

An argument for temporalism and contingentism

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Abstract Aristotle and Aquinas may have held that the things we believe and assert can have different truth-values at different times. Stoic logicians did; they held that there were “vacillating assertibles”—assertibles that are sometimes true and sometimes false. Frege and Russell endorsed the now widely accepted alternative, where the propositions believed and asserted are always specific with respect to time. This paper brings a new perspective to this question. We want to figure out what sorts of propositions speakers believe. Some philosophers have argued that we must take agents to believe temporalist propositions—propositions that are in-specific with respect to time—if we’re to explain the agent’s own thoughts and inferences. I’ll explore another strategy. I’ll focus on our ability to think and reason about the beliefs that other people have. I’ll suggest that an adequate account of that ability requires that we take others to believe some temporalist propositions. I also ask whether all propositions can be specific with respect to worlds, and close by exploring some general issues.

Keywords Temporalism · Eternalism · Contingentism · Necessitarianism · Propositions · Truth

Aristotle and Aquinas may have held that the things we believe and assert can have different truth-values at different times. Stoic logicians did; they held that there were ‘vacillating assertibles’ [ἀξιώματα μεταπίπτοντα]—assertibles that are sometimes true and sometimes false.¹ Frege and Russell endorsed the now widely accepted alternative, that, as Frege (1918/1997, p. 343) suggested, “the words ‘this

¹ Künne (2003, pp. 295–298) helpfully discusses the relevant history in more detail.

tree is covered with green leaves' are not sufficient by themselves to constitute the expression of thought, for the time of utterance is involved as well. Without the time specification thus given we have not a complete thought, i.e., we have no thought at all".²

Why does Frege need to claim that each proposition (each 'thought') is specific with respect to time? As long as he accepts that claim, he can deny that propositions are true at times. After all, people who assertively utter 'it's raining' sometimes assert something true, and sometimes they assert something false. Frege wants to deny that the proposition asserted is true at one time and false at another. So he must hold that the utterances express different propositions at the different times. But it seems like the only way the utterances could express different propositions is if each proposition is specific with respect to time.

This paper brings a new perspective to this question. We want to figure out what sorts of propositions speakers believe. Some temporalists have argued that we must take agents to believe temporalist propositions—propositions that are inspecific with respect to time—if we're to explain the agent's own thoughts and inferences. I'll explore another strategy. I'll focus on our ability to think and reason about the beliefs that *other* people have. I'll suggest that an adequate account of that ability requires that we take others to believe some temporalist propositions.

The argument comes in two parts. The first part focuses on my ability to entertain the propositions that others will believe. I show that, if Frege is right, I'm unable to entertain some of the propositions that others will believe. The second part explains why this point matters. The goal is to show that our ability to reason about the beliefs of other agents depends on our ability to entertain the propositions they believe. To achieve this goal, I focus on conditionals about what'd be true if their belief were true; conditionals of the form 'if what Mary believes is true, ...'.

In the cases that interest me, it seems like we do know those conditionals. But I show that the best accounts of our knowledge of those sorts of conditionals rely crucially on our ability to entertain the proposition that the agent believes. If I'm right that we sometimes can't entertain the eternalist propositions Frege posits, we must be taking the agents to believe something other than those eternalist propositions. We thus see powerful new evidence for temporalism if we focus on our ability to reason about what others will believe.

But the paper starts by situating this question in a broader context. Just like we might wonder whether propositions are all specific with respect to time, or true at a time, we might also wonder whether they're all specific with respect to world, or true at a world. I begin by focusing on the claim that propositions are all specific with respect to world. I develop the argument just outlined for worlds before extending it to times. The assumptions needed for worlds are simpler, so the structure of the problem emerges in sharper outline.

² Russell (1906, p. 257) similarly holds that "in order to express explicitly the whole of what is meant, it is necessary to add the date, and then the statement is no longer 'variable' but always true or false".

Contemporary eternalists include Michael Glanzberg, King (2003), Richard (1981), Salmon (1989), Soames (2011), Robert Stalnaker, and Jason Stanley. Contemporary temporalists include Brogaard (2012), Kaplan (1989), Lewis (1980), Ludlow (2001), MacFarlane (2003), and Sullivan (2014).

My Guiding Question asks: can we explain our ability to think/reason about what others would/will believe if we suppose the objects of belief are always specific with respect to world and time? I say that the answer is “No!”

After developing this argument for both worlds and times, I explore some broader issues. I explain why my argument only shows that propositions are true at world-time pairs; in particular, I explain why my argument doesn't require that propositions are also true at locations. I also explore some problems that characteristically arise for temporalists. My argument for temporalism leaves the temporalist with a much larger range of principled responses to those problems; I sketch developments of some of the most natural responses. I close by describing the broader issues raised about the nature of truth. If this paper succeeds, it's much less clear that the monadic truth predicate has the explanatory priority many philosophers think it does.

1 Introducing the argument for contingentism

Like suggested, the paper will first develop my argument that some propositions are inspecific with respect to world. Two sections later I'll show that the same argument works for times as well as for worlds. This section has two goals: to outline some terminology and basic issues, and to introduce the structure of the case I'll discuss.

I assume a Russellian picture of propositions—as structured complexes consisting of individuals, properties, and relations. On this picture, a proposition can be specific with respect to time or world if it has a time or a world as a constituent. If an utterance of ‘Mary is an excellent philosopher’ expresses a proposition that's specific with respect to world and time, then it expresses the structured proposition <Mary, being-an-excellent-philosopher, @, June 1, 2013> in the right context. Nothing substantive turns on this Russellian assumption.

David Lewis (1980) distinguishes an interest in the semantic values of sentences in contexts from an interest in the objects of attitudes like belief. I argue for a conclusion only about the second topic: about the objects of the attitudes. In what follows, I use the term ‘proposition’ only for the objects of those attitudes. I'll use fairly standard names for positions about these questions. Suppose you held that the objects of belief are always specific with respect to time. Then you're an ‘eternalist’ who thinks that ‘Frege propositions’ are the objects of the attitudes. A ‘temporalist’ disagrees. Suppose you think the objects of belief are always specific with respect to world. Then you're a ‘necessitarian’ who holds that ‘necessitarian propositions’ that are specific with respect to world are the objects of the attitudes. A ‘contingentist’ disagrees.³ Given both temporalism and contingentism, propositions will be true at <world,time> pairs.

It's worth being explicit about the commitments that each side incurs. The commitments are asymmetrical; the temporalist is right if she can find one proposition that is inspecific with respect to time but is only sometimes true. Since

³ This use of these terms extends Schaffer (2012)'s original use, where he's only interested in the semantic values of sentences in contexts. If those semantic values are identical with the objects of the attitudes, he endorses views exactly opposed to mine.

that proposition isn't specific with respect to time, the only way to explain its being sometimes true is to suppose that it's true at some time but false at another. The same is true of the contingentist. She's right if she can find one proposition that's inspecific with respect to world but not necessarily true.

I want to show that the objects of belief aren't always necessitarian propositions. This section and the next execute the first stage of my argument, by arguing that there are some propositions that would be believed in counterfactual worlds that we can't actually entertain if necessitarianism is right. I argue for this point by focusing on a particular example. The example gradually introduces all the problems that arise if the necessitarian insists that we can actually entertain the propositions believed. It's easiest to see how the costs build up with a particular example.

Suppose that you're arguing with someone about baseball. You doggedly claim that Babe Ruth was a better player than Hank Aaron. In frustration, your interlocutor exclaims:

- (1) Even if Hank Aaron had been better than Babe Ruth, you'd still believe that Babe Ruth was better than Hank Aaron.

It seems like (CanEntertain) should be true:

(CanEntertain) If (1) is true, then the proposition about BR that you'd believe in the counterfactual world:

1. isn't knowable *a priori* to be false.
2. is a proposition that competent speakers in the actual world (hereafter '@') can entertain and know to be the proposition you'd believe.

I want to show that the necessitarian must reject (CanEntertain). The second clause is centrally important in what follows—it's our ability to actually entertain the proposition the agent would believe that lies at the core of my argument. The first clause only excludes implausible candidates for the proposition the agent would believe.

Before continuing, I want to note a technical point about the significance of (CanEntertain) in what follows. A necessitarian might reject what is called the Limit Assumption—the assumption that the truth-value of (1) depends only on the truth-value of its consequent at some unique closest world. Such a necessitarian is likely to reject (CanEntertain), as there is no unique necessitarian proposition that you'd believe. (There are distinct necessitarian propositions believed at each counterfactual world.) This sort of necessitarian immediately concedes the point this section and the next defend: the point that the necessitarian should reject (CanEntertain). So she can move immediately to the next stage of the argument, where I detail the costs of rejecting (CanEntertain). The rest of this section assumes the Limit Assumption, to see if the necessitarian who accepts it can also accept (CanEntertain).⁴

⁴ The necessitarian who rejects the Limit Assumption need not reject (CanEntertain). She can suppose that the proposition believed is about a set of worlds, either descriptively or singularly. Such a necessitarian can take my reliance on the Limit Assumption to be merely expository, and replace my references to a single world with reference to a set of worlds.

There are only two necessitarian propositions I might entertain when entertaining what you'd believe.

