Combating Metric Conventionalism

Matthew Macdonald

In this paper I will critically discuss a theory known as conventionalism about the metric of time. Simply put, conventionalists hold that there is no objective fact about whether one duration of time is longer or shorter than a subsequent duration. I will explain this strange position and the argument used to support it. Then, I will attack conventionalism upon both metaphysical and epistemic grounds. I hope to show that conventionalism is ultimately the result of an epistemic supposition, and suggest how it might be combated.

Conventionalism about the metric of time holds that there is no objective fact of the matter as to whether one duration of time is longer or shorter than a subsequent duration (Le Poidevin, 6). What this means is that we cannot correctly claim, of a length of time, that it is truly 'longer than' or 'shorter than' a later length of time: strictly speaking, to do so makes no sense. While a duration *can* be compared to another on the basis of some standard of timekeeping (such as a clock), conventionalists claim that such standards are always a matter of convention: we cannot access an 'objective' standard of time. To illustrate, consider how we determine the accuracy of a clock: we compare it to other clocks. But how do we know that *those* are accurate? It seems that all we have are yet more clocks; but never can we access a truly objective clock. Our choice of timekeeping standard is always a matter of convention. Hence, the accuracy of a timekeeping standard can never be determined in terms of an objective metric, only a

Matthew Macdonald is majoring in philosophy at Victoria University of Wellington, New Zealand in 2013. His interests include epistemology, value theory and philosophical methodology. He hopes to eventually pursue a career in philosophy.

conventional one. Because claims about a duration being 'longer than' or 'shorter than' another depend upon such metrics, the implication is that it is meaningless to speak of a duration as being *objectively* 'longer than' or 'shorter than' a subsequent duration. It is only conventionally so. Le Poidevin notes that it is important to distinguish this conclusion from the obvious idea that the way in which we choose to divide time (into minutes, hours etc) is simply a matter of convention (6). Rather, the conventionalist is making the controversial claim that since our best attempts at knowing objective facts about time always fail, we are not entitled to make certain common assumptions about those facts.

The main argument for conventionalism, and the one I want to attack, is as follows:

(1) For every duration of time A and every subsequent duration B, A is objectively longer/shorter than B only if they can be compared on the basis of an objective metric.

(2) A and B cannot be compared on the basis of an objective metric.

(3) Therefore, for every duration of time A and every subsequent duration B, A cannot be objectively longer/shorter than B. (7)

Note that the first premise states part of what is meant by the 'longer-/shorter-than' relation. The second premise is more contentious, and it will become important to distinguish an ontological reason for it from an epistemic one. The conclusion is simply a formal statement of the conventionalist thesis. In what follows, I shall unpack this argument and critically discuss it. I will explain why it is necessary that the second duration be subsequent to the first, and why the conventionalist should not claim that it is plainly false that one is longer than another. I will then examine both premises of the argument and attempt to refute them. In particular, I will offer an alternate analysis of the 'longer-/shorter-than' relation, discuss how the conventionalist might respond to it, then explain why neither an ontological nor an epistemic argument for the second premise can succeed.

First consider Premise 1. We might wonder why it is important to the conventionalist that duration B is entirely *subsequent* to duration A. Shouldn't the conventionalist thesis apply to all pairs of durations? A little reflection reveals that this would be a bad idea; in fact the requirement for subsequence is there to defend conventionalism from an important logical objection. This is because attempting to apply the conventionalist thesis to entirely—or partially—overlapping durations of time would undermine Premise 1. Consider the following case:

Class begins. Part of the way through it, I begin to eat a sandwich. Then I finish the sandwich. Sometime later, class ends.[1]

If we apply conventionalism to the duration of the class and the duration of my eating the sandwich, then it is not the case that the duration of the class was *actually* longer than the duration of the sandwich. Yet clearly, to anyone who has eaten a sandwich during a class, this is false: the class is obviously longer than the sandwich-eating. But this is simply a conflict between theory and intuition. The real problem is that it is *logically necessary* that the class is longer than the sandwich-eating. The duration of the sandwich-eating is entirely contained within the duration of the class; and this is only coherent if the duration of the class is the longer of the two. For this reason, it is important that the conventionalist position stated earlier excludes cases of overlap.[2] In situations like the sandwich case, we can claim that one duration is longer than another on the basis of necessity; but for non-overlapping durations this is not so.

