MAYBE SOME OTHER TIME

Martin Glazier

Abstract: I develop a puzzle whose resolution I argue requires an unfamiliar distinction between two forms or senses of metaphysical modality, each bearing a different relationship to time. In one sense of 'metaphysically possible', it is metaphysically possible for it to be a time other than the time it is now; in another sense, this is not metaphysically possible.

1. Introduction

As I write these words, it is now 2.02 p.m. But is it *necessary* that it is 2.02 p.m.? Or could it have been some other time instead?

It may seem obvious that it could have been another time. After all, just three minutes ago it was 1.59 p.m., and three minutes hence it will be 2.05 p.m. So surely it is at least *possible* for it to be another time.

In this paper, I develop a puzzling argument that seems to show that this apparently compelling thought leads to an absurd conclusion. But I do not believe the thought should be rejected on this basis. For the puzzle also relies on the implicit assumption that there is only one form of metaphysical modality. Although this assumption is almost universally held,[1] I will argue that it should be abandoned.

The result is an unfamiliar *dualist* conception of metaphysical modality. There is one form of modality on which what time it is is different in different possible worlds. In some

---

[1] Three exceptions are Rosen [2006], Chalmers [2012: 449 n. 5] and Dasgupta [2013: 120–1]. None of these authors, however, recognize the two forms of metaphysical modality whose existence I defend in this paper.

worlds it is 2.02 p.m., in others it is 1.59 p.m., in still others it is 2.05 p.m., and so on. But there is also a *second* form of modality on which it is the same time in every possible world.

As philosophers we have gotten used to thinking about modality in a purely tenseless setting, and in such a setting it makes no sense to ask, or say, what time it is at a given possible world. Possible worlds, on this way of thinking, are not 'centred' on any particular moment of time. But much ordinary modal thought is tensed, as when we wonder about what might happen to us in the future or what we could have done differently in the past. My puzzle, like these ordinary thoughts, involves both modality and tense. To address it we require a conception of modality on which it makes sense to ask what time it is at a given possible world and on which possible worlds can indeed be 'centred' (as, for instance, in Lewis [1979]).

Or, at least, we require this if we are to preserve the orthodox view that modal terms do not manipulate an independent time parameter in the semantics. The argument of this paper is primarily addressed to adherents of this orthodoxy. It should be acknowledged, however, that the orthodox view is not universally held[2] and that those who reject orthodoxy will perhaps not be moved by the argument of this paper to embrace dualism. Yet even they may find this argument to be of value, if only as further evidence of orthodoxy's pitfalls. In section 5 I briefly discuss how the puzzle might look to one who rejects orthodoxy.

My talk of possible worlds and moments of time need not be taken too seriously. In fact, the puzzle I will develop can be formulated without any reference to such entities—and I will do so. I will not hesitate to talk of worlds and moments when it aids comprehension, but such talk is not strictly necessary and could be dispensed with.

---

[2] A prominent challenge to orthodoxy issues from those theorists who take 'will' to be a modal, since it is plausible that 'will' manipulates a time parameter. Such theorists include (in linguistics) Enç [1996], Palmer [2001: 104–6], Kaufmann [2005], and Klecha [2013], and (in philosophy) Cariani and Santorio [2018].

The plan is this. I begin by stating the puzzle (section 2). I dismiss some inadequate ways of resolving it (section 3) before introducing my central distinction between two forms of metaphysical modality (section 4) and showing how it puts the puzzle to rest (section 5). I argue that these are two independent forms of modality, with neither reducible to or definable in terms of the other (section 6) before concluding (section 7).

2. The Puzzle of Possible Peace

The puzzling argument has two premises, one involving possibility and one involving necessity.

To motivate the possibility premise, visualize world peace. Imagine that tomorrow all the warring nations of the world lay down their arms, so that every country now at war is at peace. Clearly, this is possible; it is possible for it to be the case that every country now at war is at peace. And clearly this is possible even if we understand 'every country now at war is at peace' so that it is nonvacuously true if true at all—that is, so that its truth requires at least one positive instance. So understood, this is our possibility premise: possibly, every country now at war is at peace.

To motivate the necessity premise, consider any true statement whatsoever. This statement, no matter what it is, will also be true now. And conversely, consider any statement that is true now; no matter what it is, it will also be true. This does not seem to be an accident. It is no accident, that is, that whatever is true is true now and vice versa. On the contrary, this generalization has a kind of necessity. That is our necessity premise: necessarily, for all ϕ, ϕ iff now ϕ.

There was, to be sure, a tradition in twentieth-century philosophy according to which necessity was to be explained away as a linguistic phenomenon. Think of 'bachelors are unmarried', for instance, or 'p iff $\sim\sim p$', or even '$2 + 2 = 4$'. These statements appear to be

necessary, but this appearance was taken as an indication not of their possessing any genuine necessity but simply of their being analytically true. And although today few would endorse this kind of deflationary treatment across the board, one still sometimes sees it proposed in particular cases.

The question of when exactly a deflationary treatment of apparent necessity is warranted is too large to address here. But in my view it is no more plausible for the case of 'ϕ iff now ϕ' than it is for 'p iff $\sim\sim p$'. I will therefore set aside the possibility of this treatment in what follows, though the issue certainly deserves further discussion.