- (2a) BR is better than HA in w_c .
(where ' w_c ' is a term that refers directly to the counterfactual world.)
- (2b) [the x : x is the world closest to @ where HA is better than BR] (BR is better than HA in x)

After all, a proposition that is specific with respect to world either contains a world or specifies it by description. (2a) expresses the proposition containing that world.

And (2b) specifies the world by the only description that the actual speaker can know to pick out the right world. You'll be continually tempted to reject this claim throughout what follows, and I'll consider increasingly more sophisticated descriptions as the paper progresses. But we're already in a position to see the simplest instance of this claim. We can see that (2b) incorporates the only description that specifies the world *independently of the assumptions shared in the conversation*. Focus on some proposition that incorporates a description of the world that differs from the description incorporated in (2b)—for example, the description 'Mary's favorite world'.

In order to know that you'd believe the proposition built up out of that description, I'd need to know the world closest to @ where HA is better than BR is Mary's favorite world. If I didn't have that second bit of knowledge, I wouldn't be in a position to know that 'Mary's favorite world' picks out the world where you'd have the belief. And absent that knowledge, I'm not in a position to know that your counterfactual belief would be about Mary's favorite world. But we don't have that sort of *de re* knowledge about similarities between worlds. This point generalizes. It seems like the *only* description the speaker can know to pick out the right counterfactual world is the description incorporated into (2b). Now there is one other way of building a description of the counterfactual world that interests us: we can build that description from the assumptions shared in our actual conversation. I want to delay discussion of suggestion for a few pages. We'll be better able to understand its promise and its limitations once we've seen more of the argument that I'll develop.⁵

(2b) expresses a proposition that is knowable a priori to be false. BR cannot be better than HA in any world where HA is better than BR.⁶ So if the necessitarian

⁵ I delay a discussion of this suggestion, because this suggestion isn't particularly helpful for the necessitarian at this point. There's no guarantee that the agent in the counterfactual world believes the things that we're taking for granted in the actual world during our conversation. For that reason, it's implausible that the proposition believed describes the world she inhabits as one where those assumptions hold. But what's assumed in the conversation does have to the potential help the necessitarian, as we'll see as the paper unfolds.

⁶ My formulation of (CanEntertain) ignores a complication about what's knowable a priori. Soames (2010) distinguishes two ways of entertaining a proposition that contains a world. One involves grasping the propositional content of the world, and one doesn't (Soames 2010, p. 136). Propositions entertained in the first way will be knowable a priori to be false (or true); for example, the proposition that Obama is president in 2013 in @ is knowable a priori when entertained in that first way. (CanEntertain) should be restricted to the second way of grasping propositions, the way that doesn't involving grasping the

supposes that (2b) expresses the only proposition I can entertain and take you to believe, she has to reject (CanEntertain).

For that reason, I'll assume throughout what follows that the description '[the w is the world closest to @ where HA is better than BR]' has wide scope with respect to 'believes'. As a result, I'll assume that the counterfactual (1) takes you to believe a singular proposition at that nearest world. Asking whether we can entertain the proposition believed at that world is thus asking whether we can entertain that singular proposition.

2 Entertaining singular propositions

This section finishes the first stage of my argument. It shows that the only way that the necessitarian might accept (CanEntertain) incurs a range of commitments that many will find implausible. Given the last section, the necessitarian who wants to accept (CanEntertain) must suppose that I can actually entertain the singular proposition that (2a) expresses. I emphasize two problems. Such a necessitarian first is committed to extreme liberality about singular thought—so that those of us who reject that liberality won't be able to accept (CanEntertain). Such a necessitarian also needs to suppose that we know more about the structure of modal space than is plausible.

I start with the first point. Given almost any account of singular thought, I can't entertain the singular proposition (2a) expresses. Robin Jeshion gives a quite permissive account that illustrates this point. She conceives of singular thought as thought from mental files. So she holds that an agent can think singularly about an individual only when that agent has initiated a mental file on that individual. Such initiation is possible only when that individual is *significant* to that agent:

Significance Condition: a mental file is initiated on an individual only if that individual is significant to the agent with respect to her plans, projects, affective states, motivations. (Jeshion 2010, 136)

Jeshion emphasizes that an agent's judgment that x is significant is neither necessary nor sufficient for her thinking singularly about x . The mental states that Jeshion discusses in detail alone determine what the agent thinks singularly about.

Now Jeshion's view is very permissive in comparison to other views of singular thought. But even given her view, few agents in the actual world will be in a position to think singularly about w_c . Few agents have plans, projects, affective states and motivations make w_c significant for them. Maybe some agents desperately want something to happen that doesn't happen in @, and w_c is the

Footnote 6 continued

propositional content of any constituent worlds. (2b) is knowable a priori to be false in the second way as well as the first; you don't need to grasp the propositional content of @ in order to know a priori that it's false. (CanEntertain) only assumes that there is some way of entertaining the proposition that (1) takes you to believe where the proposition believed isn't knowable a priori to be false—and taking (2b) to be the proposition believed violates even that minimal constraint.

nearest world where it does happen. And those affective states may put that agent in a position to think singularly about w_c . But it's hard to see how many agents could be in this position. So even Jeshion's permissive account of singular thought predicts that few agents can think singularly about w_c .

Any substantive constraint on singular thought secures a similar result. (For example: if we need to be acquainted with an object to think singularly about it, I won't actually be in a position to think singularly about w_c .) Most people who utter (1) stand in no relation to w_c , other than using a construction ('if HA had been better than BR, ...') that expresses a truth iff (1)'s consequent is true at w_c . Since any substantive constraint on singular thought would require each such person to stand in some additional relation to w_c , most people cannot satisfy that requirement.

The only view that allows me to think singularly about w_c is what Jeshion dubs 'Semantic Instrumentalism'. Kaplan (1989, p. 536) sketches this view: "what allows us to take various propositional attitudes toward singular propositions is not the form of our acquaintance with the object but is rather our ability to manipulate the conceptual apparatus of direct reference". The only constraint on singular thought is extremely minimal: that the thinker intend to originate a mental name for the object. But many people find Semantic Instrumentalism implausible. They doubt that you can think a singular thought about, say, the current president of Brazil just by manipulating the conceptual apparatus of direct reference.⁷

That's the first reason for doubting that most people who are curious about necessitarianism should accept (CanEntertain). Only those who are extremely liberal about singular thought can accept both (CanEntertain) and necessitarianism. I now turn to the second reason for thinking that combination unstable, a reason that might move even some Semantic Instrumentalists. Suppose that agents can think singularly about w_c . Call one such agent Sue. There's nothing special about w_c ; if Sue can think singularly about it, she can also think singularly about other worlds, like w_d .

In order to know that you'd believe the proposition you'd believe, Sue needs to somehow know that (a) rather than (b) is true:

- (a) w_c is the closest world where BR is better than HA.
- (b) w_d is the closest world where BR is better than HA.

After all, Sue needs to take your belief to line up with the world that you inhabit. We're trying to explain our ability to entertain the proposition that someone would believe if BR has been better than HA. In order for Sue to know that someone in the closest such world would believe the singular proposition that (2a) expresses, she has to know that w_c and not w_d is the closest such world. But I don't see how Sue could know (a) rather than (b), even if she were able to think singularly about the relevant worlds. (Most agents don't have that sort of *de re* knowledge about similarities between worlds.)

Now a Semantic Instrumentalist does have one route to explain Sue's ability. Suppose Sue is competent with a term like Kaplan's 'dthat', a directly referential

⁷ Jeshion (2010, pp. 125–129) helpfully details some serious problems for Semantic Instrumentalism.

term that takes a description as an argument and contributes the object satisfying the description to the proposition expressed. Then Sue is in a position to know that (2a) would be the proposition you'd believe; she can know that it's the proposition that BR is better than HA in *d*that (the closest world where HA is better than BR). But then the Semantic Instrumentalist can only endorse (CanEntertain) if she supposes that ordinary speakers are competent with a term that works like '*d*that'. Inasmuch as that supposition is implausible, even the Semantic Instrumentalist can't endorse (CanEntertain) if necessitarian propositions are the objects of belief.

Many people will find it implausible that I can think singularly about arbitrary counterfactual worlds—and even if they do think I can, they should doubt all competent speakers have the conceptual sophistication to latch on to the right counterfactual world.⁸ Suppose you agree. Then you should think that the necessitarianism should reject (CanEntertain).

(CanEntertain) If (1) is true, then the proposition that you'd believe in the counterfactual world:

1. isn't knowable *a priori* to be false.
2. is a proposition that competent speakers in @ can entertain and know to be the proposition you'd believe.

There are only two necessitarian propositions that I might take you to believe, and each fails an important constraint. The descriptive proposition—about the world nearest @ where HA is better than BR—is knowable *a priori* to be false. The singular proposition—that BR is better than HA in w_c —is not a proposition that I'll know enough to entertain, given the two problems noted here.

3 Can the necessitarian explain how we can reason about what you'd believe?

Remember our Guiding Question: we're asking whether the necessitarian has an adequate account of our ability to reason about what others would believe. This section assumes that the last section convinced most people of a conditional: that if they accept necessitarianism, they should reject (CanEntertain). This section explains why rejecting (CanEntertain) makes it hard to see how we can reason about what others would believe. The best pictures of that reasoning ability require us to entertain the proposition believed.