Of course, conventionalism is still a fairly radical position: suppose I ate the sandwich directly after class ended. In that case, the conventionalist would again claim that the sandwich-eating was 'not really' any shorter in duration than the class, and we might disagree; but at least we would not be able to appeal to the same kind of overlap as before. It seems that we would be left with only intuition. So the requirement for subsequence is an important fix against logical contradiction for the conventionalist. However, we will soon see that we can still use an observation about the sandwich case to undermine Premise 1.

It is important to make a further clarification: that conventionalism, in its most defensible form, should not claim that it is plainly *false* that duration *A* is longer/shorter than duration *B*. Rather, the conventionalist should claim that such a relation is simply meaningless: that the proposition '*A* is longer/shorter than *B*' is *neither* true nor false. In order to see why, suppose that the claim '*A* is longer than *B*' was flatly false. Suppose also that the claim '*A* is shorter than *B*' was false. This would imply that *A* and *B* are of equal duration. If so, then we can subject conventionalism to another logical inconsistency. Consider the following durations: *A*, *B* and *C*, where *C* is entirely contained within *A*, but *B* is subsequent to both of them:

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[1]The general idea behind the total overlap case was suggested by a class member in the first lecture of PHIL 325 at Victoria University of Wellington (2012).

[2]It might be objected that not all cases of overlap are like the sandwich case: there could be cases of only partial overlap. But it is easier for the conventionalist to respond by ruling out overlap completely, rather than clutter their thesis with specifying a particular type of overlap.

A   C
_____   _____

      B
      _____
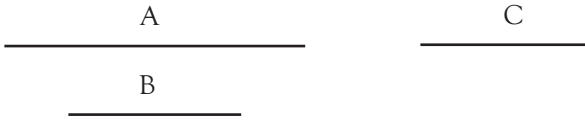
If conventionalism is interpreted in the sense I have just outlined, then it must hold that *all* non-overlapping durations are equal. Therefore, it must hold that both A and C are equal in duration to B. But if A is equal to B, and C is equal to B, then it follows that A is equal to C. However, it is clear by definition that A is longer than C. So it seems that conventionalism interpreted in this way implies contradiction: A is both longer, and not longer, than C. If we want to avoid contradiction, it seems that conventionalism should not claim that it is flatly false that one duration is longer than another. Instead, it should be claimed that it is *neither true nor false*; it is instead meaningless.

Notice that the requirement for subsequence and the requirement for meaninglessness that I have just explained are both motivated by attempts to deal with a particular type of problem case, namely, situations where one duration occurs entirely within another. Now, it might be thought that the requirements made are adequate defenses of the conventionalist thesis against such cases. However, I claim that cases like the above in fact reflect a much bigger problem for conventionalism: it seems that we are allowed to claim that duration A *is* objectively longer than duration B, in cases where B is entirely contained within A. In fact, what has been lurking in the background throughout the preceding discussion is that it looks like there is in fact a way to understand the 'longer/shorter-than' relation that does not require reference to a metric of time. I wish to develop this line of thought by proposing an analysis of 'the 'longer-/shorter-than' relation which makes use of a counterfactual 'earlier-/later-than' relation instead of a metric. The analysis is an attempt at refuting Premise 1 of the conventionalist argument. Recall that this is the claim that

> For every duration of time A and every subsequent duration B, A is objectively longer/shorter than B only if they can be compared on the basis of an objective metric.

We can instead make sense of 'longer-than' and 'shorter-than' by imagining a hypothetical overlap between two durations and checking to see whether one would be contained within the other by comparing when they end. What this means is that

> *Duration A is objectively longer than duration B only if it is the case that, had they begun simultaneously, the end of B would occur earlier than the end of A.*

Note that this is a counterfactual statement about what would happen *if it were* the case that *A* began simultaneously with *B*, and can be true even where *A* and *B* do not overlap at all. Indeed, it must in order to be effective; non-overlapping cases are the only cases to which the conventionalist thesis applies. But it is possible for counterfactual statements to be true for such durations, even if their antecedents can never obtain. For simplicity, call the analysis I have just suggested the Counterfactual-Overlap analysis (C-O).

