents. The problem becomes one of why we do not know whether future-tensed statements are true or false.

The distinction between bivalence and the law of the excluded middle

Aristotle drew his conclusion by removing bivalence from statements about the future. This requires us to distinguish between bivalence and the law of the excluded middle. For either there is or is not going to be a sea battle tomorrow.

¹¹ Tarski (1944:343) argues that a sentence, if true, designates, or picks out an existing states-of-affairs: this favours my interpretation here, since it follows that *only an existing* states-of-affairs can act as a truth-maker. Furthermore, this states-of-affairs must act as the truth-maker.

Since bivalence does apply to the future as well as the past and present, ought we to distinguish between the two in the way that Aristotle does? I believe that we should not, or at least, not in the significant way that Aristotle does. There does seem to be a need for the distinction. Bivalence applies to statements and the law of the excluded middle applies to the world, independent of statements about it. But bivalence merely appears to be a semantic equivalent to the ontology of the law of the excluded middle. But being “equivalent to” does not mean to be “distinguished from”, though they often go together. Being equivalent to is often taken as the start in a reductionist move, from one to the other. The mind is equivalent to the brain, so they are the *same*.

Bivalence certainly looks like a semantic equivalent to the law of the excluded middle. Statements are either true *or* false. If so, then we ought to think of bivalence as a semantic version of the law of the excluded middle. Aristotle’s distinction relies on the claim that bivalence only applies to the past and present, whilst the law of the excluded middle applies to all times. I have rejected this claim, so the distinction between the two becomes somewhat weaker. There is a difference between the two, but only in type, not in range. Bivalence is the semantic equivalent to the law of the excluded middle.

Conclusion

Aristotle’s argument for the contingent state of the future relies on there being a qualitative difference between the future and past. I have argued that no such difference exists. This means we ought not to distinguish between the law of the excluded middle and bivalence. With no privileged moment in time we cannot distinguish between the future and the past or present. Bivalence applies equally to statements about the past, the present and the future. That we cannot recognise or know the truth of statements about the future reflects an epistemological problem. Aristotle’s claim that statements about the future are neither true nor false is rejected.

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