To focus the general question, I ask how the necessitarian explains our knowledge of conditionals about the consequences of your beliefs—conditionals of the form 'if what you'd believe is true, ...'. I'm going to focus on the indicative versions of my conditionals. When we're reasoning about the consequences of other people's beliefs, we don't usually try to hold all their beliefs in our heads. Instead,

⁸ This general claim is continuous with the objection in Soames (1998) to descriptivist proposals that take proper names to be synonymous with rigidified descriptions. If his objection persuades you, it's likely that you already accept the assumption this section has defended. Both this section and Soames' objection assume that few agents are in a position to think singularly about other worlds.

we take our own beliefs as the background and make the minimal changes to what we believe to make what they believe true. So the indicatives I'm interested in are what Anthony Gillies (2004) calls belief-contravening indicatives—like the conditional 'if Oswald didn't kill Kennedy, someone else did'.

Before developing the argument in detail, I want to emphasize why the discussion matters. Our ability to reason about what others would believe given some supposition is important. It helps us predict their actual beliefs; reasoning about what they *would* believe reveals what considerations matter for their beliefs. Any adequate picture of the propositions we believe needs to allow that we can reason about them in that way. Now the example I'm discussing (about Hank Aaron) is unrealistically simplistic. But I'll use it to show that the necessitarian's account of that reasoning ability breaks down in unexpected and implausible ways. If I'm right, it looks like the necessitarian is wrong about the sort of propositions we in fact believe.

I'm going to start out by assuming the classic picture of our knowledge of indicatives inspired by Frank Ramsey (1926/1931, p. 247). I'll later explore other options. Ramsey famously suggests: "if two people are arguing 'If p , will q ?' and both are in doubt as to p , they are adding p hypothetically to their stock of knowledge and arguing on that basis about q ". I'll explore using this suggestion to explain our knowledge of indicatives like (4a).

(4a) If what you'd believe is true, someone is better than Hank Aaron.

I'll assume for now that the necessitarian takes (4a) to express the same proposition as (4b):

(4b) [the x : x is the world nearest @ where what you'd believe is true]
(someone is better than Hank Aaron in x)

If propositions are nonspecific with respect to world, our knowledge of conditionals like (4a) has a straightforward explanation. We're able to add the proposition believed hypothetically to our stock of beliefs, and make this inference.

- | | |
|---|----------------------------------|
| (1) What you'd believe is true. | Assumption for conditional proof |
| (2) You'd believe that Babe Ruth is better than Hank Aaron. | (1)—Construction of the story |
| (3) Babe Ruth is better than Hank Aaron. | 1, 2, Disquotation |
| (4) Someone is better than Hank Aaron. | 3, Existential generalization |
| (5) If what you'd believe is true, someone is better than Hank Aaron. | 1–4, Conditional proof |

But if the proposition that you'd believe is specific with respect to world, we can't make this inference. Steps 3 then becomes:

3' Babe Ruth is better than Hank Aaron in w_e . 1, 2', Disquotation

This part of the paper addresses someone who admits that her account of this inference can't run through 3', either because we can't entertain the proposition that

3' expresses, or because we aren't in a position to know that 3' is the proposition that 1 and 2 jointly entail. I'll argue that such a necessitarian has no way to explain our knowledge of conditionals like (4a) that works with full generality.

3.1 Strategy 1: existential quantifiers

This section explores one strategy for explaining our knowledge of these conditionals. You might try changing steps 2 and 3 to existentially quantified statements, and then suggest that this modified inference puts us in a position to know (4a):

- 2'' $[\exists w]$ (You'd believe that Babe Ruth is better than Hank Aaron in w) (1)—Construction of the story
- 3'' $[\exists w]$ (Babe Ruth is better than Hank Aaron in w) 1, 2'' Disquotation

This strategy rests on confusion about the proposition believed. The quantifier in 2'' can take narrow or wide scope: the narrow scope reading delivers (A) as the proposition believed and the wide scope reading delivers (B):

- (A) $[\exists w]$ (Babe Ruth is better than Hank Aaron in w)
- (B) (B) Babe Ruth is better than Hank Aaron in w_c .

Neither reading explains the inference we want explained. Disquoting the wide scope reading—supposing that what you'd believe is true—delivers the singular proposition (B). So Step 3 remains:

- 3 Babe Ruth is better than Hank Aaron in w_c . 1, 2'' Disquotation

This suggestion doesn't help the necessitarian avoid the initial problem; we're supposing that we can't entertain this proposition.

And the existentially generalized (A) just isn't the proposition that you'd believe. To see this, stipulate that you alone would have the false belief that Babe Ruth is better than Hank Aaron at the counterfactual world, and change the conditional slightly:

- 4' If the proposition you alone believe is true, someone is better than Hank Aaron.

'The proposition you alone believe' doesn't refer to the existentially generalized (A). After all, everyone—or everyone who's reflective enough—believes that there's a world where Babe Ruth is better than Hank Aaron. So the content of your belief must be something else.

In response, you might suppose that the quantifier in (A) is somehow restricted to a smaller set of worlds. It's important to see the reasons why this strategy won't work, because it'll be continually tempting throughout what follows. In effect, it has the same problems as supposing that the agent in the counterfactual world would believe some descriptive proposition about her world. In order for the agent in @ to be able to latch onto the restriction that would be relevant, she would take (C) to express the proposition you'd believe:

- (C) $[\exists w: w \text{ is among the closest worlds to } @ \text{ where HA is better than BR}]$
 (Babe Ruth is better than Hank Aaron in w)

(The agent in $@$ won't be in a position to know that any other restriction will pick out the right world.) But it's not plausible the agent in the counterfactual world believes this proposition. For one thing, it's knowable a priori to be false—and it doesn't seem like that agent believes something knowable a priori to be false. For another, this proposition is about $@$ —and it doesn't seem like the counterfactual agent believes anything about $@$.

This difficulty should be unsurprising. The strategy tries to find a descriptive proposition that can be believed both in the actual world and in the counterfactual world. But no such proposition can exist. Any description one agent knows to pick the right world won't be a description the other could know to pick out that world.

3.2 Strategy 2: universal quantifiers

The necessitarian might then try another strategy. Rather than trying to explain our knowledge of (4a), she might suggest that she only needs to find a proposition that we can know and use to make all the inferences that we care about drawing from (4a). And she might think such a proposition is readily available:

- (5) $[\forall w]$ (If what you'd believe is true of w , then someone is better than Hank Aaron in w)

(I here suppose that 'what you'd believe' picks out the lambda abstract of the proposition believed: $\lambda y.BR$ is better than HA in y . The antecedent then contains only the monadic truth predicate: it's equivalent to: 'if $\lambda y.BR$ is better than HA in $y.(w)$ is true, ...'.) This strategy looks very promising. It does put us in a position to draw the correct inferences about what would be the case in worlds where what you'd believe is true.

Even better, our knowledge of (5) has a straightforward explanation, via universal generalization. Let ' c ' be an arbitrary world:

- | | | |
|-----|--|-------------------------------------|
| (1) | $\lambda y.BR$ Babe Ruth is better than Hank Aaron in $y.(c)$ is true. | Assumption
for conditional proof |
| (2) | Babe Ruth is better than Hank Aaron in c . | 1, β -reduction |
| (3) | Someone is better than Hank Aaron in c . | 2, Existential
generalization |
| (4) | If what you'd believe is true of c , someone is better than Hank Aaron in c . | 1–3, Conditional proof |
| (5) | $\forall w$ (If what you'd believe is true of w , someone is better than Hank Aaron in w) | 1–4, Universal
generalization |

So we are in a position to infer (5); the necessitarian does have an explanation of how we know something like the original conditional.

This suggestion is creative, but it still won't do. It only works in a limited range of cases, and the cases where it doesn't work are just central as those where it does work. To illustrate the problematic sorts of cases, suppose that Hank Aaron is better than Babe Ruth just because he hit more home runs. (6a) is then true:

- (6a) If what you'd believe had been true, BR would have hit more home runs than HA.

(After all, we're pretending that their ability to hit home runs completely explains their effectiveness. So varying their effectiveness must change the number of home runs hit.)

Crucially, the present strategy can't handle (6a). There's no proposition (i) that we believe when we believe (6a), and (ii) that the explanation of this section puts us in a position to infer. The universal closure of (6a) won't do, because it's false:

- (7a) $[\forall w]$ (If what you'd believe had been true of w , BR would have hit more home runs than HA in w)

The most realistic way for BR to have been better than HA may well be for him to have hit more home runs. But there are many other ways, too. Maybe BR would also have been better if HA had been less consistent about batting other runners in—even if HA had hit more home runs. Suppose that BR is better in that way in w_b . w_b is a world where (6a)'s antecedent is true but its consequent false. So it's not the case that every world is such that the closest world where what you'd believe is true is a world where BR has more home runs than HA.

The general problem is that the necessitarian's strategy forces any conditional like (6a) to be necessarily true if true at all. Unfortunately, some conditionals can be true, while being only contingently true. That's the basic problem with this strategy. I'll now argue that this problem is genuinely deep and robust. (If you already agree, you can skip ahead to Sect. 3.3; the rest of this section just defends this point.)

The natural response restricts the universal quantifier. Rather than quantifying over *all* worlds, we just quantify over some worlds. This response is unpromising. First: it can't adequately explain our ability to infer conditionals like (7a). To infer a restricted universal generalization, you start out with a restriction on the item chosen:

To prove: if n is an odd integer, then n^2 is an odd integer.

