Précis of *The Open Future*

First, I want to thank John MacFarlane, Mitchell Green, Ryan Wasserman, and Anthony Bigg and Kristie Miller for their stimulating (and challenging) comments on my book – and I want to thank *Analytic Philosophy* (and David Sosa in particular) for the honour of making my book the subject of this symposium.

My defense of the open future view implicates a diverse range of issues in metaphysics, logic, philosophy of language/linguistics, epistemology, the theory of probability, philosophy of religion – and probably more. It is accordingly unlikely that I have always hit the mark in these replies – indeed, in crafting my responses, I have often felt that the plausibility of the view I defend outstrips my ability to defend it. Happily, however, the topic of the open future is alive and well, and *in lieu* of saying the natural thing that I am (perhaps) not entitled to say – that I hope these issues will get more attention in future work – let me instead preview something I try out below: future histories in which these issues are given further attention are histories in which something I hope for happens.

Now for a brief synopsis and descriptions of chapter topics.

The Open Future is organized around the resolution of the longstanding *problem of future contingents.* (What is a future contingent? Roughly: a claim to the effect that something will happen, when whether it happens isn't causally determined either way.) The problem of future contingents arises out of the following conflict. On the one hand, we have the *grounding* problem: if some future contingents are true, what accounts for their truth? Wouldn't the truth of a future contingent be problematically "arbitrary"? On the other hand, we have the *logical* problem and a series of *practical* problems. The logical problem: if future continents aren't true, are they neither true nor false? Or are they false? Or what? And how do these positions interact with standard logical principles, like bivalence and the Law of Excluded Middle? Some of the practical problems: what of *betting* about the future – and what about the fact that we often seem to permissibly *assert* future contingents? In *The Open Future,* I argue that the grounding problem stands, and the logical problem and the practical problems can be addressed. In the end, we don't *need* true future contingents, and this favors an "open future" view that simply dispenses with them – and the most elegant way of doing so is to say that they are uniformly *false.* My open future view thus preserves the classical logical principles of bivalence and Excluded Middle.

In Chapter 1, I try to develop an argument from presentism (together with indeterminism) to the open future view that does not similarly give us an open *past*. The chief claim: we shouldn't attempt to motivate the open future view *via* a generic claim about *truth*, such as that "Truth Supervenes on Being".

In Chapter 2, I articulate three different models of the undetermined future (one according to which there is some one future which is the one that will be, and it is determinate which it is, one according to which there is some such future, but it is indeterminate which it is – and one (which I defend) according to which there just is no such thing as the actual future– the future such that *that* one is the one that will be. I further introduce and defend a *modal* semantics for *will* on which *will* is a universal quantifier over the "available" future histories.

In Chapter 3, I primarily defend this account from the key objection that it invalidates the principle of "Will Excluded Middle", and that it predicts a semantic distinction between "It is not the case that there will be rain in an hour" and "It will be in an hour that there is no rain". Here I make a comparison between *will* and so-called "neg-raising" predicates.

In Chapter 4, I attempt to show how denying "Will Excluded Middle" is parallel in certain crucial ways to denying "Conditional Excluded Middle" for counterfactuals. If, as many suppose, CEM isn't a logical/semantical truth, then (so I claim) neither is WEM.

In Chapter 5, I show how my open future view interacts with (and perhaps even can be motivated by) a classical picture of omniscience.

In Chapter 6, I respond to two key "practical" objections to my view: the betting problem, and the credence problem. How could it make sense to bet that there will be rain tomorrow, given the view that I defend? Or how could rain tomorrow be *probable*?

In Chapter 7, which is a reprint of Todd and Rabern 2021, I develop an argument against two rival positions – supervaluationism and relativism – both of which try to combine the open future with a principle we call *Retro-closure*, according to which today's rain implies that yesterday it would rain a day later. We argue that this combination of views is ultimately untenable. I further add an appendix in which I try to undermine the plausibility of the Retro-closure principle.

In Chapter 8, I respond to the (normative) "Assertion Problem", which arises out of the observation that it is routine in ordinary life to assert what are in fact future contingents. Given my view, how can this practice be appropriate? My response concedes that this is indeed ordinary practice – but that the truth of the view I defend would not place significant normative pressure on us to change our practices.

References

Todd, Patrick. 2021. *The Open Future: Why Future Contingents are All False.* Oxford: Oxford University Press.

Todd, Patrick and Brian Rabern. 2021. "Future Contingents and the Logic of Temporal Omnsicience," *Noûs* 55: 102 – 127.

Defending *The Open Future*

Replies to MacFarlane, Green, Wasserman, and Bigg & Miller

Reply to MacFarlane

MacFarlane raises a number of objections to my view – 10 by my count – all of which are interesting and deserve careful consideration. But if it takes 100 words to raise an objection, it takes 1100 to respond to it. I therefore won't be able to address every point MacFarlane raises – especially in his first sections. But one global comment at the outset. MacFarlane presses problems on my all-false view, but overestimates the importance of the gap between the untrue and the false. Most of the problems – indeed, to my mind, all of the "non-logical" problems – he brings to bear against BothFalse will also apply to any adequate version of the view he prefers, BothGappy.

1. MacFarlane and Model II.

Probably the most difficult task for anyone wishing to develop a new approach to the problem of future contingents is simply developing a framework for discussing these issues that is acceptable to one's opponents. We obviously disagree with one another a great deal. But we often also cannot even agree about how to characterize the views under discussion.[1] This problem is perhaps nowhere more apparent than when considering the role of the "Thin Red Line" and the "actual future" in debates about future contingents.[2] These issues are at the heart of MacFarlane's first sections.

MacFarlane is not happy with the framework I developed in Chapter 2. But what is that framework? First, the metaphysics. Assume indeterminism. In an indeterministic context, we can say, of those histories that are still causally possible, that

I. There is some history which is the one that will obtain, and it is determinate which.

[1] One might complain about MacFarlane's own way of setting out our options. One will notice that the four answers he considers not exactly parallel in crucial respects; for instance, the first two offer a purported justification for the relevant verdict, and the latter two don't. Note in particular that it isn't clear why we couldn't append "because it is indeterminate what the actual future history is" to BothGappy – or even BothFalse! (Cf. Markosian 2012, and esp. Iacona and Iaquinto 2023). It is thus unclear what we are comparing when we are comparing these four answers. I do not necessarily mean this as a criticism of MacFarlane. We have to start somewhere.

[2] Cf. Malpass and Wawer 2012, Borghini and Torrengo 2013, Iacona 2014, Wawer 2014, Wawer and Malpass 2020, Spolaore and Gallina 2020.

II. There is some history which is the one that will obtain, but it is indeterminate which.

III. There is no such thing as "the history which will obtain".

My intent is to defend Model III broadly on grounds of metaphysical parsimony. Now we turn to semantics – to the question of what truth values future contingents should receive, given our respective models. Here I suggested a *modal* semantics on which *will* universally quantifies over the "available" futures. Crucially, availability is defined so that, on Model I, there is only one available future, and it is determinate which it is; and on Model II, there is only one available future, but it is indeterminate which it is; and on Model III, there are exactly as many available futures as there are futures that are still causally possible.

