Unfreezing the Spotlight
Tense Realism and Temporal Passage

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Abstract

Realism about tense is the view that the contrast between what was, what is and what will be the case is real, and not merely a projection of our ways of thinking. Does this view entail *realism about temporal passage*—i.e. the view that time really passes, in the same sense of 'real'? We argue that the answer is affirmative for many versions of tense realism, and indeed for all sensible versions. We thereby address an important

conceptual issue regarding these two forms of realism and rebut recent claims that tense realism is compatible with anti-realism about temporal passage.

1. Introduction

The so-called A-theory of time is often presented as a package including both *realism about tense*—i.e. the view that the contrast between what was, what is and what will be the case is *real*, and not merely an outward projection of the way reality is represented in thought—and *realism about temporal passage*—i.e. the view that the passage of time is a *real* phenomenon, in the same sense of 'real'. The question whether one of these views can be held without the other has hardly ever been addressed in the literature. There is a straightforward and, we think, compelling argument to the effect that realism about temporal passage entails realism about tense: to say that time passes is to say that what is the case is not always the same, and therefore the passage of time cannot be a real phenomenon unless the distinction between what was, is and will be the case is also real. What we want to discuss here is the converse claim that realism about tense entails realism about temporal passage.

The combination of realism about tense and anti-realism about temporal passage may look unmotivated. Some might even argue that it lacks motivation because the only serious motivation for being a realist about tense in the first place is the desire to secure realism about temporal passage. However, our question is not whether this combination of views is motivated, but whether it is *consistent*. This consistency question would still

remain interesting even if it had already been established that tense realism cum anti-realism about passage lacks motivation. For whether a view is motivated is a highly contextual matter: if a view presently lacks motivation, it may well be motivated later. Yet if the view is shown to be inconsistent, then no motivation for it will be dialectically effective.

It seems to us that most philosophers working on the metaphysics of time do believe that the combination of realism about tense and anti-realism about temporal passage is consistent. Two philosophers have recently voiced this belief. Thus, Kit Fine (2005: 287), arguing against what he calls 'standard realism', says that

> [e]ven if presentness is allowed to shed its light upon the world, there is nothing in [the standard realist's] metaphysics to prevent that light being 'frozen' on a particular moment of time.

And Ross Cameron (2015: 2), in the course of explaining why he decides to use the label 'A-theory' for the combination of realism about tense and realism about temporal passage, argues as follows:

> Here is a view: the stuck spotlight theory—all times (past, present, and future) are real, and there is an objectively privileged time, and it is always November 30, 1982. That is a coherent view; for all I know, it is even metaphysically possible.

Our main aim is to argue that there is a large class of tense realist views, to be specified in due course, that entail realism about temporal passage.

2. The permanentist argument

Let us first focus on the *spotlight theory*, which we take to combine the view that Timothy Williamson (2013: 4) calls *permanentism*, i.e. the view that always, everything always exists (in the sense of: is identical to something), with the view that there is a metaphysically robust property of presentness for times. The *moving* spotlight theory is usually characterised as the spotlight theory plus the further claim that this robust property of presentness attaches to different times as times goes by. We want to argue here that this addition is unnecessary, i.e. that the spotlight theory already precludes that the property of presentness it postulates is frozen on a particular time.

Importantly for our argument, we distinguish between the spotlight theory's notion of being a present time (in the robust sense) and another, thin notion of being a present time, which should be acceptable to all parties of the standard debate about temporal ontology, realist and anti-realists about tense alike. This latter notion can be captured by the predicate 'is denoted by 'now'', where 'now' is the familiar indexical. To avoid ambiguities, we shall use uppercase letters for expressions that signify the spotlight theory's (robust) notion of presentness ('is PRESENT', 'PRESENTNESS', etc.) and the lowercase 'is a present time' as being synonymous with 'is denoted by 'now''.