Suppose for universal generalization that c is an odd integer. ...

And it's implausible that speakers can latch on to a suitable restriction on worlds. BR could be better than HA in a wide range of ways. So the supposition for universal generalization would need to exclude all those ways: we'd need to suppose that c is a world where HA is as consistent about batting other runners in as he actually is, and ...

You might hope that what's taken for granted in the conversation supplies this restriction. In inferring (7a), we suppose for universal generalization that c is a world where all the propositions actually taken for granted are true. I earlier promised that I would consider *two* descriptive responses to the problem I'm

developing. We've already seen the first descriptive response, where a description that picks out the counterfactual world is incorporated into the proposition we take the counterfactual agent to believe. The current response is the other descriptive response. Rather than incorporating the descriptive material into the proposition the counterfactual agent believes, we incorporate the descriptive material into the conditional about what'd be true if what the speaker would believe is true. Unlike the first descriptive response, this second descriptive response doesn't need to suppose that the counterfactual agent is thinking about the descriptive material we're using.

Despite this difference, this second descriptive suggestion is also unpromising. The basic problem is that it produces the wrong results given certain natural assumptions about what's taken for granted. For example, it produces the wrong result if we were already taking for granted that BR hit more runs than HA. It predicts that the antecedent doesn't matter—that (6a) and (6b) are both true:

- (6a) If what you'd believe had been **true**, BR would have hit more home runs than HA.
- (6b) If what you'd believe had been **false**, BR would have hit more home runs than HA.

Let 'R' be the set of worlds where what's taken for granted is true - including that BR hit more runs than HA.

- (7a) $[\forall w: w \in R]$ (If what you'd believe had been **true** of w , BR would have hit more home runs than HA in w .)
- (7b) $[\forall w: w \in R]$ (If what you'd believe had been **false** of w , BR would have hit more home runs than HA in w .)

Because we're supposing that BR hit more runs than HA in every world in R , the consequents of (7a) and (7b) are both true of every world in R . Then (7a) and (7b) are both true. Any world in R that (7a)'s antecedent is true of is a world its consequent is true of, since its consequent is true at every such world. The same is true of (7b). But this result is mistaken. (6a) shouldn't turn out to be true just because we're already taking for granted that BR hit more home runs than HA.⁹

It's worth emphasizing another serious problem with the general strategy this section proposed: it incurs an implausible commitment about the semantics of natural language. It in effect forces the strict conditional account of counterfactuals. (Because necessitarian propositions are true at all worlds if true at any, Lewis' counterfactual operator occurs inessentially in (7a), and can just be replaced with the material conditional.¹⁰) But the strict conditional account faces the familiar

⁹ If you want to hold that speakers make on-the-fly readjustments of what's taken for granted to get the right restriction for universal generalization, you'd need a constructive account of the on-the-fly readjustments made. It's hard to see why you'd drop the proposition that BR got more home runs than HA, other than the fact that it produces the wrong results in the cases that matter here.

¹⁰ You can prove this equivalence, as long as you assume that no world is closer to another than it is itself. But I omit the proof, because it's long and ugly.

difficulties that Lewis (1973) develops. Those examples don't impress everybody, but those they do impress should be leery of the necessitarian's strategy.¹¹ In general, this result strikes me as evidence that something has gone wrong. Foundational theories about language should inform descriptive theories—but it's implausible that a view about truth demands a quite controversial semantics for counterfactuals.

Someone who's already committed to the strict conditional account might be tempted to dismiss this problem. So it's worth noting that the same problem arises about disjunctions.

- (6c) Either what you'd believe isn't true, or BR hit more home runs than HA.

If an utterance of (6c) communicates something that I can know, the necessitarian needs an utterance of (6c) to communicate:

- (6d) $[\forall w : w \in R]$ (Either what you'd believe isn't true of w , or BR hit more home runs than HA in w)

Though this paper focuses on the objects of belief, it should be possible to explain how we use sentences like (6c) to communicate those objects. So it's important that the necessitarian makes plausible assumptions about the syntax of sentences like (6c). If she already accepts a strict conditional account of (6a), she might think that syntactic claims she already accepts fit what she needs. Sentences like (6c) show that that optimism is mistaken. She ends up incurring syntactic commitments about disjunctions that she didn't have before—in particular, that an utterance of (6c) communicates a proposition with universal quantification over worlds.

I close this section on a more general note. This paper has two goals: to show that propositions are inspecific with respect to world, and to show that they're inspecific with respect to time. The more interesting question is about inspecificity with respect to time; that conclusion is what has broader significance. We've just explored one escape from this argument for worlds, and seen that it looks unpromising. Now you might wonder whether this escape route is in fact more promising than I allow, and be tempted to stop here for that reason. Interestingly, this escape route will turn out to be simply unavailable when we turn to the temporal case. So this response—even bracketing all its problems—will not help with the more interesting half of this paper.

3.3 Necessitarianism looks unpromising

The previous sections have worked through a thicket of difficult issues. I want to close by situating the result of this investigation in a broader context. We already should allow that descriptions like 'what you'd believe' can pick out contents that are inspecific along a range of dimensions.

¹¹ von Fintel (2001) argues that the examples don't show what they'd need to show; Moss (2012) argues otherwise.

Speaker A: I actually left my glasses in our office before lunch.

Speaker B: That's true for me, too. Could you grab mine when you stop by?

Speaker B's use of 'that' picks up a lambda abstract: [$\lambda x.x$ actually left x 's glasses in our office before lunch]. So her first sentence communicates the proposition that [$\lambda x.x$ left x 's glasses in our office before lunch](Speaker B) is true. This inspecificity is familiar and unpuzzling. You might wonder if the sort of inspecificity I've motivated is any more interesting.

It is in fact more interesting. The *proposition* that we take to be true in the glasses case is complete in all the ways that matter. (By β -reduction, it's just the proposition that Speaker B actually left her glasses in the office before lunch.) We don't predicate truth of the bare λ -abstract. Rather, we use that abstract to pick out the complete proposition we want to talk about. This completeness contrasts crucially with the conclusion I defended above. To illustrate this point, imagine that the necessitarian supposes that 'what you'd believe' really refers to the same thing as (8):

(8) [$\lambda w.BR$ is better than HA in w]

Then we can use the very first inference I suggested to explain our knowledge of (6a):

(6a) If what you'd believe is true, then BR would have hit more home runs than HA.

This example contrasts with the glasses case, because we're here predicating truth of the *incomplete* content (8) expresses. In order for this example to pattern with the glasses case, we'd need to find a world w_1 that we can combine with the content (8) expresses: then (6a)'s antecedent would be the proposition that [$\lambda w.BR$ is better than HA in w] (w_1) is true. But the earlier sections have argued that the content that (6a) takes to be true *cannot* be specific with respect to world.

Supposing that we're predicating truth of this incomplete content concedes that that contingentism is right. The necessitarian holds that contents evaluated for truth contain all information necessary for truth evaluation. The contingentist disagrees, holding that those contents that are nonspecific with respect to world can be evaluated for truth. (She thus posits an index parameter to supply that information.¹²) Supposing that (6a) (conditionally) predicates 'is true' of the referent of (8) thus concedes the central point; it concedes that contents that are nonspecific with respect to world can be evaluated for truth.

The more general lesson of this discussion, I think, is that the necessitarian doesn't have a fully adequate account of our ability to reason about the consequences of what people would believe. It seems like we do have that ability. So it's hard to see how the necessitarian can be right that the propositions we believe are always specific with respect to world.

¹² I here follow Schaffer (2012)'s helpful characterization of the dispute.

4 Against eternalism

This section extends the same argumentative strategy that I've used against necessitarians to eternalists. Eternalists hold that the objects of belief are always specific with respect to time. The basic problem concerns our ability to reason about what others will believe. Happily, the ability to reason about what others *will* believe is even more important than our ability to reason about what others *would* believe. You have to think a bit to see why we need to reason about what others would believe. But we do reason about what others will believe quite frequently. An account that's mistaken about that ability looks unpromising.

Eternalism is, I think, unpromising in just that way. It's again helpful to anticipate the two stages in the development of the problem. The first stage shows that we're often unable to entertain the propositions that people will believe in the future if the eternalist is right. The second stage argues that our ability to reason about what people will believe depends on our ability to entertain the proposition believed.

I'll focus on one particular kind of eternalist. That eternalist holds that, when I believe that it's raining, the proposition I believe is the proposition expressed by 'it's raining at t ' relative to some assignment of a time to ' t '. Those versions of eternalism are the most promising way to avoid the difficulty I'll develop. Alternative approaches specify the relevant time information through contextually restricted existential quantification. For example, they associate an utterance of 'it's raining' with a some descriptive predicate P , and say that that utterance communicates the same proposition as $\lceil \exists t: Pt \rceil$ (it's raining at t). This sort of approach will encounter the same problem as descriptive strategies in the modal case. In the case I describe, there's no restriction P where the corresponding existentially quantified sentence (a) expresses a proposition that *present* agents can know to be the proposition believed and (b) is a plausible candidate for what *will* be believed.

As before, I focus on a simple, schematic case, and suggest that the eternalist account won't work. Suppose I'm talking about a mistaken belief that someone named Adam will have.