Now to MacFarlane. First, MacFarlane is right that I did not, in Chapter 2, make the semantics/post-semantics distinction. However, I don't see that anything I said *prevents* us from making that distinction. I simply didn't think that this complicated distinction deserved a starring role in my presentation. The distinction is most necessary to distinguish between the Peircean view and the supervaluationist view. There are, in fact, two very different ways of saying that whether "it will be that *p*" is true at *t* depends on whether in *every* historically possible future (relative to *t*), *p*. For the Peircean (and for me), there is a universal quantifier over histories in the logical form of "it will be that *p*" (i.e., *will* is a universal modal – in the compositional semantics), whereas not so for the supervaluationist. Instead, for the supervaluationist, *will* is a pure tense that simply moves you forward along a given history; accordingly, there is no universal quantifier in simple "will" claims. However, they contend that, since there is no *privileged* history, "it will be that *p*" is true just in case *p* holds in *every* causally possible history. (They typically add that it is false just in case *p* holds in no such history, and is neither true nor false otherwise.) This contention, however, doesn't commit the supervaluationist to the claim that there is a universal quantifier in the logical form of "it will be that *p*". The quantification occurs only in what MacFarlane (2014: Ch. 9) calls the "postsemantics".

So far so good. Part of MacFarlane's goal here, however, is to complicate my suggestion that my modal semantics were neutral in an important way – in particular, that they could be accepted even by supervaluationists. I am not convinced by MacFarlane that they aren't, but I can't take up this (ultimately dispensable) line of thinking at length in this essay. This dispute, however, plausibly boils down to the following. I contend that supervaluationists – and thus also MacFarlane – are committed to what I earlier called Model II, and cannot really accept the more parsimonious Model III. MacFarlane demurs: he thinks he can accept Model III, and still preserve Will Excluded Middle [It will be that $p \vee$ It will be that $\sim p$].

But Will Excluded Middle entails that there is some future history which is the one that will be; it thus requires either Model I or Model II. We should not lose sight of this simple fact, whatever formal dust gets kicked into the air. Once that dust settles, MacFarlane is still committed to the existence (say) of *the ticket which will win,* and *the history which will be actual*. Consider a toy example. There are two and only two causally possible histories. On history 1, in n units, ticket 1 wins. On history 2, in n units, ticket 2 wins. Everything else is determined. In this scenario, MacFarlane is committed to:

(1) Either Ticket 1 will win or Ticket 2 will win. (2) So, there is some ticket which will win.

MacFarlane accepts the premise and presumably will accept the conclusion. Of course, I don't accept the premise, so needn't accept the conclusion. Indeed, I reject the conclusion. Yes, it will be that some ticket wins, but that doesn't mean that there is some ticket such that *it* will win. (See Section 3.4.) Because MacFarlane accepts "scopelessness", he must of course disagree: for him, it will be that some ticket wins if and only if some ticket is such that it will win.

Now, what we say about tickets we can say about branches, or histories, or futures – total "ways things can go". Yet MacFarlane tells us that he disavows commitment to any such thing as the actual future, viz. the future such that that one is the one that will be. For instance, MacFarlane writes:

> Having made this [compositional semantics vs. postsemantics] distinction, he might have recognized that the supervaluationist and the Peircean are guided by the same metaphysical view: a rejection of an actual future.

But now my key points. It is possible that my view and the supervaluationist view are "guided" by the same metaphysical view. But it is also possible that only my view in fact preserves it – that is, that the supervaluationist is guided by a view she in the end cannot endorse. And – if MacFarlane is right about what guides the supervaluationist – then this is exactly my claim. This point isn't a new one; indeed, it is a point emphasized elsewhere (in a different context) by Williamson. Williamson writes that, on supervaluationism,

> 'For some *n*, *n* + 1 grains make a heap and *n* grains do not make a heap' is true. Since the existential generalization is true on each admissible valuation, it is supertrue. Yet no answer to the question 'For which *n* do *n* + 1 grains make a heap and *n* do not make a

> heap?' is supertrue, for not all admissible valuations have the same cut-off number. (1994: 153)

He adds:

> The supervaluational treatment of the sorites argument is formally elegant. The question is whether it defuses the intuitive backing for the major premise ['For all *n*, if *n* + 1 grains make a heap then *n* grains make a heap']. Many people have found the major premise plausible just because it seemed to them that there could not be a number *n* such that *n* + 1 grains make a heap and *n* do not. Supervaluationism makes the very claim that they find incredible. (1994: 153)

Similarly, supervaluationism in the context of future contingents will have to say that

> 'For some causally possible history, that history is the one which will obtain and all of the other histories will not' is true. Since the existential generalization is true on each causally possible history, it is supertrue. [Each history is such that if that history were the actual one, the existential claim is true.] Yet no answer to the question 'For which causally possible history is it the case that that history will obtain?' is supertrue.

And to this we could add:

> The supervaluationist treatment of future contingents is formally elegant. The question is whether it defuses the intuitive backing for the contested premise ['For no causally possible history is it the case that that history is the actual one']. Many people have found the major premise plausible just because it seemed to them that there could not be a history amongst those that are still causally possible such that that history is the actual one and the others are not. Supervaluationism makes the very claim that they find incredible.

What it adds to this claim is another, one meant to make the incredible claim less incredible: yes, there is such a history, but there is no fact of the matter about – it is indeterminate – which history it is. But then the supervaluationist indeed does endorse what I called Model II.

MacFarlane writes that I am confused about the nature of the supervaluationist's commitments regarding the actual future. I'll let the reader be the judge.[3]

If you are guided by the thought that there is no such thing as *the cutoff between being bald and non-bald,* then supervaluationism doesn't preserve that thought: instead, it asks you to reject it in favor of a thought in the vicinity. It is guided by the thought that there is no cutoff to the view that there is a cutoff, but it is indeterminate where it is. A more pertinent comparison: in certain moods, Stalnaker, in his work on counterfactuals, appears to be guided by (or anyway sympathetic to) the thought that there can be genuine ties in similarity/"closeness" between worlds. But the view he ultimately offers – which relies on the limit/uniqueness assumptions, so that there is always some one closest world – doesn't preserve that thought, but rejects it in favor of the following one: cases in which you may have *thought* that there are ties in closeness are in fact cases in which some one world is closest, but it is indeterminate which.[4] This is exactly what MacFarlane is doing, once the dust settles. Some one future is the one that will be; it is just indeterminate which. MacFarlane then – as is his right – cashes out this second claim in terms of the relevant claims being neither true nor false. When MacFarlane says that he and supervaluationists reject an "actual future" in any form, what he really means – what he must mean – is that he rejects a *privileged* future in any form [a future such that it is *determinate* that that one is the one that will be]. And so he does. But then this is exactly my oft-repeated point, which MacFarlane's comments never touch: he rejects a privileged future, but accepts that there is some future which is the one that will be. I reject both.

But let me back up. Why does all of this matter? It matters for the following reason. MacFarlane's ultimate aim here is to show that my view and his are matched in terms of their metaphysical commitments. And his suggestion is that by mucking about in the semantics and the logic, his view can preserve Will Excluded Middle, whereas mine cannot. If this were so, then it would be *advantage MacFarlane*: he is doing more with just the same! But this appearance is illusory. In an indeterministic lottery, there is something in MacFarlane's worldview which is *the ticket which will win* (even if not *the ticket which determinately will win*) – and there is *the history which will be*. Not so in mine. This marks a significant ontological and metaphysical difference between my view and MacFarlane's. In terms of metaphysical parsimony, it is *advantage*

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[3] To my mind, MacFarlane's construal of supervaluationism renders its underlying mechanics unintelligible. It would be because there is a cutoff that we can reason about *truth no matter where the cutoff lies*. And it would be because there is a future which is the one that will be that we can reason about *truth no matter which future is the one that will be* – the key way that supervaluationists vindicate WEM, without vindicating either given disjunct. Note: if I am confused, so is, e.g., Hughes 2015. See also Spolaore and Gallina 2020: 113.