Our two premises give rise to the *puzzle of possible peace*.

(1)   Possibly, every country now at war is at peace. (Possibility premise)

(2)   So possibly, there is a country x such that x is now at war and x is at peace. (From 1)

(3)   Necessarily, for all ϕ, ϕ iff now ϕ. (Necessity premise)

(4)   So necessarily, if there is a country x such that x is now at war and x is at peace, then there is a country x such that x is at war and x is at peace. (From 3)

(5)   So possibly, there is a country x such that x is at war and x is at peace. (From 2 and 4)

The conclusion (5) is absurd. Yet it appears to follow from the premises (1) and (3) by way of the intermediate steps (2) and (4).

To obtain (2) from (1), we note that we are understanding 'every country now at war is at peace' so that it is nonvacuously true if true at all. So in any possible world at which this statement is true, there must *be* some country that is now at war. Since by (1) this country must also be at peace, we have (2).

We obtain (4) from (3) as follows. Let x be a country such that x is now at war and x is at peace. Instantiating the quantifier in (3), we have that from 'x is now at war' it

necessarily follows that x is at war. And so from 'x is now at war and x is at peace' it necessarily follows that x is at war and x is at peace. This straightforwardly yields (4).

(5) then appears to follow from (2) and (4) by the modal axiom K. (2) says that the following thing is possible: there is a country x such that x is now at war and x is at peace. And (4) says that it necessarily follows from 'there is a country x such that x is now at war and x is at peace' that there is a country x such that x is at war and x is at peace. But it is a consequence of axiom K that anything which necessarily follows from something possible must itself be possible $((\Diamond A \wedge \Box(A \rightarrow B)) \rightarrow \Diamond B)$. And so we have (5).

Our formulation of the puzzle has employed (in the necessity premise) quantification into sentence position, but it is worth noting that other formulations are available. For example, we might instead state the necessity premise by means of a schema. We might also formulate the puzzle using only first-order quantification over propositions, provided we admit *tensed* propositions.[3] The differences between these formulations will not matter for our purposes. I will officially work with the formulation that employs quantification into sentence position, though I will often semantically ascend for ease of presentation.

3. Some Inadequate Responses to the Puzzle

3.1 Objecting to Tense

Some may be tempted to dismiss the puzzle because it is stated in tensed terms. Indeed, this is an essential feature of the puzzle: without tense it cannot even be raised. And some philosophers (such as Sider [2001]) believe that the most metaphysically perspicuous description of the world will not involve tense at all. They are happy to allow, of course, that such a description may include *tenseless* statements about what is the case at various times. Thus it might include statements like 'at t_1 I stand', 'at t_2 I sit', and 'at t_3 I walk'. But it will

---

[3] Brogaard [2012] is a recent defence of tensed propositions.

not, they believe, include *tensed* statements like 'I stood', 'I am sitting', and 'I will walk'. Such tensed statements, these philosophers worry, presuppose a distinction between the past, the present, and the future, and they deny that the world in itself makes any such distinction.

But even if these philosophers are right to exclude tensed statements from the most metaphysically perspicuous description of the world, they must still admit that such statements can be *true*. I am here in my chair in front of my computer; however tenseless the world may be at its fundamental level, it can hardly be denied that I am sitting. Even these philosophers, then, should agree that the puzzle presents us with apparently true statements that apparently entail an unacceptable conclusion. And so they still must offer a response; the puzzle, even for them, cannot simply be dismissed.

Other philosophers may be suspicious of our tensed puzzle for a different reason. These philosophers refuse to countenance tensed propositions [Moore 1927; Stalnaker 1970; Lewis 1980]. They agree that there are tensed *sentences*, of course, but they hold that the propositions stated by such sentences are invariably tenseless. But we may respond in much the same way as before. Even if the tensed sentences (1) and (3) state tenseless propositions, these sentences still appear to be true and to entail an unacceptable conclusion, and so a response to the puzzle is still required.

There is admittedly a view on which the puzzle *can* be dismissed.[4] On this view, there are no tensed sentences. There are only tensed utterances, which may be used to state in an elliptical way what is properly stated by means of a tenseless sentence. For example, when I utter 'I am sitting', the relevant tenseless sentence is something like 'I am sitting at t_0'; I simply elide the words 'at t_0'.

This view, however, is not very plausible. Of course, the phenomenon of linguistic ellipsis is real enough. For example, in response to 'Who will answer the door?', one may say

---

[4] I am grateful to a referee for suggesting this view.

'I will', thereby eliding 'answer the door'. But in such cases we have the strong sense that some words are being left out. We have no such sense in the case of 'I am sitting'. I will therefore assume that this view is false and that we have no choice but to address the puzzle directly.

3.2 Rejecting the Possibility Premise

It might be thought that a response to the puzzle is easily given by means of a scope distinction. One might reject the possibility premise of the puzzle

(1)   Possibly, every country now at war is at peace

but attempt to soften the blow by pointing out that there is a true claim 'in the vicinity': every country now at war is such that, possibly, it is at peace. In effect, the original possibility claim, whose operator takes wide scope, is replaced with one whose operator takes narrow scope. The puzzle will then no longer arise.