- (9) Even when China's GDP exceeds the US', Adam will still believe that China's GDP doesn't exceed the US'.

It seems like the temporal analogue of (CanEntertain) should be true.

(TemporalCanEntertain) If (9) is true, then the proposition that Adam will believe at the future time:

1. isn't knowable *a priori* to be false.
2. is a proposition that present speakers can can entertain and know to be the proposition Adam will believe.

The first stage of my argument tries to show that eternalists must reject (TemporalCanEntertain).

There are again two propositions that Adam might believe at the future time.

- (10a) China's GDP doesn't exceed the US' at t .
 (Let ' t ' be a term referring directly to the relevant time.)
- (10b) [the x : China's GDP exceeds the US' at x] China's GDP doesn't exceed the US' at x .

If Adam will believe either proposition, (TemporalCanEntertain) is false. First: (10b) expresses a proposition that is knowable a priori to be false. Second: I'm not in a position to entertain the proposition (10a) expresses, or to know that it's the proposition that Adam will believe.

It's no more plausible that you can think singularly about arbitrary future times than that you can think singularly about arbitrary possible worlds. Jeshion's account is again helpful in illustrating this point. She holds that singular thought constitutively involves thinking of the individual from a mental file, and adds that "a mental file is initiated on an individual only if that individual is significant to the agent with respect to her plans, projects, affective states, motivations" (Jeshion 2010, p. 136). Now t might be significant in this way for some people. Suppose that Jake will graduate from high school at t . He's motivated to continue working on his school work, so he can graduate then. And he has plans revolving centrally around that time: parties planned for then and for surrounding days, and so on. He may well be able to think singularly about t . But few people are in Jake's position. So few people are in a position to think singularly about t . I'm presumably among those people—so I'm not in a position to entertain the singular proposition (10a) expresses.

In general, those who reject Semantic Instrumentalism don't think that you can think singularly about t by thinking about a description that t satisfies. But most of us don't stand in any significant relation to t , other than thinking about a description it satisfies. So most of us aren't in a position to think singularly about that time.

4.1 Is there something special about times?

Now you might think that times will be relevantly different from worlds, because we can think singularly about future times in a way we just can't think singularly about non-actual worlds. After all, we speak a language with terms for arbitrary future times, like 'Feb 29, 2016'. (I'll call those terms 'day designators'.) And you might think that our competence with day designators puts us in a position to think singularly about those future times.

And if competence with day designators allows us to think singularly about future times, the eternalist might think she can accept (TemporalCanEntertain). Suppose that China's GDP first exceeds the US' on Feb 29, 2016. Given these assumptions, it's reasonable to expect (11a) to express the proposition Adam will believe:

- (11a) China's GDP doesn't exceed the US' on Feb 29, 2016.

Since we can entertain (11a), we can entertain the proposition Adam will believe.

This proposal is mistaken; the availability of day designators doesn't help the eternalist. First: they help the eternalist only if they're directly referential. If they're not, (11a) doesn't express a plausible candidate for the proposition Adam believes at the future time. (After all, he may well be confused about leap years, and believe

that Feb 29, 2016 doesn't exist. Then he might not have any beliefs about Feb 29, 2016—and so not have any beliefs about China's GDP then.)

And we should doubt that day designators are directly referential. Thought via day designators is very much unlike normal cases of singular thought; our linguistic competence never allows us to think singularly about an arbitrary object from any other big set. Jeshion's account illustrates this point. She conceives of singular thought as thought from mental files. Now it's implausible that we have a mental file for each future time—we'd need to have infinitely many mental files. So if we can think singularly via day designators, singular thought can't be thought from mental files. If an account like Jeshion's is right, day designators aren't directly referential.¹³

But the most important problem for the eternalist comes from our ignorance about the future, rather than from constraints on singular thought. Even if you think I can think singularly about the future time—perhaps by using a day designator—I don't know enough to know that Adam will believe the proposition Adam will believe. I'll explain this point by building up constraints on what the eternalist needs to accept about this case.

First, the proposition I take Adam to believe needs to line up with the time when he believes it. The belief that (9) attributes to him is a belief about that time, which the eternalist tries to capture by having that time as a constituent. So the proposition we take him to believe must be (11a) rather than (11b):

- (11a) China's GDP doesn't exceed the US' on Feb 29, 2016.
- (11a') China's GDP doesn't exceed the US' on t_1 .
(Relative to an assignment of Feb 29, 2016 to ' t_1 ')
- (11b) (11b) China's GDP doesn't exceed the US' on **Mar 1**, 2016.
- (11b') China's GDP doesn't exceed the US' on t_2 .
(Relative to an assignment of Mar 1, 2016 to ' t_2 ')

(Even if Adam also believes (11b), (11b) isn't the proposition that the belief attribution in (9) takes him to believe. (9) attributes to Adam a belief about the day when China's GDP exceeds the US', not about the day after.)

However, I'm in a position to know that Adam will believe (11a) (or the singular proposition (11a')) at that future time only if I know (12a) or (12b):

- (12a) [the x : China's GDP first exceeds the US' at x] (x = Feb 29, 2016)
- (12b) [the x : China's GDP first exceeds the US' at x] (x = t_1)

If I don't know (12a), I don't know that (11a) is the proposition Adam will believe when China's GDP first exceeds the US'; for all I know, it could be (11b) that he'll believe. But then the eternalist must deny that I'm in a position to know that Adam will believe the proposition he'll believe. After all, both (12a) and (12b) express propositions that few to no people are in a position to know. So the eternalist must hold that few to no people are in a position to know that (11a) is the proposition Adam will believe at the future time—that is, the eternalist must reject (TemporalCanEntertain).

¹³ King (2001, p. 307) gives a powerful argument that day designators aren't directly referential. Despite its relevance, it's too complicated to discuss here.

4.2 Our ability to reason about what'll be believed

The first stage of my temporalist argument has just finished. I now turn to the second. I'll try to show that the eternalist has no good account of our ability to reason about the beliefs that others will have. If I succeed, we'll have the same sort of anti-eternalist evidence we had against the necessitarian. The eternalist won't be able to make sense of something we seem able to do.

I'll argue for this point by focusing on our ability to know certain belief-contravening indicatives. For those indicatives, we take our own beliefs as the background and make the minimal changes to what we believe to make the indicative's antecedent true.

- (13) If what Adam will believe will be true, there will be a lot less American hand wringing than I now expect.

It's important to explain our knowledge of these conditionals, because that knowledge figures importantly in our ability to predict Adam's beliefs. I might know only that Adam will hang onto his belief about US GDP longer than he should, and then try to figure out what other beliefs he's likely to have, given that belief. Conditionals like (13) will help me figure out what else Adam will believe. (And once I know what else he believes, I'll be better able to predict what he'd do. Maybe once I know (13), I'll know that Adam would underestimate how soon American self-confidence will be shaken, and make bets against him.) The difficulty I'll detail isn't a marginal problem for the eternalist; instead, it's at the heart of our ability to represent what others believe.

The eternalist needs an explanation of our knowledge of (13) that doesn't require us to entertain the proposition Adam believes. But she has no better strategies for explaining that knowledge of (13) than the necessitarian does. I'll defend this point the same way I defended the corresponding point about the necessitarian, by explaining why the eternalist can't use the natural options. Then I'll again explain why more exotic options aren't any more help.

- | | | |
|-----|--|-------------------------------|
| (1) | What Adam will believe is true. | Assumption |
| (2) | Adam will believe that China's GDP doesn't exceed the US'. | (1)—Construction of the story |
| (3) | China's GDP doesn't exceed the US'. | 1, 2, Disquotation |
| (4) | If China's GDP doesn't exceed the US', there would be a lot less American hand wringing than there would be if it did. | Background knowledge |
| (5) | There will be a lot less American hand wringing than there would be if China's GDP exceeded the US'. | 3–4, Modus ponens |
| (6) | If what Adam will believe had been true, there would be a lot less American hand wringing than there actually will be. | 1–5, Conditional proof |

This familiar inference is off-limits for the eternalist. She replaces (3) with the proposition expressed by ‘China’s GDP doesn’t exceed the US’ on t_1 ’, relative to an assignment of Feb 29, 2016 to ‘ t_1 ’. And that proposition isn’t a proposition agents at the present time are in a position to entertain. Even if agents presently could entertain it, they aren’t in a position to know that it’s the proposition that (1) and (2) jointly entail. So the eternalist can’t use this inference to explain our knowledge of (13).¹⁴

She again has the same options that the necessitarian does. She might suppose that the proposition Adam believes is contextually restricted in some way, as in (11c).

- (11c) $[\exists t$: China’s GDP exceeds the US’ at t] (China’s GDP doesn’t exceed the US’ at t)

But it’s not plausible that I take Adam to believe (11c). Someone who believes (11c) is grossly irrational, and I don’t need to think that Adam is grossly irrational when he believes what he does.

Moreover, that’s the only contextual restriction I can know to pick out the time that we’re interested in. I may not know anything about the first time China’s GDP exceeds the US’; for example, I definitely don’t know what date it happens on. In that situation, there is no other contextually restricted proposition that I could recognize as being a plausible candidate for what Adam believes when he has the belief we’re talking about. For example: in order to know that ‘ $[\exists t$: t occurs on Feb 29, 2016] (China’s GDP doesn’t exceed the US’ on t)’ expresses the proposition he’ll believe, I have to know that China’s GDP first exceeds the US’ on Feb 29, 2016. Because I don’t have that sort of knowledge, (11c) expresses the only contextually restricted proposition I can know that Adam believes.