[4] Stalnaker 1981.

Todd. The question is simply whether this advantage in parsimony matters, and supposing that it *does* matter, whether it is outweighed by disadvantages elsewhere – disadvantages in terms of what we cannot now do or say, given that we have denied WEM.

Let us now turn to some of these alleged disadvantages.

2. Retraction

Perhaps the first bullet mentioned by MacFarlane concerns *retraction*. He writes:

> The problem is that, once a sea battle is raging around us, it seems hard to deny that someone who said yesterday that there would be a sea battle tomorrow said something true. Todd's view, however, is that they said something false. Presumably, assertions that are known to have been false should be retracted. But far from being a candidate for retraction, the person's assertion seems to be vindicated.

There is indeed a bullet to bite here, but we shouldn't make that bullet out to be larger than it is. Presumably, assertions that are *known* to have been false should be retracted, yes. Yet MacFarlane writes as if, given what I've said, I should, in the imagined circumstances, be prepared to demand a "retraction" from whoever it is that said there would be a sea-battle. But in order to prove that a retraction is in order, I would have to prove (inter alia) that yesterday there couldn't have been some primitive, brute fact to the effect that there would be a sea-battle today. But the idea that I could prove any such thing – and thus be in position to demand a "retraction" – is absurd. (See similar themes in Ch. 8.) The claim that there could not be such facts is (I am slightly sad to say) an empirically unverifiable claim of speculative metaphysics. So there is no threat of a looming demand for retractions.

A comparison. Trenton Merricks has defended the position that there are no composite objects, and thus no tables and chairs and the like, and thus that assertions such as "There are five chairs in the room" are uniformly false.[5] Complaint: presumably assertions that are known to be false should be retracted! – but we don't feel like someone who says that there are five chairs in the room needs to retract what she said, once we confirm that there are five sets of atoms-arranged-chairwise in the room. Instead, we think that this person's assertion has been vindicated. Is this some kind of problem for Merricks? I don't think so. I think it amounts

[5] Merricks 2001.

simply to the observation that we don't believe his view. But Merricks presumably knows that we do not, in general, believe his view. Similarly here.

Still, let us consider MacFarlane's (5) – something he finds "hard to swallow":

> (5) What you said yesterday was false, when you said that there would be a sea battle today—even though there is a sea battle, just as you said there would be.

This is, indeed, hard to swallow. But swallow it (or something very similar – something that replaces "false" with "untrue") we must, if we want to avoid the postulation of primitive future-directed facts that do not supervene on current conditions and causal laws. For, contra MacFarlane, there is no way to avoid a result like (5), given the open future.

3. Omniscience

And that brings me here. Brian Rabern and I argued that – contra MacFarlane – one cannot plausibly combine the view that future contingents are never true with the principle we call:

> *Retro-closure:* $\varphi \rightarrow \text{Was}n\text{Will}n\varphi$

Our argument was essentially that this combination would implausibly rule out the existence of a (temporally) omniscient being. In response, MacFarlane maintains that there are

> two paths forward for open futurists who defend Retro-closure: (a) hold that if there is an omniscient being, Settledness of Belief must fail for it, or (b) hold that omniscience, properly understood, does not imply Omni-accuracy [$\varphi \equiv$ God believes φ] but only something weaker.

MacFarlane briefly explores option (a) – and suggests that the relevant dialogue he puts forward "does not seem incoherent". But with the plausible proviso that the meanings of "sea-battle" (and so on) are settled, then this dialogue *does* seem incoherent. This leaves option (b), which essentially is to concede that MacFarlane's view rules out the possibility of an omni-accurate being. (Whether this being does or doesn't deserve the title of "omniscient" is in the end beside the point.) Here I only have space to register my feeling that this consequence is surprising – and implausible. The open future, I contend, cannot be reconciled with Retro-closure. Denying

Retro-closure is a cost, but this cost isn't nearly so bad as some have made it seem. (See the appendix to Ch. 7.)

4. Wondering

MacFarlane writes:

> Todd's view faces the inverse of Lewis's problem, because it takes "it won't be either way" (¬SB ∧ ¬NSB) to be true. So we can ask a question just like Lewis's. What sense can it make to wonder whether there will or won't be a sea battle tomorrow at noon, if we already know it won't be either way?

But I don't say that it won't be either way. Indeed, I say that it will be one of the ways. I say, instead, that it is not the case that it will be this way, and not the case that it will be that way. Does this imply that it won't be either way? No – or so I contend (although there are some subtleties here [cf. Chapter 2.10] I'll ignore.) But let us set aside this dispute, and simply rephrase MacFarlane's question: What sense can it make to wonder whether there will or won't be a sea battle tomorrow at noon, if we already know that it is not the case that there will be, and not the case that there won't be? (A similar problem is noted by Wasserman, and developed at length in Torre 2021; the following is an attempt to reply to all three at once.)

Answer: it doesn't make sense. If we accept my view, then we should likewise be prepared to accept that *wondering* is the wrong attitude to have here. To *wonder* whether there will or won't be a sea-battle at noon tomorrow is in effect to treat the facts about the future as *there*, waiting to be discovered. I wonder what those facts are! But that is exactly the picture I recommend that we reject. Or we can put it this way (cf. Torre 2021). If you wonder whether there will be a sea-battle, then my view (in conjunction with indeterminism) gives you a full and complete answer: it is not the case that there will be a sea-battle. So it no longer makes sense to go on wondering.

My response to this problem mirrors my response to a similar problem due to Torre that I discuss in my book (involving the attitude of *fear*). My response is to make a comparison with anti-Molinism. Curley – a libertarian free agent – wasn't offered the bribe. But now you wonder: would he have taken it? That certainly seems to be a natural thing to wonder about. But then you start thinking. You end up accepting the view that, because Curley has free will in the imagined scenario, there is really no fact specifying what he would have done in that scenario. You admit that this is out of keeping with how we ordinarily think, but, on

philosophical reflection, you are prepared to say that ordinary thinking on this matter is a bit confused. In light of your new knowledge – that there is no fact about what Curley would have done – you accept that it now makes no sense to *wonder* what he would have done.

We might also make a comparison with a moral error theory. The moral error theory states that there are no facts stating that that such and such is impermissible, or instead that such and such is permissible. "But we often *wonder* whether what we're doing is permissible or impermissible!". Yes, we do. But to point this out is no further problem for the moral error theory than simply saying that the moral error theory is a moral error theory. "But we often wonder which it'll be" – yes, we do. Here a similar point applies.

A final comparison. Suppose LEM holds in a fiction. In the fiction: $p \vee \sim p$. This doesn't imply, by itself, that it is appropriate to wonder which is true in the fiction: maybe neither is. Similarly here. In n units: $p \vee \sim p$. This doesn't mean that it is appropriate to wonder which will be true in n units. (Not either are such that they will be true in n units, although it will be in n units that one or the other is true.) "But it will in n units be that $p \vee \sim p$!" Quite right. So start wondering in n units.

Of course, as we just noted, there is a difference between the counterfactual/moral/fiction cases and the future case. In the future case, unlike the other cases, something is eventually going to be *resolved*. But this difference doesn't make a difference. It will be tomorrow that (I have won or I have not won); therefore, perhaps it will be appropriate tomorrow to wonder whether I've won. That doesn't mean that it is appropriate today to wonder whether I will win or I will not win. In short, it will be tomorrow that there is something to wonder about. That doesn't mean that *today* there is something to wonder about. To my mind, this is exactly what the genuine openness of the future should imply.