Crucially, 'is denoted by 'now'' should not be confused with 'is now'. The two predicates are coextensive, i.e. the following sentence is true:

(1)   For all times t, t is denoted by 'now' iff t is now

Yet they are not interchangeable in all tense-logical contexts. Indeed, the following sentence is false:

(2)   24 hours ago, for all times t, t is denoted by 'now' iff t is now

For suppose (2) is uttered at time u. Since 'now' is understood as the familiar indexical, the utterance of (2) is true (simpliciter) iff the following sentence type is true at u:

(3)   24 hours ago, for all times t, t is denoted by 'now' iff t is u

Assuming that (3) is true at u, so will then be

(4)   24 hours ago, u is denoted by 'now'

But (4) is *not* true at u, since at the time v that is 24 hours before u, 'now' denoted v rather than u. This very last claim is a consequence of a general principle that we take to be a conceptual truth:

(5)   Always, for all times *t*, at *t*, *t* is denoted by 'now'

The previous argument shows that replacing 'is denoted by 'now'' in (5) by 'is now' yields a falsehood.

The spotlight theorist's notion of being a PRESENT time and the neutral notion of being a present time just introduced are distinct. As we have emphasised, the neutral notion should be acceptable to all parties, while the notion of being a PRESENT time is not. Yet the two notions are connected via the following "bridge principle":

(6)   For all times *t*, always, *t* is PRESENT only if *t* is a present time

(6) must be recognised as true by all those who countenance the notion of being PRESENT, in particular those who, like the spotlight theorist, take this notion to be exemplified.[1]

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[1] (6) provides a further illustration of the fact that 'is denoted by 'now'' and 'is now' are not interchangeable in all tense-logical contexts. (6) is equivalent to

(6a)   For all times *t*, always, *t* is PRESENT only if *t* is denoted by 'now'

While we claim that (6a) must be accepted by those who countenance the notion of being PRESENT, we hold that

(6b)   For all times *t*, always, *t* is PRESENT only if *t* is now

should be rejected as false by spotlight theorists. For consider an utterance of (6b) made at time *u*, and suppose that *u* is now. Then the utterance is true (simpliciter) iff

(6c)   For all times *t*, always, *t* is PRESENT only if *t* is *u*

is true now. Assume with the spotlight theorist that there is a time, say *v*, that is distinct from *u*, and assume that *v* is, say, 24 hours before *u*. Granted that (6c) is true now, then so must be

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With these preliminary considerations in place, we proceed to argue that assuming the spotlight theory, the PRESENT cannot be frozen on a particular time. We start by establishing that assuming permanentism, the present (lowercase) cannot be frozen on a particular time:

Suppose for *reductio* that the present is frozen on some time, say t. This means that t is, always was, and always will be a present time. Clearly, sometimes, there is a time distinct from t. Given permanentism, this implies that there is a time, say u, such that sometimes, $t \neq u$. Given that every time is a present time at itself, and that what is true at some time is sometimes true, we can infer that sometimes, u is a present time. Since by hypothesis, t is always a present time, we can infer that sometimes, both t and u are present times. Since there can never be distinct present times, we can infer that sometimes, $t = u$. Since times that are sometimes identical are always identical, we can infer that always, $t = u$, and hence that it is not the case that sometimes, $t \neq u$. Contradiction.

Given this result, the argument for the claim that the PRESENT cannot be frozen is straightforward. Given (6) (and fairly weak principles of quantified tense logic), if there is a time that is always PRESENT, there is a time that is always present. We have just

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(6d)   Always, v is PRESENT only if v is u

But (6d) is *false* now, since 24 hours ago, v was PRESENT but was not identical to u.

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established that no time is always present. Therefore, we can conclude that no time is always PRESENT.

3. Formalisation of the permanentist argument

Our argument involves statements that mix tense-logical operators and quantifiers. Putting aside special cases, reasoning with such statements is not trivial. Let us formalise our argument before we comment on its soundness.

The argument can be regimented in a first-order tense-logical language with identity. Let us use

'Sφ' for 'It is sometimes the case that φ', i.e. 'It is, sometimes was, or sometimes will be the case that φ',

'Aφ' for 'It is always the case that φ', i.e. 'It is, always was, and always will be the case that φ',

and

'@$_u\varphi$' for 'It is the case at time u that φ'.