Notice that the C-O analysis depends upon the 'earlier-/later-than' relation, the objectivity of which the conventionalist position does not deny. In fact, it is important that conventionalism retains such a relation, in order to make sense of the requirement for subsequence. I demonstrated before that it was necessary for the conventionalist to exclude cases where duration *B* occurs within duration *A* in order to avoid contradiction. Notice that this requirement for subsequence prevents the conventionalist from responding to the C-O analysis by challenging what is meant by the earlier-/later-than relation. It might be the case that we could raise worries about defining that relation - such problems do come up in the philosophy of time - but because the earlier-/later-than relation is needed for subsequence, that strategy is not open to the conventionalist. Notice also that the C-O analysis won't tell us *how much* longer one duration is than another. But that is not really required to refute Premise 1. All that is required is a way of making sense of the 'longer-/shorter-than' relation which does not refer to a metric. For that reason, I think we can reject Premise 1 of the conventionalist argument, at least as it has been stated.

Unfortunately though, several other points need to be addressed before conventionalism can be properly rejected. Recall that Premise 2 of the conventionalist argument claimed that for any duration of time *A* and any duration *B*:

> *A and B cannot be compared on the basis of an objective metric.*

There are two possible reasons for why this is so, and they mark the difference between an ontological version of the argument and an epistemic one. First, it might be that we cannot compare durations to an objective metric because *there is no* such metric. This is an ontological version of the argument: it makes a claim about the non-existence of a particular set of facts about time. Alternatively, it might be the case that we cannot compare

durations to an objective metric because we cannot *know about* that metric. This weaker but more defensible claim is the epistemic version of the argument: it makes a claim about the inaccessibility of a particular set of facts about time, regardless of whether or not those facts exist.

It is important to make this distinction because it allows us to see why the alternate analysis of the 'longer-/shorter-than' relation which I have suggested does not fully succeed in refuting the argument for conventionalism. Rather, it refutes only the ontological version, the kind which relies upon the non-existence of an objective metric. If it is true that an objective metric does not exist, then it is true that we cannot use one as a basis of comparison; but this would not be such a problem if we can instead appeal to the C-O analysis.[3]

An epistemic argument for Premise 2 is much more resilient however. Again, the epistemic conventionalist claims that we cannot compare durations to a metric because we cannot *access* such a metric, even if there is one. The same reasoning could be applied to the analysis I suggested as well: we simply cannot *know* which duration would end first and which would end later. Hence, the C-O analysis fails at refuting a weaker form of conventionalism, because the conventionalist can respond by modifying her premises so as to subject counterfactual-overlap to the same problem as an objective metric:

(1) For every duration of time *A* and every subsequent duration *B*, *A* is objectively longer/shorter than *B* only if either they can be compared on the basis of an objective metric, or we can know that had they begun simultaneously, the end of *B* would occur earlier than the end of *A*.

(2) *A* and *B* cannot be compared on the basis of either an objective metric or a counterfactual-overlap.

(3) Therefore, for every duration of time *A* and every subsequent duration *B*, *A* is not objectively longer/shorter than *B*.

It is for this reason that existing attempts to refute conventionalism have struggled. Objectivist positions about the metric of time have attempted to respond to conventionalism by asserting that an objective temporal metric *does* exist, thereby attacking the ontological version of Premise 2. Such attempts have failed, however, at refuting the epistemic version of this premise, because an objective metric of time remains inaccessible (Le Poidevin, 7).

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[3]It should be noted that an even stronger version of ontological conventionalism might simply deny that there is even a fact about whether or not duration A would complete sooner than duration B, on the C-O analysis. But since this version will also fall prey to my argument against the epistemic version of conventionalism, I will not consider it further.

Hence, even if there is an objective metric or facts about a counterfactual overlap, that we simply cannot know them makes a metaphysical response to conventionalism incomplete.