A final note: Torre, I think, has convincingly argued that the wondering problem also applies to the BothGappy view that MacFarlane prefers: how can you wonder whether *p,* when you know that *p* is neither true nor false? Even if the wondering problem is a problem for my view, it is also a problem for MacFarlane's.

5. Credence

In my book, I acknowledge, more or less, that the credence problem is a terrible problem that I don't really know to solve. Perhaps my main claim is that this problem is no worse for me than is a parallel problem for the denier of Conditional Excluded Middle for counterfactuals.[6]

[6] Torre (forthcoming), however, is skeptical of this claim.

A small recap. Lewis defends the view that, assuming Curley's indeterministic freedom, both "If Curley had been offered the bribe, he would have taken it" and "If Curley had been offered the bribe, he would have rejected it" can both be false; since both can be false, "Conditional Excluded Middle" must be rejected (at least for counterfactuals). So Lewis thinks that it is false that if Curley had been offered the bribe, he would have taken it. Still, presumably Lewis may want to grant that it could be more likely than not that he would have taken it – maybe Curley has often taken similar bribes before. But wait. How could it be more likely than not that (if he had been offered it) Curley would have taken the bribe, if it is false that (if he had been offered it) he would have taken the bribe?

This is a fair question, but it is one I don't really know how to answer. But one observation. Note that a natural thing to try to say here is that, though it is false that Curley would have taken the bribe, it can still be true that Curley would *probably* have taken the bribe (van Inwagen 1997: 231). (That is: our credence in the *would* claim – which is false – can be 0, but our credence in the *would probably* claim – which is true – can be 1, or anyway higher than 0.) But wait again. How it can be that Curley *would probably* have taken the bribe, when it is false that Curley would have taken the bribe? Doesn't a "would probably" simply amount a probability of a "would"? Lewis must be saying "no" – and thus there is some worry about compositionality and "would probably". Is "would probably" therefore simply an idiom?

Again, this is a fair question, and one I don't really know to answer. But I'm just assuming there's an adequate answer.

Similar issues, of course, afflict my account: How can it be more likely than not that it will rain tomorrow, when it is false that it will rain tomorrow? And how it could it be true that it *will probably* rain tomorrow, when it is false that it will rain tomorrow? Such are my problems, at any rate as discussed in *The Open Future*.

The only question I have space to address is whether MacFarlane has made these problems worse for me than they already were. About this, I am not sure. For instance, MacFarlane writes:

> It seems incoherent to believe that
> (11) It is false that there will be a sea battle tomorrow, but it is more likely than not that there will be one.

But does this seem any more or less incoherent than the following?

(11*) It is false that Curley would have taken the bribe, but it is more likely than not that he would have.

Not to me. MacFarlane also raises a problem involving complex embeddings (as in (18)):

(18) It's likely that either it rained yesterday or it will rain tomorrow [so no need to turn on the sprinklers].

This just begs to be understood as

(19) probable [[was-yesterday [rain]] or [will-tomorrow [rain]]].

But if Todd is right that "probable" and "will" don't combine compositionally, we can't understand it that way.

But suppose there was rain two days ago. Now consider:

(18*) It's likely that either there was also rain yesterday or had there been no rain two days ago, there would have been rain again today.

This just begs to be understood as (where '>' is the counterfactual):

(18*) probably [[rain yesterday] or [no rain two days ago > rain today]]

But if Lewis is right about counterfactuals, can we understand it this way?

In general: does MacFarlane defend the parallel credence-based argument for CEM? That isn't an outlandish thing to do – and several have done it. (Cf. Mandelkern 2018.) But: why is it that so many of us find CEM so hard to swallow? Curley was never offered the bribe. According to CEM, either if he had been offered it, he would have accepted it, or if he had been offered it, he would have rejected it. To my (perhaps untutored) ear, that sounds exactly like saying that there is some fact about what Curley would have done in this circumstance. But is there really any such fact – some fact just inscribed in Plato's heaven, as it were – saying what really would have happened had he been offered the bribe?[7] I find it hard to take that thought seriously – though of course many have taken it (very) seriously. (Cf. Plantinga and other

[7] Cf. Hájek 2021, Khoo 2022.

"Molinists".) But if we reject CEM, we are going to have to solve the problems mentioned above. Once they are solved for *would*, they will also be solved for *will*.

Let me also concede that MacFarlane is right that what I said in the noted part of *The Open Future* is "too objective" – or at best, it is only one part (i.e., the objective part) of the story.

6. Credence and Assertion

The credence problem is a difficult problem for my own view. But it is also, I suggest, a difficult problem for MacFarlane's. MacFarlane doesn't make many concessions, but one concession he *does* make is that my view and his are on a par with respect to the Assertion Problem – roughly, the problem that common practice puts our views in tension with a Truth Norm of assertion. This concession is welcome. But it is also, for MacFarlane, problematic. Insofar as MacFarlane grants that assertions of future contingents are indeed in violation of a Truth Norm of assertion (a "bullet" he concedes he must bite [2014: 231]), MacFarlane will thereby grant to the proponent of the credence argument everything they need to attack his view: if they aren't true in the sense relevant for the Truth Norm, they can't be more likely than not.

The question here is simple. If BothFalse and BothGappy are on a par on the assertion problem, why not also on the credence problem? In other words, suppose, with MacFarlane, that his view – but not mine – can solve the credence problem in exactly the manner he suggests: despite the fact that FC is untrue, and one knows this, it is nevertheless rationally permissible to have a non-zero credence in FC. Well, why shouldn't this fact translate into a difference in assertibility? The fact that S can rationally have a *high credence* that *p* certainly seems to bear on whether it is rationally permissible for S to *assert* that *p*. Indeed, rational assertibility, one might have thought, comes in proportion to rational credence: the higher S's rational credence in *p,* the more rationally acceptable it is for S to assert that *p*. MacFarlane: S's rational credence that *p* is .9, but is S permitted to assert that *p*? Here we get a flat *no* – because S's assertion would be in violation of the Truth Norm!

Look at it this way. It seems strained to grant that S rationally has a high credence that *p* – say, that it will rain tomorrow – but also to maintain that her assertion – that it will rain tomorrow – is in violation of the Truth Norm of assertion. How can you grant that what S said is very probably true (that is, have a high credence in what S said), but also maintain that S's assertion was in violation of a norm to only assert what's true? To grant that what S said is very probable ("much more likely than not", etc.) seems to be nothing more than to grant that S's assertion very probably *is not* in violation of the Truth Norm. So why is MacFarlane willing to concede that all assertions of future contingents are in violation of the Truth Norm when – in

replying to the Credence problem – he apparently maintains that at least some very probably aren't?

In the end, MacFarlane's suggestion that BothGappy has any kind of advantage over BothFalse on the credence issue is without merit. The fundamental tension here is simple: it is strained to maintain, in the same breath, that *p* is neither true nor false, but then to maintain that one is very confident that *p*.[8] MacFarlane would allow us to say, strangely, "What he said is neither true nor false – which is why he's not really in position to say that – but I'm very confident in what he said." Yes, my view faces a parallel problem – but so does *any* view on which future contingents aren't true, and that is my point.