But this response fails to resolve the puzzle. To be sure, the replacement, narrow-scope claim is doubtless true. For take any now-warring country. It could simply surrender tomorrow, even if other countries continued to fight. The problem is that the original, wide-scope claim is also true. For it is also possible for all the now-warring countries to be at peace *together*. It is this claim that gives rise to the puzzle.

We can now see why we have formulated the puzzle in precisely the way we have. Why did we not simply take

(2)   Possibly, there is a country *x* such that *x* is now at war and *x* is at peace

as a premise of the puzzle, given its intrinsic plausibility, and leave (1) aside altogether? The reason is that, in the absence of (1), someone might try to reject (2) in exactly the way we considered rejecting (1). Someone might replace the wide-scope claim (2), that is, with the narrow-scope claim that there is a country *x* such that *x* is now at war and possibly, *x* is at

7

peace. This narrow-scope claim does not give rise to the puzzle. But the evident truth of the wide-scope possibility premise (1) blocks this response. For it forces upon us the wide-scope claim (2).

There is yet another narrow-scope replacement claim that should be considered. One might replace the wide-scope possibility premise (1) with the narrow-scope claim that the countries now at war are such that possibly, they are at peace. Where the possibility premise employs singular or individual quantification, this new replacement claim employs plural quantification, or plural reference. This plural claim does not give rise to the puzzle.

We are not yet in a position to address this pluralist resolution of the puzzle. We will return to it in section 3.4. Let us set it aside for the moment and take up the other premise of the puzzle.

3.3 Rejecting the Necessity Premise

The necessity premise of the puzzle is

(3)   Necessarily, for all ϕ, ϕ iff now ϕ.

Might there be a way to reject this claim?

The claim is hard to deny in the case of *tensed* statements. If I am sitting, for instance, then I must also be sitting now. And in the other direction, if I am sitting now, then I must also be sitting.

But what about tenseless statements? Although $2 + 2 = 4$, it might be thought that it is not *now* the case that $2 + 2 = 4$. Or again, although the fifteenth century is an artistically important period, it might be thought that this truth does not hold *now*. Such tenseless statements, one might object, are not properly said to be true *at* a time. Rather, they are true *regardless* of the time.

A straightforward response to this objection would be to restrict the quantifier in 'for all ϕ, ϕ iff now ϕ' to cases in which ϕ is tensed. The reasoning of the puzzle, as detailed in section 2, only requires the necessity premise to license the inference from 'x is now at war' to 'x is at war'. Since 'x is at war' is a tensed statement, the puzzle only requires the quantifier in the necessity premise to range over tensed statements. Everything I say in the remainder of the paper is easily modified to be compatible with this response to the objection.

I am inclined, however, to prefer a different response which leads to a simpler overall view. This is to insist that, even if there is a restrictive sense of 'now' in which tenseless statements cannot be said to be true now, there is also an ordinary sense in which they can. It makes perfect sense to say, for example, that although the world has changed a great deal since 2019, life is not without its constants—since after all it was true then and it is still true now that $2 + 2 = 4$. In this sense of 'now', the tenseless statements that are true now are simply the tenseless statements that are true. Following Fine [2005: 322–4], let us call this the *extended* sense of 'now'.

The necessity premise of the puzzle is true when understood in the extended sense. The possibility premise, of course, is also true when understood in the extended sense, and the inference from premises to conclusion remains as plausible as before. The puzzle therefore still arises when 'now' is understood in the extended sense throughout.

3.4 An Equivocation on 'Now'?

Yet another potential response to the puzzle is to argue that it arises merely from an equivocation between two different senses of 'now' (both of which are extended). The possibility premise involves one sense; the necessity premise involves the other sense. Thus the intermediate steps (2) and (4) also involve different senses of 'now' and so the conclusion (5) does not follow from them. But what might these two senses of 'now' be?

Arthur Prior [1968] distinguished *redundant* and *nonredundant* senses of 'now'. When a sentence token is prefixed with 'now' in its nonredundant sense, that ensures that its moment of evaluation is the present, even if the token lies within the scope of another operator. The redundant sense of 'now', by contrast, is semantically inert; it does not shift the moment of evaluation. To illustrate, consider the statement 'tomorrow there will come a storm stronger than any we now know'. If this statement is true at all, it is true only in the nonredundant sense of 'now'.

One might now suggest that one of the puzzle's premises involves one of these senses of 'now', while the other premise involves the other sense. But which premise involves which sense? The possibility premise

(1)   Possibly, every country now at war is at peace

cannot be understood in the redundant sense. For if it *were* so understood, then

(2)   Possibly, there is a country x such that x is now at war and x is at peace

would also involve the redundant sense and so would be equivalent to

(5)   Possibly, there is a country x such that x is at war and x is at peace.

Thus if the possibility premise (1) is understood redundantly, absurdity follows even without the necessity premise.

If this response to the puzzle is to have any hope of success, then, the possibility premise must be understood to involve the nonredundant sense. And so it is the *necessity* premise

(3)   Necessarily, for all ϕ, ϕ iff now ϕ

that will have to be understood to involve the redundant sense.