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The regimented argument involves the following six substantial principles, whose quantifiers are understood to be restricted to times:

(BF) $S\exists t\varphi \rightarrow \exists tS\varphi$

(P1) $\forall tS\exists u(t \neq u)$

(P2) $\forall u@_u(u$ is a present time$)$

(P3) $\forall u(@_u\varphi \rightarrow S\varphi)$

(P4) $\forall t\forall uA(t$ and u are present times $\rightarrow t = u)$

(P5) $\forall t\forall u(S(t = u) \rightarrow t = u)$

(P6) $\forall t\forall u(S(t \neq u) \rightarrow t \neq u)$

Beyond these principles, the argument only involves the tense-logical principle

(MIN) $A\varphi \rightarrow (S\psi \rightarrow S(\varphi \ \& \ \psi))$

and a background logic for the truth-functional connectives and the quantifiers that can be taken to boil down to the classical propositional calculus plus the following standard quantificational axioms and rule (we assume that '$\exists$' abbreviates '$\neg\forall\neg$'):

$\forall t(\varphi \rightarrow \psi) \rightarrow (\forall t\varphi \rightarrow \forall t\psi)$

$\varphi \rightarrow \forall t\varphi$ (with t free in φ)

$\varphi \ / \ \forall t\varphi$

We call this background logic *the propositional-quantificational*, or *PQ*, *basis*.

The regimented argument runs as follows, where line 1 contains the hypothesis made for the *reductio*, line 8 contains the absurd conclusion (the conclusion is indeed inconsistent given the PQ basis), and the column on the right indicates what is used, apart from the PQ basis, to derive lines 2 to 8:

1. $\exists t A(t$ is a present time$)$ Hypothesis

2. $\forall t \exists u S(t \neq u)$ (P1), (BF)

3. $\forall u S(u$ is a present time$)$ (P2), (P3)

4. $\forall t \exists u(S(t \neq u)$ & $S(u$ is a present time$))$ 2, 3

5. $\exists t \exists u(S(t \neq u)$ & $S(u$ is a present time$)$ & $A(t$ is a present time$))$ 3, 4

6. $\exists t \exists u(S(t \neq u)$ & $S(t$ and u are present times$))$ 5, (MIN)

7. $\exists t \exists u(S(t \neq u)$ & $S(t = u))$ 6, (P4)

8. $\exists t \exists u(t \neq u$ & $t = u)$ 7, (P5), (P6)

We assess the argument by running through the various items it invokes:

- The PQ basis is safe. Importantly, the quantificational postulates listed above are extremely weak—they are indeed too weak to fully characterise the universal quantifier, since at least a principle of universal instantiation (or existential generalisation) should be added to the list, be it unrestricted (as in

classical quantification theory) or restricted (as in free logics). This weakness is an asset.

- (MIN) is valid in minimal tense logic. We take minimal tense logic as a whole, and (MIN) in particular, to be unproblematic.

- (BF)—the Barcan Formula with quantifiers restricted to times—is controversial. Some presentists reject it: they hold that in the past, there was a time at which dinosaurs existed, but deny that there presently is a time such that sometimes, dinosaurs exist at that time, because they hold that there is exactly one time t, and that it is not the case that sometimes, dinosaurs exist at t (Correia & Rosenkranz 2015). However, (BF) is compulsory for permanentists. For suppose that sometimes, there is a time t that meets condition φ. Then by permanentism, sometimes, there is a time t that meets condition φ and which always exists and hence exists now. But then obviously, since being a time is not a property that can only be had temporarily, there now is a time t that sometimes meets condition φ.

- We believe, with orthodoxy, that numerical identity and distinctness are permanent, and hence that both (P5) and (P6) hold. We might even take (P5) and (P6) to be logical truths, given that they follow from minimal tense logic, the quantificational postulates of the PQ basis and the usual axioms for identity. There are controversies about whether numerical identity and distinctness are

permanent, but these controversies typically concern so-called 'material objects'. Since in (P5) and (P6) the quantifiers are restricted to *times*, we take these controversies to be irrelevant in the present context.[2]

- (P1) is a not a logical truth. Yet its "metaphysical substance" is very thin. (P1) does not say that given any time, *there is* at least a distinct time. This last claim is accepted by many tense realists but not all: some presentists believe that there is exactly one time. (P1) makes the weaker, presentistically acceptable claim that given any time, *there sometimes is* at least a distinct time. This we take to be uncontroversial.

- (P2) is a direct consequence of (5) above, which we take to be a conceptual truth (recall that we understand 'is a present time' as 'is denoted by 'now''').