MacFarlane does try to address these issues (2014: 234 - 6). In my estimation, his reply amounts to the following:

> When I say that it isn't true that there will be a sea-battle tomorrow, the "isn't true" here doesn't mean what you might think it means. (This isn't the "monadic" truth predicate.) I don't mean that it is *false* that there will be a sea-battle tomorrow. Of course, if it were *false* that there will be a sea-battle tomorrow, I couldn't have a non-zero credence that there will be a sea-battle tomorrow. But I'm not saying that.

And yes, maybe MacFarlane isn't saying that. But it is unclear why this matters. Consider an analogy. Imagine taking a Strawsonian approach to definites, fully accepting that there is no King of France, but adding that one is pretty confident that the King of France is bald. That, of course, makes no sense whatsoever: how can I think that "The King of France is bald" is neither true nor false, but then also maintain that it is more likely than not that the King of France is bald? On this front, there is no important difference between the Strawsonian view and its Russellian competitor, on which "The King of France is bald" is simply false. "But when I say that it isn't true that the King of France is bald, I don't mean that the King of France *isn't* bald." Well, that's nice. But that goes no distance whatsoever towards vindicating a non-zero credence in "The King of France is bald" in face of the certainty that that proposition is neither true nor false.

7. Summing up

[8] There are, of course, a great many further issues here; see Santorio and Williams (forthcoming).

In the end, MacFarlane's view is fascinating. But it is faced with a series of unresolvable tensions. MacFarlane purports to give us a radical open future view: future contingents are neither true nor false! But MacFarlane wants none of the radical consequences of the kind of open future view he purports to give us. Instead, in case after case, he wants to square the circle. Yes, future contingents are never true – but Retro-closure is still true! Yes, future contingents are neither true nor false – but don't worry, you can go on wondering whether a given future contingent is true! And don't worry, you can still think that a given future contingent is more likely than not! But none of this will work. And indeed, none of it *should* work. The wondering problem and the credence problem both trade on fundamentally the same set of intuitions – a set of intuitions that would imply that the future-directed facts are just *there,* awaiting our discovery, in just the same way as the past-directed facts are just *there*. The story of the future – the Book of Future Contingents – is there. I wonder what that book says! It is more likely that it says this than that! And so on. But the whole interest of the doctrine of the open future, to my mind, is in its denial that the future-directed facts are "there" in exactly this way. There is no Book of Future Contingents. We should therefore expect that the doctrine of the open future would require us to give a theory of future-directed credence and probability that looks very different in kind than its past-directed counterpart. This project is in its infancy[9], and my own halting contributions to it are anything but definitive. But this is something MacFarlane doesn't *attempt* to give us – and insofar as one doesn't feel the *need* to give it, that is likely because one is not really defending a doctrine of the open future in the first place, but only a simulacrum.

Reply to Green

1. What are future contingents? Green's dilemma

Let's start with Green's first puzzle. What are "future contingents"? Me: "roughly, propositions saying of causally undetermined events that they will happen." (2021, p. 1; p. 3) Green's interesting suggestion is that the *will* here isn't necessary:

> The problem of future contingents may be formulated in a way that makes no crucial use of 'will' or cognate terms such as 'going to' or 'in future'. Instead, the following is also a case of a future contingent:

[9] See Baron (forthcoming).

1. There is a sea battle on Thursday, April 21st, 2028,

said by someone speaking one day prior to that date, and in a situation in which the laws of nature and then-current state of the universe don't uniquely determine whether a sea battle takes place on April 21st.

In this light, Green articulates the following trilemma:

> I. Accept that (1) is an example of a future contingent. Then if we are compelled by Todd's reasons for claiming that SB is false, we should accept that (1) is false also. If we also retain LEM, (2) will turn out true.
>
> 2. It is not the case that there is a sea-battle on Thursday, April 21st, 2028.
>
> But (2), uttered under the conditions we are imagining, would seem to be precisely the kind of utterance an "open futurist" would abjure.
>
> II. Deny that (1) is an example of a future contingent. Then explain why the considerations that moved us to see SB as a future contingent, and to claim that it is false, don't carry over to (1).
>
> III. Accept that (1) is an example of a future contingent. But deny LEM. This enables one either to claim that (1) is false without being committed to the conclusion that (2) is true.

My reply is the following. (1) is in the first instance ambiguous. It is ambiguous between (a) a "planning reading", and (b) a non-planning, bare *predictive* reading. If it is (a), then we have solution II: (1) is not a future contingent. If it is (b), then (1) is really under the scope of a *will* – in which case I am *not* committed to (2).

2. Plans and Schedules.

First, imagine someone desperately searching for a wedding venue for the 28th. Looking at the relevant schedule, she sadly reports:

(3) There is a wedding here on the 28th.

My first observation: this assertion seems felicitous. Similar apparently "tenseless" claims abound: "The Super Bowl is in New Orleans in 2025"/ "The painter arrives on the 18th"/"The

Mets play the Yankees on the 17th", and so on. (Cf. Copley 2009: Ch. 2) Now, there is similarly such a reading of Green's (1), albeit a reading that would be strange in most contexts; sea-battles typically aren't *scheduled*. Call this reading of (1) the "planning" reading. But now our key question: given such a reading, must we treat the relevant claim as a future contingent – something my view would treat as false?[10]

Not obviously. Suggestion (again, see Copley 2009: Ch. 2): the relevant "planning" readings *presuppose* that if the given event is planned by the appropriate planner, it will happen. If this presupposition is false, then the relevant claim is neither true nor false. In that case, given my view, and given that the planning of the wedding doesn't render the wedding causally necessary, "There is a wedding here on the 28th" is simply neither true nor false, in the same way as "Jack stopped smoking" is neither true nor false, if Jack never smoked. But if this is right, then given a planning reading of Green's initial item, I am *not* committed to its falsity; instead, I can say that it is neither true nor false on grounds of presupposition failure. Another example. Let's say that the fact that the Mets are scheduled to play doesn't make it true (together with the other relevant facts) that they *will* play. In that case, assuming that they're scheduled to play tomorrow, do the Mets play tomorrow? I'm tempted to reject the question, much like I'm tempted to reject "Has Jack stopped smoking?" when he's never smoked. It isn't true that the Mets play tomorrow. But I'm not saying that it is *false* that the Mets play tomorrow. That is, I'm not saying that the Mets *don't* play tomorrow. Similarly, given the "planning" reading of (1): it isn't true that there is a sea-battle on that date. But I'm not saying that there *isn't* a sea-battle on the date.

3. Unpronounced modals

There are, of course, complex further issues here – but this is a rabbit-hole best left unexplored. After all, a "planning" reading of (1) certainly isn't Green's intended reading. If (1) *isn't* given such a reading, however, then insofar as it strikes us as still felicitous, my contention is that prior elements of the discourse will make it plausible that there is an unspoken *will* here. Note that an uncontextualized, bare assertion of a claim like (1) is certainly odd. Indeed, anyone saying any of the following will almost certainly be met with a blank stare:

[10] This result certainly seems undesirable, especially for my own view. For if it is not the case that there is a wedding here on the 28th, then – and this seems in part to be Green's point – there isn't a wedding here on the 28th. By parity of reasoning, my view will also seemingly imply that it is not the case that there *isn't* a wedding here on the 28th. Contradiction.

(x) The coin lands heads on the 18th.

(y) There is an emergency landing at the airport on the 19th.

(z) There is a Mets victory on the 20th.

To get something *less* odd, we need something like:

> Let me tell you about the future, about how all of this is going to play out. First, there is peace on April 20th. Then, on April 21st, there is a sea-battle.