The necessitarian did have a more promising strategy. She could suppose that conditionals like (13) communicate a proposition that quantifies universally over worlds, and that we’re in a position to infer via universal generalization. The eternalist can make a similar move, suggesting that universal generalization puts us in a position to infer (13f).

- (13f) $[\forall t$] (If what Adam will believe will be true of t , there will be a lot less American hand wringing at t than I now expect)

But this suggestion won’t do.

For one thing, (13f) is likely false even though (13) is true. To see why, imagine that American and Chinese GDP oscillates for several years, so that sometimes America’s is greater and sometimes China’s is greater. At some point, Americans will become comfortable with the situation, and stop worrying about it. But then (13f) is false. Suppose that there’s a future time t_{2017} where what Adam would

¹⁴ Someone who looks back at this inference after considering the problems I detail below might wonder about step (4); you might wonder how a temporalist can allow it to be true. I take (4) to express a tensed truth—a counterfactual that is true at some but not all times. In particular, it’s true throughout the near future, but it’s false at times in the more distant future.

believe is false of t_{2017} (America’s GDP isn’t higher than China’s then). Because Americans have reconciled themselves to the oscillation, it’s not true that Americans would wring their hands less had what Adam will believe been true of t_{2017} .

You might hope that a restriction on the universal quantifier allows us to escape this problem. Only one restriction could work.

- (13lf’) $[\forall t : t$ is the first time after now when China’s GDP exceeds the US’s]
(If what Adam will believe will be true of t , there will be a lot less American hand wringing at t than I now expect)

It’s worth emphasizing why this is the only viable restriction: it’s the only restriction agents in the present can know to pick out the time they’re interested in. As I been emphasizing throughout, present agents don’t know when China’s GDP first exceeds the US’. We might try to pick some other restriction—for example, we might suppose for universal generalization that c is a time on Feb 29, 2016. But present agents won’t be able to know that Adam’s belief is about a time that satisfies that description. And present agents aren’t picking a time at random and thinking of what’d be true if Adam’s belief were true then. They’re thinking about what’d be true if Adam’s belief *were true of the time when he has it*.

So there’s only one viable restriction on the universal quantifier: (13lf). But the universal generalization strategy doesn’t allow us to infer (13lf) in a plausible way.

- | | | |
|-----|---|---|
| (1) | Suppose for universal generalization that c is the first time after now when China’s GDP exceeds the US’s | Assumption for universal generalization |
| (2) | Suppose for conditional proof that what Adam will believe is true at c | Assumption for conditional proof |
| (3) | China’s GDP doesn’t exceed the US’s at c | 2, Construction of the story |
| (4) | \perp | 1, 3 |

So it’s only by reasoning explosively that we can infer (13lf’). And that’s not the right way to infer (13), because it equally allows us to infer that there’d be a lot more American hand-wringing.

This difficulty might strike you as a shallow technical problem. Rather than reasoning by universal generalization in this way, you might think that we need to reason in the way that Ramsey (1926/1931, p. 247) suggests: “if two people are arguing ‘If p , will q ?’ and both are in doubt as to p , they are adding p hypothetically to their stock of knowledge and arguing on that basis about q ”. That is exactly the right conclusion to draw; we shouldn’t try to infer (13) by universal generalization. But the eternalist can’t use this strategy; on her view, we often aren’t in a position to add propositions about future times to our stock of knowledge and reason from them.

We often want to reason about what others will believe at future times; for one thing, we want to predict what they’ll do. The case I’ve described shows that the

eternalist's account of that ability doesn't work with full generality. If this argument succeeds, it has the same upshot as Kripke's epistemic argument against descriptivism. Neither shows that the opposing view gets all cases wrong; each shows only that that view doesn't fit the full range of cases.

I conclude that eternalism and necessitarianism have parallel problems. Neither can adequately explain our ability to reason about what others will believe or would believe. Since it does seem like we have that ability, it seems that we must at least sometimes believe propositions that are inspecific with respect to world and to time. But the propositions that are inspecific with respect to world and time are neither eternally nor necessarily true. As a result, it seems like some propositions must be true at worlds and at times.

5 Does this style of argument show too much?

I now switch from offense to defense—to showing that the assumptions I've made are jointly plausible. One sort of worry about the argument I've just detailed points to cases where my assumptions seem to warrant some conclusions that we should reject. Were some such case to exist, we should wonder whether my assumptions are really plausible. I tackle two versions of this worry, and articulate the distinctive features of time and modality that warrant the conclusions I draw.

5.1 Overgeneration: location

You might first wonder whether my assumptions would also show that propositions are inspecific with respect to location. After all, I may know that Ernie believes that he's dancing, without being about to think singularly about Ernie's current location. If the proposition he believes is specific with respect to location, I wouldn't be in a position to entertain it. So I wouldn't be able to reason about what he believes. But that's exactly the same result I found objectionable for modality and time. To avoid that result, perhaps we should hold that propositions are non-specific with respect to *location*, too. And the objector might conclude that this proposition should be true at a location if it's not specific with respect to location. You might reasonably take this result to be a reductio of any assumptions leading to it.

The most elegant answer to this worry breaks the connection between nonspecificity with respect to location and truth at locations. It's helpful to recall why nonspecificity with respect to time is plausibly connected to truth at a time. If your belief that it's raining is non-specific with respect to time, that proposition must be true at some times and false at others. Sometimes the proposition believed is false, and sometimes true.

But if propositions are already true at <world, time> pairs, this kind of argument doesn't show that propositions must also be true at locations. Suppose that Ernie's belief that he's dancing is non-specific with respect to location. It's again possible that he believes that same content when he's in different locations—say in l_1 and l_2 . And he could well be dancing in l_1 but not dancing in l_2 . (Maybe he's hallucinating in l_2 .) However, this possibility doesn't show that the proposition believed is true at

l_1 but not at l_2 . Since Ernie is in l_1 and l_2 at different times, the proposition believed can be true at one time and not at another without also needing to be true at one location but not at another. Non-specificity with respect to location generates no pressure towards relativizing truth to \langle world, time, location \rangle triples rather than \langle world, time \rangle pairs.¹⁵

I also have another route for resisting the conclusion that propositions are true at locations. My assumptions do *not* force us to hold that the relevant propositions are non-specific with respect to location. I can entertain a proposition that Ernie plausibly believes: the proposition that Ernie is dancing in his current location. And I can entertain that proposition to reason about what Ernie believes. In general, place and time are crucially asymmetric: \lceil the place where x is at t \rceil picks out only one location, but \lceil the time when x is at p \rceil doesn't pick out only one time. Given a time (however represented) and a person, you're able to think by description of her location—and that descriptive belief is one that she herself shares. And we can all entertain that descriptive proposition. So our ability to reason about what Ernie believes does not require that propositions be non-specific with respect to location.¹⁶

Whichever strategy proves more attractive, the fundamental point remains the same. As long as propositions are true at \langle world, time \rangle pairs, they don't need to be true at locations too. The agent's ability to represent his current environment pushes us towards temporalism and contingentism. I've argued that the agent doesn't always represent his environment by entertaining a proposition that's specific with respect to time and world. As a result, we need to suppose that the propositions that represent his current environment are true at times and worlds. We can then ask what else the agent needs to do to situate the representation of his environment with respect to that environment. I'm suggesting that he doesn't need to do anything else.

¹⁵ Cappelen and Hawthorne (2009, p. 96) emphasize a similar point: “in the case of location, it is natural to say both that ‘Ernie is dancing’ makes no reference to a location and that it is true *simpliciter*, since the location of dancing is intuitively irrelevant to its truth”.

¹⁶ You might wonder whether this suggestion works with full generality. The suggestion seems only to work when the complement is about some particular agent. And there seem to be complements that aren't about any particular agent, as in ‘Ernie thinks that it's raining’. So I can't use an agent and a time to pick out a particular location, as I suggest in the text. So it's unclear whether my strategy works with full generality. In response, I do in fact think the same strategy works in all these cases. To show how it would go, I'll assume a standard Davidsonian event semantics, so that ‘it's raining’ contributes the content that there's a raining event: that is, that $[\exists e]$ (Raining(e)). Agents don't normally believe a content that is this minimal - a content that is true as long as there's some raining somewhere. (Those cases where they do are no problem for the present strategy. The proposition that it's raining somewhere is true at some but not all times—no contradiction looms.) They rather believe an enrichment of the bare Davidsonian content. The normal enrichment contains the matrix subject—it's that $[\exists e]$ (Raining(e) and e occurs near Ernie). That enrichment plays the same role as the contents I discussed in the main text. Now there may be other enrichments, where the speaker has some description in mind—for example, $[\exists e]$ (Raining(e) and e occurs near that place we've been talking about). There won't be any problem about reasoning about these contents, either, as long as the hearer can recover which description the speaker intends. If the hearer *can't* recover that content, the speaker has violated an important conversational maxim: the maxim that Stalnaker (1984, p. 110) describes as requiring “[that] speakers ought, in general, to assume that their addressees have whatever information is necessary to determine what they are saying”. If the speaker isn't cooperative enough to conform to this maxim, it's unsurprising that her hearers can't reason about what she's trying to communicate. As far as I can see, the present example doesn't undermine the point I defend in the text. I'm grateful to an anonymous reviewer for pointing out this kind of case.