- We also take the remaining principles (P3) and (P4) to have that status. (P3) is a schema that states that what is true *at some time* is *sometimes* true. How could this be denied? (P4) immediately follows from the observation that 'now' never refers to two distinct instants of time.

This concludes our argument for the claim that on the spotlight theory, the PRESENT cannot be frozen on a particular time.

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[2] To be fair, the controversies are potentially relevant if one assumes a version of relationism about time that identifies times with classes or fusions, not of events or states as the orthodox versions have it, but of *material objects* understood as enduring entities. Whatever the merits of such a view, we will leave it aside for the purposes of this paper.

4. A permanentism-independent version of the argument

The assumption of permanentism in the previous argument was crucial, but, as we show now, there is a very similar argument that does not involve this assumption. The argument, like the previous one, divides into two parts: it is first argued that the present cannot be frozen, and then, as before, from this conclusion and the bridge principle (6) it is inferred that the PRESENT cannot be frozen either. Here is the first part:

Suppose for *reductio* that the present is frozen on some time, say *t*. This means that always, *t* is a present time. Clearly, *sometimes*, there is a time *u* such that $t \neq u$. Given that always, every time is a present time at itself, and that always, what is true at some time is sometimes true, we can infer that *sometimes*, there is a time *u* such that both $t \neq u$ and sometimes, *u* is a present time. Since by hypothesis, *t* is always a present time, it is always always a present time, and we can therefore infer that *sometimes*, there is a time *u* such that both $t \neq u$ and sometimes, both *t* and *u* are present times. Since there can never be distinct present times, we can infer that *sometimes*, there is a time *u* such that both $t \neq u$ and sometimes, $t = u$. Given that being sometimes identical entails being identical, we can infer that *sometimes*, there is a time *u* such that both $t \neq u$ and $t = u$. Yet this cannot be the case.

The most immediate difference between this argument and the previous one is that (BF) is not used to move from 'Sometimes, there is a time u such that $t \neq u$' to 'There is a time u such that sometimes, $t \neq u$', which, as it were, makes the subsequent reasoning occur within the scope of the operator 'Sometimes' (we italicized its relevant occurrences).

We can devise a regimented version of the argument which involves only the PQ basis, (MIN), the tense-logical principle

      (AA) $A\varphi \rightarrow AA\varphi$

and (P1), as well as, instead of (P2)-(P6), the following four principles:

      (P2*) $A\forall u@_u(u$ is a present time$)$

      (P3*) $A\forall u(@_u\varphi \rightarrow S\varphi)$

      (P4*) $\forall tA\forall uA(t$ and u are present times $\rightarrow t = u)$

      (P5*) $\forall tA\forall u(S(t = u) \rightarrow t = u)$

Note that each results from the corresponding non-starred principle by prefixing the quantifier '$\forall u$' with 'A'. The argument goes as follows:

    1. $\exists tA(t$ is a present time$)$ Hypothesis

    2. $\forall tS\exists u(t \neq u)$ (P1)

3. A∀uS(*u* is a present time)   (P2*), (P3*)

4. ∀*t*S∃*u*(*t* ≠ *u* & S(*u* is a present time))   2, 3

5. ∃*t*AA(*t* is a present time)   1, (AA)

6. ∃*t*S∃*u*(*t* ≠ *u* & S(*u* is a present time) & A(*t* is a present time))   4, 5

7. ∃*t*S∃*u*(*t* ≠ *u* & S(*t* and *u* are present times))   6, (MIN)

8. ∃*t*S∃*u*(*t* ≠ *u* & S(*t* = *u*))   6, (P4*)

9. ∃*t*S∃*u*(*t* ≠ *u* & *t* = *u*)   8, (P5*)

Note that the conclusion in line 9 is inconsistent given the PQ basis plus the rule of inference 'φ / ¬S¬φ'.

We have already argued in favour of the PQ basis, (MIN) and (P1), and our arguments for (P2)-(P5) carry over to (P2*)-(P5*). The rule of inference just alluded to is a validity-preserving rule of minimal tense logic and, as we already stressed, we take this logic to be unproblematic.