But then the first element suggests that "On April 21st, there is a sea-battle" should really be understood as being under the scope of a *will*, so that this claim is really "Will: there is a sea-battle on April 21st". The overall force here is thus again, "It will be that on April 21st, there is a sea-battle." Thus, I am not really committed to (2); instead, I'm committed to

> (2*) It is not the case that it will be that there is a sea-battle on Thursday, April 21st, 2028.

And this is – for better or worse – exactly what I have already defended. Of course, one might think that it is somehow *ad hoc* to posit an unpronounced modal in this context – but this move is certainly not without precedent (see Kratzer's (1986) well-known claim about covert modals and conditionals[11]).

In the end, then, we have another trilemma. (1) is either (a) felicitous, but given a "planning" reading, in which case it isn't a future contingent, (b) felicitous, but only insofar as it is under the scope of an unpronounced *will*, in which case my view applies as normal, or (c) it is infelicitous, in which case it tells us nothing.

4. Green on The Assertion Problem

Green now turns to my attempt to defuse the "assertion problem". Green says:

> In support of his pragmatic defense of the reasonableness of utterance of future contingents …, Todd notes that the phenomenon of saying something false but conveying something true is a familiar one (2021, p. 190). However, this generally occurs

[11] But see Ciardelli 2022 for recent discussion.

> when a speaker violates a conversational norm, and it is common knowledge that she has done so.

Generally, yes – but necessarily? No. Green goes on:

> Thus in hyperbole, a speaker says what her interlocutors know is not true ("The line at the concert was a million miles long!"), and their awareness of the utterance's falsity together with their grasp of conversational proprieties leads them to search for an alternate interpretation of what the speaker might mean. Similar remarks apply to many uses of metaphor in conversation (Green 2017). However, for Todd to make use of a similar pragmatic strategy, he would need to hold a view that he explicitly disavows, namely that ordinary speakers accept FCF, and are mutually aware of one another's doing so. Otherwise there would be no felt violation of assertoric norms or conversational propriety, and thus no impetus to search for an alternate gloss of what the speaker has said. The pragmatic conveyance strategy does not seem to be a promising one for Todd.

But the key point: I am not suggesting that we do or should or must search for an alternate of interpretation of what the speaker might mean, in ordinary assertions of future contingents. When Jack says, "Yeah, I'll be at the conference next week, so let's talk then," my suggestion is not that we should search for an alternate interpretation of his utterance, so that while he uttered "I'll be at the conference," what he really *meant* was that he plans to go to the conference. Instead, my suggestion is that (a) when Jack says "I'll be at the conference", that will reliably convey that he plans to be at the conference, and (b) the fact that he plans to be at the conference (and other things are equal) explains the appropriateness of his saying "I'll be at conference", *even if* it is – on grounds of the open future (or, indeed, on some other grounds) – false that he will be at the conference.

Let me return to Green's observation that "the phenomenon of saying something false but conveying something true … generally occurs when a speaker violates a conversational norm, and it is common knowledge that she has done so." But we need to make a distinction between

(A) S knowingly and intentionally saying something false in order to convey something true
(B) S saying what is in fact false but conveying a truth

Every case of (A) is a case of (B), but not vice versa. Yes, cases of (A) generally require exactly the kind of common knowledge Green mentions. But cases of (B) that aren't cases of (A) abound. And these are all I require. In particular, my proposal is not that our assertions of future contingents are appropriate because although we know that these future contingents are false, we also know that our interlocutors know this as well, and so will interpret us accordingly. There is indeed a mechanism here, but this isn't the mechanism to which I need to appeal.

The mechanism is instead boilerplate knowledge of what is likely given what. Consider an example. You overhear Jack say to Jill, "Hey, we should go swimming in the lake later tonight." As it happens, you know that the lake has been poisoned, so you think to yourself, "No, they really shouldn't." So what Jack said is false. But from this you have certainly gathered this much: Jack likes swimming. Otherwise, why would he suggest going for a swim? What Jack said is false, but conveyed a truth. The point here is simple. There is an obvious and mundane sense in which "We should go swimming" defeasibly conveys, in normal circumstances, that the speaker likes swimming. This is all the mechanism we require. There is an obvious and mundane sense in which "Yeah, I'll be at the conference next week" defeasibly conveys, in normal circumstances, that the speaker plans to go to the conference next week. (People who do not plan to go to philosophy conferences very seldom end up at philosophy conferences – unlike, say, prisons.)

Of course, this isn't the end of the story. My pragmatic response to the assertion problem maintains that ordinary assertions of what are in fact future contingents are appropriate (when they are) because, though these assertions are false, they nevertheless convey truths. My point here is simply that this mechanism of "conveyance" needn't be the mechanism in (A) noted by Green, but something much simpler. But there is something else required here, on my account. It has to be (at least in part) *because* the falsehood conveyed the truth that S's assertion of the falsehood was nevertheless appropriate. When Jack says to Jill, "We should go swimming", this is false, though it does (defeasibly) convey to Jill the truth that Jack likes swimming – but it isn't as if the fact that this utterance conveys *I like swimming* that Jack's utterance of this falsehood was still appropriate. True. But it *is,* I contend, because "I'll be at the conference" conveys *I plan to be at the conference* that a (false) assertion of the former is appropriate, despite being false.

5. Eliminating Future Contingents?

This final point is connected to another. I contend that, in principle, we could simply *replace* our talk involving future contingents with talk in terms of plans and tendencies, without loss of anything important – in particular, without losing our ability to successfully plan and coordinate. (Notably, it would be strange to suggest that we could replace talk like "We should go swimming" with talk like "I like swimming." But it *isn't* outlandish to suggest that we could replace "I'll be at the conference" with "I plan to be at the conference.") About this theme, however, Green writes:

> Recall that Todd had set out in this book to resolve problems posed by future contingents. The solution before us now is that we could reform our language so that it no longer contains them. Might there be another approach that involves scorching a bit less earth?

But to suggest that we could scorch this earth is not to recommend that we scorch it. To say that we *have* the nuclear option is not to recommend the nuclear option! Indeed, I was at pains to emphasize that I am very much *against* the nuclear option: I think that, despite the fact that future contingents are false, the normative pressure on us to reform our speech is negligible. Yes, if you watch me carefully in my day-to-day, you will often find me saying things like "I'll be there in an hour," and so on for so much else. Conditional on the open future view I defend, that implies that I will often be in violation of the Truth Norm. "But you are only supposed to assert what you think is true!" OK. Sue me.

The point of the observation about the in-principle eliminability of our practice of asserting future contingents is admittedly less than clear. But this is, in part, because the contours of the problem I am trying to address are, in my opinion, less than clear. If the objection is that my view would make some certain class of propositions we regularly assert false, somehow it seems relevant to observe that nothing of importance rides on our practice of actually asserting them. A comparison may help (or, just as likely, may not). Consider free will skepticism. The anti-skeptic might urge that the skeptic's position would render unjustified a whole range of attitudes and practices familiar from ordinary life – attitudes like resentment and indignation, and practices like punishment and reward. Well, somehow it seems relevant if the free will skeptic can observe (which is of course hugely controversial) that preserving these attitudes and practices is unimportant – that nothing important would really be lost if we did (perhaps *per impossible*) get rid of them. True, it isn't immediately clear why this question is relevant to the *truth* of free will skepticism, but somehow the question – at least to some – has a bearing on its

overall acceptability. If the objection is that my view would render a practice from ordinary life – our practice of asserting future contingents – unjustified, somehow it seems relevant to observe that preserving this practice is unimportant.