This suggestion explains why time patterns with modality rather than with location. Suppose that the proposition that Ernie is dancing is non-specific with respect to location, time, and world: it's just the structured complex $\langle \text{Ernie, dancing} \rangle$. An agent can't adequately represent her current environment by taking that that proposition to be true at a world; Ernie is presumably dancing at some times at that world but not at other times. But—like just emphasized—an agent *can* adequately represent her current environment by taking that proposition to be true at a $\langle \text{world, time} \rangle$ pair. So any viable account of our ability to represent our current environment requires the representation to be situated with respect to a world and to a time—but it doesn't also need to be situated with respect to a location.

5.2 Overgeneration: quantifying into belief reports

Quantification into belief reports generates another worry about overgeneration.

- (14) You'll meet a tall stranger. Once you've gotten to know him, you'll think he's friendly.

(14) attributes to you belief in a singular proposition. (It doesn't attribute to you belief in the descriptive proposition that the tall stranger is friendly; when you have this belief, you're not thinking of him as a stranger.) But we can make inferences about what you'll believe:

- (15) If what you'll believe is true, someone is friendly.

Stipulate that I can't currently think singularly about the stranger. My puzzle then appears: how do we know (15)? Since we do know (15), you might think that the necessitarian can just help herself to the correct explanation of that knowledge.

She can't. One of the strategies that's inadequate for her purposes explains our knowledge of (15). I again assume that 'what you'll believe' picks out a lambda abstract. In this case, there *is* a proposition that an assertive utterance of (15) could communicate and that we can use in the inferences we'd use (15) for:

- (16) $[\forall x]$ (If $\lambda y.y$ is friendly.(x) is true, someone is friendly)

The inference that explains our knowledge of (16) is straightforward. For arbitrary c , suppose that $\lambda y.y$ is friendly.(c) is true. β -reduction guarantees that c is friendly, and existential generalization on c guarantees that someone is friendly.

So this attempt to find companions in guilt fails. If you're hopeful about finding a different companion in guilt, it's worth emphasizing a structural difference between the strategy the necessitarian or the eternalist needs and ordinary examples like this 'stranger' sentence. *Only the necessitarian or the eternalist must include the variable introduced for universal generalization in the conditional's consequent.*

- (16) If $\lambda y.y$ is friendly.(c) is true, someone is friendly.
 (17) If $\lambda y.BR$ is better than HA in y .(c) is true, BR hit more home runs than HA in c .

The necessitarian or the eternalist has this additional commitment, because she thinks that each proposition is specific with respect to world or to time. So the consequent of the conditional includes a (pronounced or unpronounced) term that contributes a world or a time. Now that term needs to be a variable that's bound by the universal quantifier; otherwise the content of the antecedent doesn't matter for the truth-conditions.¹⁷

By contrast, the strategy suggested for the 'stranger' sentence does not require the posited universal quantifier to bind variables in the consequent. On the strategy suggested for that sentence, the consequent doesn't contain any free variables to bind. So the explanation of the 'stranger' sentence avoids exactly that feature of the necessitarian/eternalist strategy that created the trouble. For example, the necessitarian strategy in effect required that *all* antecedent-worlds be consequent-worlds in order for a conditional to be true at any world. As long as you don't have a quantifier binding world variables in both the antecedent and consequent, you can avoid this result. This attempt to find companions in guilt also fails.

6 A dialectical advantage

I've argued that temporalism has a serious but unnoticed advantage over eternalism. This section emphasizes a virtue of this argument—the way it avoids a dialectical vulnerability that crops up in some other arguments for temporalism. An argument that Berit Brogaard (2012) gives illustrates this vulnerability. She argues for temporalism in part from disagreement across time:

I turn to you and say 'A blue Ford Escort just rear-ended your car.' You jump up from your chair, look out the window and reply: 'That's not my car. My car is parked over there.' Here your assertion is denying not what I said but what you took me to believe on the basis of what was said, namely, that your car is the car that was just rear-ended. You are not asserting that the car that was just rear-ended is not your car at t^* , where t^* refers to the time at which you are speaking, as the eternalist would say. (Brogaard 2012, p. 8)

On her view, we should take the two agents to have different attitudes towards the same proposition. And she suggests that they don't have the same attitude towards any one eternalist proposition; for example, she argues that no eternalist proposition about some contextually salient interval of time will do. This sort of argument for

¹⁷ Suppose that the quantifier didn't bind 'c'; instead, the consequent contained a singular term that contributed the relevant world: w_b :

- (a) If BR is better than HA, then BR hit more home runs than HA.
- (b) If the sun is shining, then BR hit more home runs than HA.
- (a') $\forall x$ [If λy .BR is better than HA in y .(x) is true, BR hit more home runs than HA in w_b .]
- (b') $\forall x$ [If λy .the sun is shining in y .(x) is true, BR hit more home runs than HA in w_b .]

So (a) is true iff (b) is true.

temporalism builds from premises about agents who believe (or who don't believe) the same propositions.

Mark Richard has developed a significant difficulty for this kind of argument for temporalism. He notes that the temporalist has a problem explaining the invalidity of this inference:

- (a) Mary believed that Nixon is president.
- (b) Mary still believes everything she once believed.
- (c) So Mary believes that Nixon is president. (Richard 1981, 4)

After all, temporalists think that the proposition that Nixon is president is non-specific with respect to time. So we think that this inference has this form:

- (a) At t_1 , Bel(Mary, p)
- (b) $[\forall x] (At\ t_1, Bel(Mary, x) \rightarrow At\ t_2, Bel(Mary, x))$
- (c) At t_2 , Bel(Mary, p)

The eternalist predicts this inference to be invalid; she denies that (a) and (c) attribute to Mary belief in the same proposition. We temporalists need our own explanation of the invalidity here.

Importantly, the temporalist's explanation shouldn't undermine her own evidence for temporalism. If intuitions about same-believing motivate her temporalism, her response to Richard's argument can't undermine the force of those intuitions. Brogaard (2012, pp. 40–55), for example, develops a multifaceted response to Richard's argument—a response with a striking number of moving parts. She needs those moving parts to distinguish the intuitions about same-believing that she takes to have evidential force from those that don't. Inasmuch as the complexity of her explanation detracts from its plausibility, it's important to see that the argument I've developed isn't committed to all those complexities.¹⁸ (Now her response may in the end be completely adequate. If it is, the advantage this section claims for my argument isn't genuine.)

Someone with my motivation for temporalism has a free hand in responding to Richard's argument, since I can deny that intuitions about same-believing have any force against temporalism without undermining my own evidence for temporalism. To illustrate this point, I sketch one independently motivated response to Richard's argument. I emphasize that this sketch isn't a response to Richard's problem; it's too schematic to play that role. It rather illustrates the way that my motivation for temporalism leaves the temporalist a free hand in responding to Richard's problem.

¹⁸ Meghan Sullivan's motivation for temporalism have a similar dialectic vulnerability to Richard's argument. She's a temporalist for metaphysical reasons. She explains: "I am driven to temporalism because I endorse the A-theory of time and change, and some metaphysically accurate propositions about objects with A-properties will have to be temporalist propositions" (Sullivan 2014, p. 476). She notes a plausible platitude about truth—that "a proposition is true only if it accurately represents reality" (Sullivan 2014, p. 475). We should assume that a single sort of content both accurately represents reality and is the object of belief. Given that assumption, Richard's argument that temporalist propositions aren't the objects of belief forces the conclusion that temporalist propositions don't accurately represent reality. Sullivan develops a complex proposal about communication to answer Richard's arguments that conforms to these constraints.

I start with Scott Soames' proposed revision to the standard picture of the connection between meaning and assertion.

If M is the meaning (or semantic content) of an indexical-free sentence S , then normal, literal uses of S (without conversational implicatures that force reinterpretation of the utterance) result in assertions of propositions that are proper pragmatic enrichments of M . When M is a complete proposition, it counts as asserted only if M is an obvious, relevant, necessary, and a priori consequence of enriched propositions asserted in uttering S , together with salient shared presuppositions in the conversation. (Soames 2009, 281)

I also assume the natural generalization of this proposal to belief-reports—that speakers can use them to communicate that the believer believes a proper pragmatic enrichment of the complement.

Now the temporalist has a principle furnishing a proper pragmatic enrichment of Mary's belief readily at hand:

(Time Enrichment) if s expresses a proposition that's true at t , then \ulcorner at t , s \urcorner also expresses a proposition that's true at t

This principle is both necessarily true and knowable a priori. If the proposition that Nixon is president is true at t , then the proposition that at t , Nixon is president is also true at t . This principle furnishes a proper pragmatic enrichment:

- (a) At t_1 , Mary believed that Nixon is president.
- (a') At t_1 , Mary believed that at t_1 , Nixon is president.

This enrichment is both obvious and relevant for our inference.