It is not at all clear, however, that there even is a redundant sense. The standard view for the past half-century has been that 'now' is univocally nonredundant [Kamp 1971; Vlach 1973; Cresswell 1990]. And even if one is prepared to abandon that view, this response still

fails to resolve the puzzle. For although the necessity premise is of course plausible when understood redundantly, it is also plausible when understood nonredundantly. It is hardly an accident, after all, that whenever something is true it also turns out to be true right now, nonredundantly, at *this* very moment, and vice versa. And since, as we have seen, the possibility premise can *only* be understood nonredundantly, we still face the absurd conclusion (5).

But although the puzzle arises when 'now' is understood nonredundantly throughout, it might be thought that there are in fact two nonredundant senses of 'now'. One of these senses is *rigid*; the other is *nonrigid*. When a sentence token is prefixed with 'now' in the rigid sense, that ensures that its world of evaluation is the actual world, even if the token lies within the scope of another operator.[5] The nonrigid sense, by contrast, does not shift the world of evaluation (though since it is nonredundant it may shift the *moment* of evaluation). It is true only in the rigid sense that possibly, the man who is now president is never born. After all, any possible world at which a man is never born is a world at which he is never president. And it is true only in the nonrigid sense that possibly, Trump is now president. After all, at the actual world, Trump is *not* now president.

One might now suggest that one of the premises of the puzzle involves one of these senses of 'now' while the other involves the other. The necessity premise is not plausibly understood to involve the rigid sense, since it is clearly possible for things to differ from how they are now at the actual world. It will therefore have to be understood to involve the nonrigid sense.

The possibility premise must then be understood to involve the other, rigid sense. So understood, the premise says that there is a possible world *w* such that every country now at

---

[5] A similar treatment is standardly given of the behaviour of 'actually' in sentences like 'possibly, everyone actually rich is poor'. See, for example, Crossley and Humberstone [1977].

war at the actual world is, at *w*, at peace. And this is clearly true. Indeed, it is probably the most natural reading of 'possibly, every country now at war is at peace'.

This response, then, has significant appeal. Nevertheless, it fails to resolve the puzzle. For although the possibility premise is plausible when understood rigidly, it is also plausible when understood nonrigidly.

To see why, start by considering the following principle:

Possibility of the past. For all ϕ, if it was the case that ϕ, then possibly ϕ.

Whatever was true, that is, is possibly true.

This principle is very plausible.[6] After all, if ϕ has already managed to be the case, then there is nothing about the world, or about ϕ, to block ϕ from being the case. And so how could ϕ fail to be possible?

We now make the following observation: at one time in the past—in 1954, as it happens—every country now at war was at peace. But is this true in the rigid sense of 'now' or in the nonrigid sense? Both! Since our observation concerns the actual world, it makes no difference to its truth whether 'now' is taken to be rigid or nonrigid. It is the case in *both* senses of 'now' that in 1954, every country now at war was at peace. And so the principle of the possibility of the past entails that, in both senses of 'now', possibly, every country now at war is at peace. In particular, then, the principle entails that this holds in the nonrigid sense. And so the possibility premise is plausible when understood nonrigidly.

If we are to grasp the nonrigid reading of the possibility premise, we need to resist our natural inclination to read it rigidly. It may help to consider how the truth of the nonrigid reading could be witnessed. The above argument from the possibility of the past suggests one

---

[6] It is also a consequence of the 'perpetuity' principle defended by Dorr and Goodman [2020].

kind of witness possible world: a world in which the countries now at war there are the actual now-warring countries. And this witness is indeed sufficient to establish the truth of the nonrigid reading. But there are other witness worlds in which the countries now at war there are *not* the actual now-warring countries.

Consider two countries that are actually now at peace—Switzerland and Sweden, say. Imagine a movie depicting a present-day Swiss invasion of Sweden in an otherwise peaceful world. And suppose the movie contains a flashback to the halcyon days before the war. In the flashback, Switzerland and Sweden are at peace—but not for long, since in the world of the movie they are *now* at war. The possible world depicted by this flashback witnesses the truth of the nonrigid reading.

Movies aside, the principle of the possibility of the past on its own ensures the plausibility of the possibility premise, understood nonrigidly. And since, as we have seen, the necessity premise can *only* be understood nonrigidly, we again face the absurd conclusion (5). The puzzle arises when 'now' is understood nonrigidly throughout.

One might attempt to avoid this conclusion by objecting to the principle of the possibility of the past in the following way. In 1666, St Paul's Cathedral burned down in the Great Fire of London. The principle thus entails that possibly, the cathedral burns down. But one might insist that this is *not* possible, since it has already burned down and so cannot burn down again. This objection is compelling, however, only if the principle is taken to involve the 'historical' notion of possibility [Prior 1967: ch. 7], which holds fixed the world's history, including the cathedral's demise. But it is much more plausible to take the principle to involve metaphysical possibility, which does *not* hold history fixed. The objection therefore fails.

But even though the principle should be allowed to stand, one might object to its use here. We argued that given the principle, the possibility premise

(1)   Possibly, every country now at war is at peace

follows from the observation that in 1954 every country now at war was at peace. But does

this observation not entail only that possibly, every country now at war *was* at peace?