Reply to Wasserman

1. A more direct argument?

Wasserman raises a series of different problems for my view – some pertaining to how I set up my project in Chapter 2. Wasserman writes:

> Suppose that [Todd] is correct and that there are no primitive future-directed facts. In that case, the only facts there are about the future are those which are grounded in current facts and facts about the laws. If we assume that causal indeterminism is true and that grounding requires entailment, it follows immediately that there are no contingent facts about the future. But if there are no contingent *facts* about the future, then there are no contingent *truths* about the future. Given bivalence, it follows that all future contingents are false. That is the most direct argument for Todd's conclusion, and it makes no reference to available branches.

Wasserman makes an excellent point. A different book – still, I think, a very good book – could have simply started with this argument, dispensed with the semantic project of Ch. 2 (and its associated [if quixotic] goal of semantic neutrality), and proceeded to defend an all-false view against various charges of incoherence or illogicality. Indeed, a sub-book of my book could be read as taking up exactly this project. Why not go this route?

Well, I didn't want to simply *assume* bivalence, especially in light of the voluminous previous literature on this topic. Instead, I wanted to show that an all-false view falls out of an independently plausible (modal) picture of *will,* together with the metaphysical picture (Model III) most open futurists will find attractive. (Yes, you can say that *will* is a modal, even in a non-bivalent setting – there is such a thing as trivalent modal logic – but no one seems to think such logics are in any way the default starting point.) At any rate, Wasserman's remarks are a reminder of the difficulty of articulating a framework for comparing our options that is at once simple and also comprehensive; insofar as the framework is simple, it will tend to leave some theoretical

options out, and insofar as it is comprehensive, it will be anything but simple. We have to strike a balance; whether I struck the right balance in Chapter 2 is anyone's guess.

2. Wasserman on Primitive Future-directed Facts

Wasserman then turns to my metaphysical argument in Chapter 1, which he nicely reconstructs. His key claim is ultimately the following:

> If it's a fact that there will be a sea-battle tomorrow, then that fact is grounded in more basic facts about what the elementary particles will be like tomorrow and how they will be related. It is not grounded in facts about what the elementary particles are like *now* or how they are *currently* arranged (even if those latter facts causally necessitate that there will be a sea-battle tomorrow).

In *The Open Future*, I was implicitly ignoring synchronic grounding – the way in which *there is a sea-battle now* is grounded in how the elementary particles are arranged now. But with this notion in play, we can ask the following. Wasserman suggests that the fact (if it is one) that there will be a sea-battle tomorrow is grounded in the fact (if it is one) that the elementary particles will be like [thus and such] tomorrow. But what grounds this latter fact? What grounds the fact (if it is one) that the elementary particles will be like *that* tomorrow? Wasserman doesn't say – indeed, *can't* say, because there is nothing to say here. The elementary particles are currently in a given arrangement; given the laws, this arrangement is consistent with them being in one arrangement tomorrow, or instead another. If they'll be in the first arrangement, what grounds *this* fact? Wasserman's suggestion (on behalf of the presentist-indeterminist) seems to be: nothing.

Well, why should this be a problem? The best I can do is to say the following. The future is still being produced, made, created, invented, *caused* – something. It thus wears its "derivativity" on its sleeve. (This should be plausible, given presentism.) But the facts about the invention are grounded in facts about the inventor. The facts about the made are grounded in facts about the maker. The present and the laws are what make the future – well, something like this. The facts about the future (the future-tense facts) should then be grounded in facts about the present and the laws. (Nothing like this holds for the past. Therein, I say, lies the difference.) Admittedly, the thought here relies on some principle like the following:

> When facts in domain D are causally explained by facts in domain D*, the facts in D are grounded in facts in D*.

It would be nice if I could make this more convincing – and more careful – but I can't (and not just because I lack the space, although I do).

Let me instead note the following. One argumentative path to the open future attempts to say that true future contingents would involve something strange, something arbitrary – something akin to the belief that in a split-brain case, identity *just goes* with lefty, not righty – something that everyone should see is metaphysically suspect (given the relevant starting points). This pathway, I believe, is beset with danger – although I did my best to walk it in Chapter 1. But there is a different argumentative pathway to the open future, which in some sense is distributed over the remaining 7 chapters of *The Open Future*. It isn't so much that the future-directed facts are intrinsically objectionable. It is instead that they are dispensable. In other words, it observes that the non-open future view posits primitive future-directed facts. It asks whether we can do without them. It observes that we can. It suggests that we should.

3. Wasserman's Attitude Problems

After rightly noting that a certain theoretical option (roughly, a Lukasiewicz-style view) was left out of my presentation, Wasserman suggests that there is reason to take this type of view seriously (at least relative to my own view).[12] He writes:

> Suppose that you have just placed a large bet on a coin flip landing heads. You are understandably excited. In fact, you are *so* excited that you inspect the coin, the flipper, and the surrounding conditions, hoping to determine the results in advance. However, you quickly realize that the system is indeterministic, with a 50% chance either way. So, there is nothing left to do but to wait and wonder.
>
> On the neither-true-nor-false view, this makes sense. After all, you have learned all the causally relevant facts, and those facts are consistent with both the proposition that the coin will land heads and the proposition that the coin will land tails. Moreover, on this view, there are no primitive future-directed facts of the sort that one might consult an oracle about. There are simply no facts either way.

[12] Rubio (forthcoming) makes a similar point; for my reply, see Todd (forthcoming).

It is unclear what Wasserman means when he suggests that, on this view, the causally relevant facts are "consistent with both the proposition that the coin will land heads and the proposition that the coin will land tails"; after all, on this view, these facts are *not* consistent with the *truth* of either of these propositions, since on this view neither such proposition is true in exactly this kind of circumstance. Wasserman goes on:

> On the "all false" view, things are different... it is *false* that you will win the money. Period. ... But...if you know that it is not the case that the coin will land heads, then it makes no sense to *get excited* by that prospect, or to *be nervous* about the possibility, or to *plan* for what you will do in that scenario. From the practical perspective, every future contingent is an open and shut case, which is just to say that the future does not seem open at all.

My response is that Wasserman's claims rely on exactly the principle I reject, viz., that ~Will *p* implies Will ~*p*. The truth in the vicinity is the following. If you know that the coin will not land heads, then it makes no sense to get excited by that prospect, or to be nervous about the possibility, or to plan about what to do in that scenario. But to know that it is not the case that the coin will land heads is not thereby to know that it won't land heads. Or so I say. This is really the heart of the matter.

Moreover, Wasserman's claim that the "neither true nor false" view is better off on this front is unsupported. If you accept that "That's a heap" is neither true nor false, it makes no sense to get excited by the prospect that it's a heap. If you accept that "The King of France is bald" is neither true nor false, it makes no sense to be nervous about the possibility that the King of France is bald. Why is it, then, that if you accept that "There will be a sea-battle tomorrow" is neither true nor false, it still *does* make sense to be excited/nervous about the prospect of a sea-battle tomorrow? I see no answer here that isn't special pleading of behalf of the neither-true-nor-false view. "Because even though that claim isn't true, a sea-battle is still possible for tomorrow". But my view says just the same: even though that claim is *false*, a sea-battle is still possible.

4. Hopes and Fears

Wasserman's remarks, however, raise some difficult issues about how the open futurist should handle certain attitudes that are sometimes future-directed – an issue that unfortunately went

mostly unaddressed in my book.[13] In a word: how should we handle hopes and fears for the future?