It is worth noting that this response also applies to versions of temporal objectivism which appeal to the laws of physics (Le Poidevin, 8-11). The general thought is that, although we cannot discover an objective metric of time by looking at the metrics we use (since all such metrics are conventions), we might be able to use the laws of physics to derive an objective metric instead. However, the conventionalist has an easy reply: she can simply claim that our physical theories, including the mathematical theories upon which they are based, are simply matters of convention as well. In fact, it was this much more general idea that Hans Reichenbach, the most notable early proponent of conventionalism, had in mind when he articulated the theory in his *Der Philosophie der Raum-Zeit-Lehre*, which was published in 1928. We can see, then, that conventionalism is ultimately derived from an epistemic problem. That we cannot actually *know* about objective metrics or counterfactual overlaps makes the epistemic version of conventionalism a much tougher opponent to tackle upon metaphysical grounds. Therefore, if we want to refute it, it looks like we need to do some epistemology. Le Poidevin notes that conventionalism is motivated by an epistemic position called verificationism (7). There are various takes on verificationism, but the general idea is that a proposition is objectively true/false only if it can be empirically demonstrated to be so. Otherwise, it is neither true nor false.[4] I noted earlier that in order to avoid a logical problem, conventionalism is committed to the claim that it is neither true nor false that duration A is longer/shorter than duration B. This is because the first premise of the conventionalist argument is exactly a verificationist-type requirement about what is needed in order to make a true statement about the 'longer/shorter-than' relation. Recall that this premise (in the revised form we just looked at) is the claim that

> For every duration of time A and every subsequent duration B, A is objec-
> tively longer/shorter than B only if either they can be compared on the basis
> of an objective metric, or we can know that had they begun simultaneously,
> the end of B would occur earlier than the end of A.

The second premise is of course the claim that such verification is impossible. I have two responses, however. First, it looks like Premise 1 (even when revised) falls prey to exactly the kind of verificationism that motivates

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[4]A stronger form of verificationism claims that a statement is meaningless unless it can be verified. However, we can easily ignore this, because it turns out to be self-defeating.

it. The conventionalist begins by setting the requirement that a statement about time be verifiable, and then goes on to say that it is not, because we cannot access the relevant facts. But what are we to make of premise 1 itself? If the conventionalist is being consistent in her epistemology, *that* claim should also be verifiable. But of course, it is not.[5] We cannot verify the claim that knowing about a 'longer-/shorter-than' relation (via either a metric or a counterfactual overlap) is actually required in order for that relation to be objectively true. So it looks like Premise 1 is undermined by the same considerations that motivate it. This of course is a common problem for verificationism.

Second, it looks like, even if some kind of verification is needed, the epistemic version of conventionalism overextends its conclusion. That version does not make any claim about the existence of an objective metric; rather it simply claims that we cannot know about one. This rather modest claim is then used to support the quite radical claim that there can be no objective truth as to whether a duration is longer/shorter than another. I contend, however, that only suspension of belief (if even that) should follow from the conventionalist argument. If the conventionalist is to be consistent in her epistemology, then it looks like she is not really entitled to say that there is *no* fact about whether a duration is longer/shorter than another. Rather, the epistemic version of conventionalism implies only that we cannot *know* what those facts are. So this version of conventionalism falls short of the metaphysical thesis which it attempts to establish.

Again, this is symptomatic of a more general problem for verificationism. Rather than confine her conclusion to an epistemic one, the verificationist seems to try and draw metaphysical conclusions from epistemic grounds. I claim that this is an overextension, and that the verificationist (and hence the conventionalist) seems to have the wrong idea about the relationship between the ontology of facts and our ability to know them. Rather, I allege that it is erroneous to suppose that all objective truths only exist if they can be accessed. For this reason, the requirement that durations A and B be 'comparable' on an objective basis is problematic. All that should be needed is that the right kind of objective relation exists between them; and this relation can exist independently of our knowing it.

In conclusion, I hope to have shown that conventionalism about the metric of time ultimately derives from a difficult epistemic supposition. I have given an alternate analysis of the 'longer-/shorter-than' relation which responds to an ontological version of conventionalism; and

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[5]The same problem would apply to the stronger form of objective conventionalism that I noted in the footnote above. The claim that there is no objective metric or fact about C-O is just as unverifiable as the claim that there is.

I have explained that there is a weaker but more resilient version of the conventionalist argument that needs to be addressed separately. However, this version is at best confined to an epistemic conclusion, and is at worst completely indefensible.

Works Cited

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