No. For the use of the past tense in 'in 1954 every country now at war was at peace' is

plausibly taken merely to signal that 1954 is in the past. (After all, the intended meaning is

not that in 1954 it was the case at some still earlier time that every country now at war was

then at peace.) To be sure, it is correct to say that it was the case (in 1954) that every country

now at war was at peace. But it is equally correct to say, in the style of the tense logicians,

that it was the case (in 1954) that every country now at war *is* at peace. Here we employ a

disengaged use of the tensed predicate 'is at peace', one that in itself specifies nothing about

the time at which it is instantiated. Applied to this claim of 'tense logic-ese', the principle of

the possibility of the past does indeed entail that possibly, every country now at war is at

peace.

The principle also allows us to address the pluralist resolution of the puzzle, which we

set temporarily aside in section 3.2. According to this resolution, the possibility premise (1)

of the puzzle, which employs individual quantification, is false, and in fact what is true is the

plural claim that the countries now at war are such that possibly, they are at peace. But we are

now in a position to see that, although the plural claim is doubtless true, so is the individual

claim (1). For in 1954 every (individual) country now at war was at peace, and so given the

principle of the possibility of the past, (1) follows. The puzzle persists!

The puzzle arises, we have seen, when both of its premises are taken to involve the

extended, nonredundant, nonrigid sense of 'now'. So understood, the premises are plausible

yet appear to lead to an absurd conclusion. We will understand 'now' in this sense for the

remainder of the paper.

4. Proprial and Nonproprial Modality

We have seen that the puzzle cannot be resolved by rejecting either the possibility premise or the necessity premise. Nor does it rest on an equivocation between different senses of 'now'.

But I will argue that the puzzle *does* rest on an equivocation—only the equivocation is not between different senses of 'now' but rather between different senses of the modal operators. The premises of the puzzle involve different forms of modality. The notion of possibility involved in the possibility premise is not the dual of the notion of necessity involved in the necessity premise. And so the modal axiom K does not license the inference from (2) and (4) to the absurd conclusion (5).

The two forms of modality differ in their relationship to the time it is now. It will be convenient to have a name for this time; let us use 'Now'. The time or moment Now should be sharply distinguished from the tense operator 'now ϕ' which has figured so prominently in the paper thus far.

Call a moment t *veridical* if it is the unique moment such that for all ϕ: ϕ iff at t, ϕ. It is then easy to see that Now is veridical; we need only consider cases. Thus not only is it true that I am sitting, it is also true at Now that I am sitting, and vice versa. And let us understand 'at t' in an extended sense analogous to the extended sense of 'now', so that tenseless statements fit the pattern too: not only is it true that $2 + 2 = 4$, it is also true at Now that $2 + 2 = 4$, and so on. In general, then, whatever is true is true at Now and vice versa. In this sense, what is true is *aligned* with Now.

What is more, Now is unique in this respect. After all, the way the world is at the moment Now will differ somehow from the way it is at any past or future moment t, if only with respect to whether t is past or future. Thus since what is true is aligned with Now, it cannot be aligned with this other moment t. Now, therefore, is the unique moment such that whatever is true is true at it and vice versa, and so Now is veridical.

The veridicality of Now is in one sense necessary. After all, it is no accident that whatever is true is true at Now and vice versa, and it is also no accident that what is true at Now will differ from what is true at any other moment t, if only with respect to whether t is past or future. This sense of necessity requires our *own* moment to be veridical and so we will call it the *proprial* sense (from the Latin for 'own').

But there is another sense in which the veridicality of Now is *not* necessary. After all, which moment is veridical changes over time. If t is a past moment, then although t is not veridical, it *was* veridical. And so section 3.4's principle of the possibility of the past entails that possibly, t is veridical. (A parallel argument establishes the possibility of a *future* moment's veridicality.) So although in fact Now is veridical, it is possible for some other moment to be veridical. Of course, this is not possible in the proprial sense; in that sense, Now is necessarily veridical. It must therefore be possible in another, *nonproprial* sense.[7]

These two senses or forms of modality, proprial and nonproprial, are the key to our resolution of the puzzle of possible peace. But before we present this resolution, let us say more about these two forms of modality.

They differ, as we have seen, over which moments are possibly veridical. In the nonproprial sense, moments other than Now are possibly veridical; in the proprial sense they are not. But notice that a moment is veridical if, and only if, that moment is what time it is. For the left-to-right direction, suppose first that some moment t is veridical. Then whatever is true at t is true simpliciter. One of the things that is true at t is: t is what time it is. It follows that it is true simpliciter that t is what time it is. For the right-to-left direction, suppose that t is what time it is. Whatever this fact ultimately amounts to, it surely entails that whatever is

---

[7] It must then be the *nonproprial* form of possibility which figures in the principle of the possibility of the past.

true is true at t and vice versa. And since what is true at t will differ from what is true at any other moment, this entails that t is veridical.

This link between veridicality and what time it is can help us to understand proprial and nonproprial modality (and I will make use of it freely in what follows). Since proprial modality holds fixed which moment is veridical, and since the veridical moment is what time it is, we may gloss the proprial notions as necessity and possibility *given what time it is.* In the proprial sense, it is necessary what time it is: Now. Nonproprial modality, by contrast, allows for variation in which moment is veridical, and so we may gloss the nonproprial notions as necessity and possibility *regardless of what time it is.* In the nonproprial sense, it is possible for it to be a time other than Now.