The only substantial extra element in the new argument is (AA). In the usual Kripke-style model theory for tense logic, (AA) is valid on a temporal structure iff the relation of temporal accessibility (*x* has access to *y* iff$_\text{df}$ *x* = *y* or *x* is before *y* or *y* is before *x*) is transitive. This condition fails if, for instance, the temporal structure is forward branching. Given that forward branching is taken very seriously in certain philosophical debates, we cannot simply ignore it.

Even if (AA) is rejected, the proposed argument can still be recycled into an argument for the negation of line 5, namely for the claim that no time is *always always* a present time. This, we take it, is good enough. For what sense would it make to hold that some time is always, but not *always* always, a present time? Even if we do agree that there is no *logically valid* transition from '*t* is always a present time' to '*t* is always always a present time', we fail to see how one could reasonably accept the former but not the latter.

5. A further generalisation of the argument

So far we have argued that the view that PRESENTNESS could be frozen on a particular moment of time cannot be endorsed by a tense realist, irrespective of whether she is a permanentist or not. Obviously, there is a gap between this conclusion and the claim that *no* tense realist can endorse the view that time could fail to really pass, since not all versions of tense realism need to allow for a characterisation of temporal passage in terms of a metaphysically robust notion of presentness. For instance, a tense realist impressed by Williamson's (2013: 24-25) rejection of such a notion would reject such a characterisation.

However, the previous arguments can be modified to reach a much broader class of tense realisms. The only principles involving the concept of PRESENTNESS that were used in the arguments for real passage are

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(6)   For all times *t*, always, *t* is PRESENT only if *t* is a present time

and a principle giving a sufficient condition for real passage, namely

(PAS)   There really is temporal passage if some time is PRESENT and it is not the case that some time is always PRESENT

As a consequence, if we are right that the present (lowercase) cannot possibly be frozen on a particular moment of time, then any theory which countenances principles that result from (6) and (PAS) by replacing 'is PRESENT' by another predicate will be committed to the reality of temporal passage. Now, we submit, *many* versions of tense realism *do*, or at least *should*, countenance such principles.

Thus, replacing 'is PRESENT' in both (6) and (PAS) by the tensed predicate 'exists' yields principles that are compulsory for some versions of presentism (see e.g. Correia & Rosenkranz 2015). The same holds of the predicate 'is the last time' and all versions of the Growing Block Theory that are faithful to C. D. Broad's original view (see e.g. Correia & Rosenkranz 2018).

These suggestions require specific temporal ontologies, but other suggestions do not. Consider the concrete/non-concrete distinction that Linsky & Zalta (1994) and Williamson (2013) invoke in the context of modal metaphysics to replace the distinction between what is actual, understood in a metaphysically robust sense, and what is not.

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Williamson (2013: 6-18, 24-25, 28-29) uses this distinction in the context of temporal metaphysics to replace the distinction between what is PRESENT and what is not. On that account, replacing 'is PRESENT' in (6) and (PAS) by 'is concrete' yields highly plausible principles.

Another example is the predicate 'is accurate' introduced in Dorr & Goodman *forthcoming*, which applies to a time t iff all and only the true propositions are true at t. Replacement by this predicate yields highly plausible principles, given the natural assumption that there are no distinct times at which the very same propositions are true. This example is of particular importance, because accuracy can be defined using fairly neutral conceptual resources, namely quantification into sentential position, the 'at t' operator, a predicate for times and the material biconditional.

The previous considerations show that many versions of tense realism are committed to realism about temporal passage. Although we still have not reached the conclusion that *no* tense realist can be an anti-realist about temporal passage, what has been shown is already significant given the range of views covered by our arguments.

As a conclusion, however, we submit that all *sensible* versions of tense realism entail realism about temporal passage. The claim follows from the claim that the present (lowercase) cannot be frozen on a particular time, which we have defended at length above, and the further claim that all sensible versions of tense realism must countenance a notion that is connected to the concept of being a present time and the concept of

temporal passage in the way (6) and (PAS) say that PRESENTNESS is connected to them. This last claim we find overwhelmingly plausible.[3]

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[3] Earlier versions of this paper were presented at the 12th Conference of the Italian Society for Analytic Philosophy (Pistoia) in September 2016, at a session of the *eidos* seminar (University of Geneva) in April 2018 and at a session of the Ontoformat Metaphysical Seminar (University of Milan) in June 2018. We are grateful to the respective audiences for the useful discussions.

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