The second step of my schematic suggestion proposes that Richard's quantifier is contextually restricted, to quantify only over those propositions that are always true:¹⁹

- (a) At t_1 , Bel(Mary, \mathbf{p})
- (b) $[\forall x : x \text{ is always true}] (\text{At } t_1, \text{Bel}(\text{Mary}, x) \rightarrow \text{At } t_2, \text{Bel}(\text{Mary}, x))$
- (c) At t_2 , Bel(Mary, \mathbf{p})

And this inference is happily invalid; the temporalist proposition \mathbf{p} isn't always true.²⁰ Now Richard might classify this sketch as a kind of 'moderate

¹⁹ This suggestion echoes Aronszajn's proposal (1996, p. 81). But it doesn't have the problems that Aronszajn's appeal to pronouns of laziness does. Fitch (1998, pp. 255–256) notes that he can tell someone 'I am in Arizona' on May 1, and report that he still believes what he said then several months later, even if he's no longer in Arizona. It's not clear how Aronszajn would handle that case. But that case is no problem for the proposal I favor; the speaker is just indicating that he still accepts the proper pragmatic enrichment that he also accepted on May 1.

²⁰ This proposal is a version of what Sullivan (2014, p. 488) calls 'conciliatory temporalism'. Matching this paper's concerns with her concerns about conciliatory temporalism isn't straightforward, as she has an eye on metaphysical questions that I haven't attended to. I'm equally happy with the response to the Richard problem that she favors. But it is a more radical revision than the conciliatory response I've sketched here. The metaphysical issues she attends to may warrant the more radical revision—but the argument I've offered in this paper only warrants my less radical revision.

temporalism'.²¹ Happily, this kind of moderate temporalism is principled—arising from Soames' independently motivated picture plus natural assumptions about truth at a time. This sketch of a response shows how to defang Richard's objection. It shows that the eternalist and the temporalist might both explain the invalidity of this inference. In fact, this response is too schematic to actually defang the objection. A full response would build from a constructive pragmatics in a way that goes beyond the scope of this paper.

I close this section by discussing a related point. Many temporalists have defended an operator approach to tenses, where tenses are treated as index shifting operators rather than quantifiers over times. It's natural for them to defend that approach, as the alternative approach seems to guarantee that the eternalist has the resources she needs to say what she wants to say. If tenses are something like quantifiers over times, every tensed sentence will express a proposition that's specific with respect to time.

Moreover, the temporalist's operator approach faces severe empirical difficulties. Jeff King (2003) helpfully reviews those pressures and the resources for responding to them. His review concludes that "virtually all current researchers trying to give a treatment of the complex temporal data in natural languages eschew an operator approach to tenses in favor of treating tenses as something like quantifying over, referring to and/or expressing relations between times" (King 2003, p. 221). That conclusion makes trouble for many versions of temporalism.

I want to make the same kind of point about King's problem as I did about Richard's problem. I don't want to build a constructive answer to either problem. I rather want to emphasize the way that my argument for temporalism leaves the temporalist a free hand in responding to these problems. In particular, the temporalist is free to agree with King about the proper treatment of tense. She would

Footnote 20 continued

She gives one argument against conciliatory temporalism that is less bound up with metaphysical questions. She imagines someone locked in a prison for several years without any way of knowing what year it is. During her stay, she gets a copy of the *New York Times* with the date blacked out, that tells her that Bush is president. Sullivan (2014, p. 488) objects to the conciliatory temporalist that such a person "believed the temporalist proposition [*Pres(bush)*]. She was not able to form the corresponding eternalist belief [*Pres(bush,2003)*], because she didn't know what year it was". So *pace* the conciliatory temporalist, the belief retained throughout captivity couldn't have been the eternalist belief [*Pres(bush,2003)*]. There are, I think, two eternalist propositions that she might retain belief in—either the existentially quantified [$\exists t: t$ was during my stay in prison] (*Pres(bush,t)*), or the singular proposition [*Pres(bush,t)*]. Sullivan's observations are entirely compatible with the prisoner believing the existentially quantified proposition. But they're also compatible with her believing the singular proposition. If you doubt that '2003' refers directly, you think that the singular proposition [*Pres(bush,t)*] is distinct from [*Pres(-bush,2003)*—so you can acknowledge that the prisoner doesn't believe the latter even though she believes the former. If you think '2003' does refer directly, you should see Sullivan's case as an instance of Frege's puzzle, to be solved in whatever way you favor. So I don't think that this argument shows conciliatory temporalism to be mistaken—though I admit that the metaphysical considerations might decisively favor her proposal.

²¹ He gives that name to views that deny the assumption that "a sentence expresses at most one thing (a proposition) at a time" (Richard 1981, p. 9). My sketched response holds that an utterance of a sentence can *communicate* more than one proposition at a time, so I don't quite deny his assumption. But I deny something close.

then suppose that temporalist propositions play no role in the semantics of natural language. She would rather suppose that they're conversationally implicated. She might invert the Soames-style strategy I floated for Richard's problem.

(Inverted Time Enrichment) if an eternalist proposition is true at t , then the corresponding temporalist proposition is also true at t .

This suggested enrichment principle would combine with facts about what's relevant in a conversation to allow a temporalist to treat tenses in the quantifier-like way that King favors. A belief report—'Mary believed that Nixon is president'—then semantically expresses that Mary believed the eternalist proposition that quantifies over the contextually salient time interval. But in many contexts, it will also be relevant that Mary believed the temporalist proposition \langle Nixon, *being-president* \rangle . Since relevant a priori consequences are conversationally implicated, the temporalist belief report is conversationally implicated.

Now there isn't space to develop or evaluate this pragmatic proposal. For one thing, it would need to be integrated in a constructive account of the propositions an utterance conversationally implicates. I mention this point only to emphasize that the temporalist who accepts my argument does have a free hand in developing these sorts of constructive suggestions. No part of my argument forces her to locate temporalist propositions in the semantics of natural language.

This paper argued that some belief reports must convey that the agent believes a temporalist proposition. But it incurs no commitments about the *way* that belief reports convey that proposition about the agent's belief. If necessary, I can suppose that that belief is pragmatically conveyed. As a result, my conclusion doesn't force problematic accounts of belief reports or of tenses. It does, however, force the distinctive temporalist claim that some propositions are true at some times and false at others.

7 Wrapping up

I've tried to show that the eternalist picture is indefensible—that it lacks an account of our ability to make certain inferences. This conclusion calls for significant revision of standard assumptions about the representation of time. For example, Nathan Salmon (1989)'s Fregean conception of propositions as informationally complete needs to be revisited. This conclusion also illuminates broader disputes about the nature of truth. Philosophers have become increasingly interested in the explanatory work that relativized notions of truth can do. Some think, for example, that the best explanation of certain constructions—like epistemic modals or indicative conditionals—supposes that they express propositions that are true relative to novel points of assessment.²² Others remain skeptical that those relativized notions will do genuine explanatory work. Cappelen and Hawthorne (2009, p. 3) are here representative, suggesting "that when one carves linguistic and

²² MacFarlane and Kolodny (2010) illustrate the sort of work that such a proposal can do.

psychological reality at its joints, monadic truth and falsity with take centre stage, and that invoking relations such as *true at* and *false at* is a step towards the gerrymandered and not the fundamental”.

Such theorists can allow that those relativized notions of truth play some significant role. But they hold that the relativized notions are only intelligible inasmuch as they're explainable in terms of the monadic property. For example, Soames (2011, p. 124) suggests that the most natural way to understand those relativized notions “is to take world states to be properties, and to take *the truth of p at w* to be *the fact that p would be true (i.e. would instantiate monadic truth) were the universe to instantiate w*”.

My conclusion bears on this dispute, because this sort of suggestion is less plausible if propositions are true at times as well as at worlds. Soames (2011, p. 127) makes a similar suggestion for that case, that “it's not unreasonable to think that for a proposition *p* to be true at *t* is for *p* to have been true when *t* occurred, for it to be such that *p* will be true when *t* occurs, or for *p* to be true now (if *t* is occurring)”. But it's quite difficult to make sense of a time *occurring*, unless you take *occurring* to be an A-theoretic property, like the property *being-present*. Given that gloss on *occurring*, Soames' suggestion won't help those of us who doubt that there are A-properties. So if we come to believe that propositions are true at times—as this paper has urged—there is some pressure to rethink the explanatory priority of monadic truth.²³

Soames' parting comments are worth quoting in full.

I have raised two challenges. First, convincing routes to parameter-neutral propositions other than the Operator Argument are needed. Second, if they are found, non-monadic, relativist truth must somehow be connected to meaning and representation in a way that replaces the standard conceptual connection we get when we take the claim that *p* is true at *w* to be the claim that *if w were instantiated, then p would be (monadically) true*. Without this, we have no way of relating conditions under which a sentence is (relativistically) true at a parameter to meaning and representation, in which case it is an illusion to think that we have a semantic theory at all. (Soames 2011, 132)

If this paper succeeds, Soames' second task is a task we all need to take up. (Or it's at least a task that any metaphysical eternalist needs to take up.)

Thinking carefully about our ability to represent our present environment requires parameter-neutral propositions. But thinking about that representational ability pushes us no further than the traditional position that the Stoics and others defend. For example, it does not require that propositions also be true at locations. A proposition can represent a location as being some way without either containing that location or being true at it—the proposition just needs to be true at a <world, time> pair.

²³ Cappelen and Hawthorne (2009, p. 96) emphasize a similar point.

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