Despite its unfamiliarity to philosophers, the distinction between proprial and nonproprial modality is not absent from our ordinary thought. We naturally think, for instance, that I could not have been a fried egg. Since we mean I could not have been a fried egg, not only now, but at any time, we here have in mind the nonproprial form of modality. But we also think that if I am to freely consent to something, then it must be possible for me *not* to consent to it.[8] And we mean this must be possible now, for if it were possible only in ten years then my consent would not be so free after all. Here we have in mind the proprial form of modality.

Where we have a form of modality, we have a domain of possible worlds. We have proprial and nonproprial forms of modality, so we have two domains of possible worlds. At every proprially possible world it is the same time: Now. The nonproprially possible worlds, by contrast, vary with respect to what time it is and perhaps also, as we will see below, with

---

[8] Frankfurt [1969] famously held that there are cases in which one acts in a way for which one is morally responsible, even though, in some sense, one could not have done otherwise. But even Frankfurt's cases provide the *metaphysical* possibility of doing otherwise, which is all that is relevant here. See Vihvelin [1996] and Sider [2002] for related discussion of the link between freedom and metaphysical possibility.

respect to whether it is any time at all. Clearly, both the proprial and nonproprial worlds should be conceived of as being capable of being 'centred' on some moment. They are worlds about which it makes sense to ask 'what time is it there?'

5. Resolution of the Puzzle

We can now give our resolution of the puzzle of possible peace. The possibility premise is true only if possibility is understood nonproprially, while the necessity premise is true only if necessity is understood proprially. And so no matter how the modal notions involved in the puzzle are understood, the absurd conclusion does not follow.

Consider first the possibility premise

(1)   Possibly, every country now at war is at peace.

Since we are understanding 'now' nonrigidly, this premise requires there to be a possible world w at which every country that is now at war in w is also at peace in w. Clearly, this must be a world in which it is a time other than Now. And so it must be a nonproprial world. This premise is therefore true only in the nonproprial sense.

Consider next the necessity premise

(3)   Necessarily, for all ϕ, ϕ iff now ϕ.

If, no matter which possible world we choose, everything true is true now and vice versa, then it must be that no matter which possible world we choose, the time it is is Now. The possible worlds in question, then, are the proprial ones, and so the premise is true only in the proprial sense.

Since the premises cannot be plausibly understood to involve the same form of modality, we face no pressure to accept the absurd conclusion

(5)   Possibly, there is a country x such that x is at war and x is at peace.

And indeed this is false no matter how possibility is understood. For consider any possible world, whether proprial or nonproprial. Whatever time it is there, at that time there cannot be a country that is both at war and at peace.

That is our treatment of the puzzle. But will this treatment overgenerate and force us to accept similar modal distinctions elsewhere? Consider a *spatial* variant of the puzzle, which results from replacing the possibility premise with 'possibly, everything here is far away' and the necessity premise with 'necessarily, for all ϕ, ϕ iff here ϕ'. Or consider a *purely modal* variant of the puzzle whose premises are 'possibly, everyone actually rich is poor' and 'necessarily, for all ϕ, ϕ iff actually ϕ'. We might even consider a *subjectivist* or *perspectival* variant of the puzzle whose premises are 'possibly, everything which is from my perspective tasty is disgusting' and 'necessarily, for all ϕ, ϕ iff from my perspective ϕ'. Must we respond to these variant puzzles in the same way we responded to the puzzle of possible peace? And so must we distinguish spatially proprial and nonproprial forms of modality, and perspectivally proprial and nonproprial forms, and so on?

I would be happy if the answer were 'yes', since my own view is that we should accept these distinctions. But I also think that the variant puzzles are different enough from the puzzle of possible peace that they alone should not force us to accept their corresponding distinctions. The best arguments for these distinctions, I believe, require resources beyond the puzzle 'template'.[9]

Here is one reason for this (not the only one). In section 3.4 we argued that, since both premises of the puzzle of possible peace are plausible in a nonredundant, nonrigid sense of 'now', the puzzle cannot be dissolved by distinguishing rigid and nonrigid senses. An

---

[9] I discuss arguments in favor of the perspectival distinction in Glazier [2020] and in favor of a distinction closely related to the purely modal distinction in Glazier [ms] and Glazier and Krämer [ms].

analogous argument will need to be made for each of the variant puzzles if they are not to be dissolved in the same way.

Now in order to argue that both premises of the puzzle of possible peace are plausible in the nonrigid sense of 'now', we appealed to the principle of the possibility of the past, the claim that for all ϕ, if it was the case that ϕ, then possibly ϕ. For the variant puzzles, we will need to appeal to analogous principles. In the case of perspective, for example, the analogous principle is that for any ϕ, if from someone's perspective ϕ, then possibly ϕ.[10] But this principle does not, I think, enjoy quite as much intuitive support as does the principle of the possibility of the past (the same goes for the principle for place). Further argument is required.

Matters are different with the purely modal variant. Here the problem lies not with the analogous principle, which turns out to be trivially true, but with the prior question of whether there even *is* a nonredundant, nonrigid sense of 'actually'. Most philosophers would answer 'no', since most philosophers hold that any nonredundant sense of 'actually' will obey the principle that for all ϕ, if ϕ, then necessarily actually ϕ. I myself believe there are good reasons to reject this principle, but that again requires further argument.[11]

Let me conclude this section by mentioning an alternative way of resolving the puzzle, one more linguistic than metaphysical.[12] This resolution involves the rejection of the orthodox view that modal terms do not manipulate an independent time parameter in the semantics. A 'heterodox' theorist who rejects this view might respond to the puzzle as follows. Rather than recognize two different forms of modality, she might recognize two different uses of modal language. The possibility premise of the puzzle, according to her, involves a use of a modal term ('possibly') on which that term manipulates the time

---

[10] I discuss this principle in Glazier [2020].
[11] I argue against the principle in Glazier [ms] and Glazier and Krämer [ms].
[12] I am grateful to a referee for suggesting this alternative.

parameter. The necessity premise, by contrast, involves a use of a modal term ('necessarily') on which that term does not manipulate the time parameter.[13] And she may then argue that because the puzzle's premises involve different uses of modal language, the absurd conclusion does not follow from them. This alternative treatment of the puzzle deserves a fuller examination; however there is no space for that examination here, and so I must leave the task for another time.

6. Against Reduction

To resolve the puzzle of possible peace, I have argued, we must distinguish proprial and nonproprial modality. But are these two independent forms of modality, or can one be reduced to or defined in terms of the other? I believe that no such definition can be given, and although I cannot here consider all potential definitions, I will argue against the two I take to be most promising.

To begin, it is natural to suspect that proprial necessity can be defined as a *conditional* form of nonproprial necessity in the following way: for it to be proprially necessary that ϕ is just for it to be nonproprially necessary that, if Now is veridical, then ϕ.

An immediate difficulty arises. Consider the case in which ϕ itself is 'Now is veridical'. Then it is proprially necessary that ϕ. But soon a moment other than Now will be veridical, and so soon it will no longer be proprially necessary that ϕ. Yet it will still be nonproprially necessary that *if* Now is veridical then ϕ.

We may avoid this difficulty by removing from the definition the reference to the particular moment Now. Instead, we may say that for it to be proprially necessary that ϕ is

---

[13] These two uses of modal language might be characterized in terms of the framework of Lewis [1980], in which a sentence has its truth value relative to (among other things) a time and an *uncentred* possible world. The time-manipulating uses may be taken to be those which manipulate both the world and time parameter, the non-time-manipulating uses those which manipulate only the world parameter.

just for the veridical moment, whatever it is, to be such that it is nonproprially necessary that, if that moment is veridical, then ϕ. That is, it is for there to be some moment t such that (i) t is veridical and (ii) it is nonproprially necessary that, if t is veridical, then ϕ.[14]

But as Kit Fine [2002: 265–6] has pointed out in a different context, this style of definition faces an objection. Consider again the case in which ϕ is 'Now is veridical'. It is proprially necessary that ϕ, and according to the revised definition, this will amount to its being the case that (i) ϕ is true and (ii) it is nonproprially necessary that if ϕ then ϕ. But (ii) is simply an instance of self-entailment, which surely does nothing to help make ϕ necessary. Thus the proprial necessity of ϕ, on the revised definition, will simply amount to the truth of ϕ—and yet this does not seem possible. Truth is one thing, necessity another.

If we cannot define proprial modality in terms of nonproprial modality, what about the other direction? One might suspect that for it to be nonproprially possible that ϕ is just for there to be some moment at which it is proprially possible that ϕ.

This definition faces two objections. First, it cannot account for the possibility of a nonactual moment's being veridical. Suppose, for instance, that time will come to an end at some future moment t. Even so, one might still think it *possible* for time not to come to an end and so for some nonactual moment t^+, later than t, to be veridical. But since t^+ is distinct from Now, it is not proprially possible for t^+ to be veridical. Nor, given the definition, is it nonproprially possible. For since t^+ is distinct from every actual moment, there is no actual moment at which it is proprially possible for t^+ to be veridical.

Second, the definition cannot account for the possibility that no moment is veridical. One might think it possible, for instance, for time not to exist, perhaps on the grounds that reality could have consisted of nothing other than the timeless immaterial realm of

---

[14] Dorr and Goodman [2020: 655] consider an analogous definition of a notion they call 'immediate necessity'.

mathematics.[15] But clearly there is no moment at which this is *proprially* possible, and so given the definition, it will not be nonproprially possible either.

I do not know whether these possibilities—that a nonactual moment is veridical, and that no moment is—are genuine or illusory. But the question whether they are genuine is clearly a matter of substantive debate and is not to be settled merely by definition.[16]

But although these definitions should be rejected, our investigations in this section have not been altogether fruitless. Consider again our proposed definition of proprial necessity as a conditional form of nonproprial necessity. Although as a definition it is unacceptable, it does appear to be extensionally adequate. It appears, therefore, that the following material biconditional is true:

Proprial–nonproprial link. It is proprially necessary that ϕ iff the veridical moment is such that it is nonproprially necessary that, if that moment is veridical, then ϕ.

And this link does shed some light on the relationship between our two forms of modality. It entails, for instance, that whatever is nonproprially necessary is proprially necessary and that whatever is proprially possible is nonproprially possible.

This last point helps clarify the relationship between the proprially possible worlds and the nonproprially possible worlds. Since whatever is proprially possible is nonproprially possible, it must be that for every proprial world, there is a corresponding nonproprial world

---

[15] The possibility that time might not have existed has been appealed to in a different context by Sider [2001: 99–100].

[16] The second of our two objections is also a difficulty for definitions of the nonproprial possibility of ϕ obtained by prefixing ϕ with any sequence of the operators 'there is some moment at which it is the case that' and 'it is proprially possible that'.

at which exactly the same statements are true. But is this nonproprial world distinct from the corresponding proprial world, or identical to it?

We can go either way. If we say the worlds are distinct, we arrive at a view on which there are two disjoint collections of worlds, proprial and nonproprial. On this view, just as there are two forms of modality, so there are two kinds of possible worlds. If on the other hand we say the worlds are identical, we arrive at a view on which the proprial worlds form a subset of the nonproprial worlds. On this view, although there are two forms of modality, there is but a single collection of possible worlds, all of which are nonproprial and some of which are proprial.

7. Conclusion

I have argued that it is only by recognizing the distinction between the proprial and nonproprial forms of metaphysical modality that the puzzle of possible peace can be resolved. If I am right, then by careful consideration of the puzzle we have arrived at a certain, not unattractive, picture of modality and time. The world is affixed by the glue of necessity to *our* moment in particular. But it retains the potential to adhere to some other moment instead.

University of Hamburg

drafts of this paper and to Yael Lowenstein and Jeff Russell for serving as conference commentators.

References

Brogaard, B. 2012. *Transient Truths*, Oxford: Oxford University Press.

Cariani, F. and P. Santorio 2018. *Will* Done Better: Selection Semantics, Future Credence, and Indeterminacy, *Mind* 127/505: 129–165.

Chalmers, D. 2012. *Constructing the World*. Oxford: Oxford University Press.

Cresswell, M. 1990. *Entities and Indices*, Dordrecht: Kluwer Academic Publishers.

Crossley, J. and L. Humberstone 1977. The Logic of "Actually", *Reports on Mathematical Logic* 8: 11–29.

Dasgupta, S. 2013. Absolutism vs Comparativism about Quantity, in *Oxford Studies in Metaphysics* 8, ed. K. Bennett and D. W. Zimmerman, Oxford: Oxford University Press, 105–48.

Dorr, C. and J. Goodman 2020. Diamonds are Forever. *Noûs* 54/3: 632–665.

Enç, M. 1996. Tense and Modality, in *The Handbook of Contemporary Semantic Theory*, ed. L. Shalom, Cambridge, MA: Blackwell, 345–58.

Fine, K. 2002. The Varieties of Necessity, in *Conceivability and Possibility*, ed. T. S. Gendler and J. Hawthorne, Oxford: Oxford University Press, 253–82.

Fine, K. 2005. Necessity and Non-existence, in *Modality and Tense: Philosophical Papers*, Oxford: Oxford University Press, 321–54.

Frankfurt, H. 1969. Alternate Possibilities and Moral Responsibility, *Journal of Philosophy* 66: 829–39.

Glazier, M. 2020. Being Someone Else, in *Becoming Someone New: Essays on Transformative Experience, Choice, and Change*, ed. E. Lambert and J. Schwenkler, Oxford: Oxford University Press, 37–51.

Glazier, M. ms. The Contingency of Actuality.

Glazier, M. and S. Krämer. ms. The Logic of Contingent Actuality.

Kamp, H. 1971. Formal Properties of 'Now', *Theoria* 37/3: 227–274.

Kaufmann, S. 2005. Conditional Truth and Future Reference, *Journal of Semantics* 22/3: 231–80.

Klecha, P. 2013. Diagnosing Modality in Predictive Expressions, *Journal of Semantics* 31/3: 443–55.

Lewis, D. 1979. Attitudes *De Dicto* and *De Se*, *Philosophical Review* 88/4: 513–543.

Lewis, D. 1980. Index, Context, and Content, in *Philosophy and Grammar*, ed. S. Kanger and S. Öhman, Dordrecht: D. Reidel Publishing Company, 79–100.

Moore, G. E. 1927. Facts and Propositions, *Proceedings of the Aristotelian Society, Supplementary Volumes* 7: 171–206.

Palmer, F. R. 2001. *Mood and Modality* (2nd ed.), Cambridge: Cambridge University Press.

Prior, A. 1967. *Past, Present and Future*, Oxford: Oxford University Press.

Prior, A. 1968. "Now", *Noûs* 2/2: 101–119.

Rosen, G. 2006. The Limits of Contingency, in *Identity and Modality*, ed. F. MacBride, Oxford: Oxford University Press, 13–39.

Sider, T. 2001. *Four-Dimensionalism: An Ontology of Persistence and Time*, Oxford: Oxford University Press.

Sider, T. 2002. Time travel, Coincidences and Counterfactuals, *Philosophical Studies* 110: 115–138.

Stalnaker, R. 1970. Pragmatics, *Synthese* 22/1&2: 272–289.

Vihvelin, K. 1996. What Time Travelers Cannot Do, *Philosophical Studies* 81: 315–330.

Vlach, F. 1973. *'Now' and 'Then': A Formal Study in the Logic of Tense Anaphora*, Ph. D. Thesis, University of California, Los Angeles.