My response starts with the following (see pgs. 95-6). Suppose someone has been going around offering bribes. However, due to random chance, you weren't around at the time, so you were never offered the bribe. Further, on reflection, you think that – due your free will – it would have been an indeterministic matter (resolved by you in the moment) whether you take it. In this light, you end up accepting the Lewisian position that it is false that you would have taken it, but also false that you would have *not* taken it. But still. You are glad that you were never offered the bribe. But now suppose someone asked (what is admittedly a natural question): What are you so happy about, if you accept that it is false that would have taken it? You might say:

> Well, though it is not the case that I *would* have taken it, it is still true that I *might* have taken it. So that's why I'm glad I wasn't offered the bribe. I'm afraid of the possibility of my having taken it, even though I accept that it is false that that is what would have happened, had I been offered it.

Similarly, we can imagine someone asking: What are still you so afraid of, if you accept that it is false that you will be tortured? And we a imagine a proponent of my view saying:

> Well, though it is false that I *will* be tortured, it is still true that I *might* be tortured. So that's why I'm afraid. There's an open possibility of my being tortured tomorrow, and nothing rules it out. I'm afraid of the possibility of my being tortured tomorrow, even though I accept that, right now, it is false that I *will* be tortured tomorrow.

Or: What are you so hopeful about, if you accept that it is false that you will win?

> Well, though it is false that I *will* win, it is still true that I *might* win. So that's why I have hope. There's an open possibility of my winning tomorrow, and nothing rules it out.

Let me back up. Consider the following:

> I am afraid of there being a sea-battle tomorrow.

[13] A point also made by Cariani (forthcoming).

I am afraid that there will be a sea-battle tomorrow.
I am afraid of the possibility of a sea-battle tomorrow.
I am afraid that it is possible that there will be a sea-battle tomorrow.
I am afraid that what he said – "there will be a sea-battle tomorrow" – is true.

How should the open futurist think about these respective items, once we appreciate that "There will be a sea-battle tomorrow" isn't true (or is false)? Are all of these in some way equivalent? I am afraid I can't tell you. But note. Plausibly we *can* say this:

Future histories in which there is a sea-battle tomorrow are histories in which something happens tomorrow that I fear.

More on this in a moment. Similar questions arise for *hope*:

I am hoping for his recovery/that he recovers/that he will recover.
I am hoping for a sea-battle tomorrow.
I hope that there will be a sea-battle tomorrow.
I hope that what he said – "there will be a sea-battle tomorrow" – is true.

Again, what should the open futurist say here, once we accept that (say) "he will recover" isn't true (or is false)? I don't know, but I hope someone can sort this out. (Could the open futurist make a distinction between hoping "for his recovery" and hoping "that he will recover"?) But again observe that we *can* say this:

Future histories in which there is a sea-battle tomorrow are histories in which something happens tomorrow that I hope for.

After all, given my current preferences, this much can be currently *settled*. But now suppose someone asked: "And you hope that one of those histories is *our* history, the one we will find ourselves in?" Here, I suggest, the open futurist can reply:

Well, I wouldn't say that – or needn't say that. I don't hope that a sea-battle history, of the possible histories, is selected as "our history". All I am saying is exactly what I already said: histories with a sea-battle are histories where something happens that I hope

> for – they are histories in which I exclaim, "Yes! Just what I hoped for has happened!" And some such histories have a non-negligible objective chance. That is why I hope!

And this, I claim, makes sense. The result is rational future-directed hope (or fear), without commitment to any contingent facts about what will be – in particular, without rational hope *that* any such claim is true. But now a critic might say that I am committed to the coherence of the following:

> Future histories in which there is a sea-battle are histories where something that I hope for happens – but I don't hope that there will be a sea-battle.

I am aware that some are likely to regard this result as just one more perversity that a proponent of my view is forced to accept. Well, so be it: if you regard a result like this as terminal, then all I can say is that you are looking at the issues in the wrong way. Yes, this set of attitudes seems *prima facie* incoherent. But the question is whether it is *ultima facie* coherent, and I suggest that it is. To hope *that there will be a sea-battle* – to hope that this is *true*[14] – in the face of known indeterminism, is inevitably to hope that some set of facts privileges a sea-battle history over the others as our actual history. But surely one can have rational future-directed hopes and fears, in the absence of belief in any such facts. Yes, expressing ourselves in a way that makes no recourse to such facts is jarring, given the contingent idiom which we find so natural – one that developed in a context that made free (and illicit) use of exactly these kinds of facts. It is unclear why this should matter.

Reply to Bigg and Miller

1. Bigg and Miller on the grounding argument

Bigg and Miller's reply consists in two key sections. In the first, they criticize my argument (as does Wasserman) that true future contingents would involve a certain kind of unacceptable

[14] Of course, if hoping that there will be a sea-battle comes apart from hoping that something is *true* (e.g., if this attitude is somehow non-propositional), then the dialectic here becomes very different. Might this be something we can reject? In *The Open Future* (Ch. 6), this is indeed something I rejected for two senses of "betting" and "promising". But this strategy doesn't seem to carry over to hoping/fearing that something will happen.

arbitrariness. In the second, they raise a fascinating problem involving how my view interacts with the possibility of the end of time.

As I see it, the core of their first section is the following. Bigg and Miller want to leverage the arbitrariness already implicit in indeterminism itself into an acceptance of the arbitrariness implicit in the view that one of two candidate future contingents (Will *p* or Will ~*p*) is true while the other one isn't. Bigg and Miller are absolutely right to see this problem in my presentation. But I remain unconvinced. I think that the former kind of arbitrariness is acceptable, but the latter isn't.

Again, my thought that the future-tense facts need to be *grounded* in the present+laws is based on the idea that the future is *derivative* in some key way – again, produced, made, caused. (For such derivative domains – fiction, the future – the truths about those domains need to be grounded in facts about the things from which they derive – authorial intentions, current conditions.) But when I say that the present and the laws *produce* the future, what do we mean here? Are we saying that the present and the laws produce further *events* – or is it that they produce new *facts*? Let's say the following: they causally produce new concrete events, which in turn non-causally *ground* certain new facts. My claim: it is acceptable to have arbitrariness at the first level, but not at the second. In other words, let's say that present and the laws causally produced event E1. Well, perhaps this is arbitrary: they could have produced E2 instead, in exactly the same circumstances. However, there can't be arbitrariness at the *other* level, the level of which facts/truths there are *about* what will be produced by the present and the laws. The present and the laws produce events arbitrarily, but it is not and cannot be arbitrary which truths there are about the present and the laws, nor about what events they will produce.

It will be easiest to compare the issues here if we give an example looking backwards. Suppose there was a sea-battle today. Now, my claim is that *this* can be arbitrary, in the sense that if we 'rewound' time and let it play out again, in the next replay we might get peace, and so on for any further replays. Further, we can allow that the occurrence of a sea-battle today still has an explanation – albeit an indeterministic explanation – in temporally prior conditions and laws of nature. So for *some* types of explanation, these explanations can be non-necessitating.

But now consider something further. Consider the thought – from the perspective of yesterday – that it was *true* that there would be a sea-battle today (i.e., a day later). Now, my claim is that this is arbitrary in an *unacceptable* way. Why would it be true in advance that there will be a sea-battle, when what explains the *occurrence* of a sea-battle can give us a sea-battle, or instead no sea-battle? The fact that the present and the laws can arbitrarily produce either a sea-battle or instead peace doesn't seem to support the further idea that there can be an ungrounded,

arbitrary truth stating *which* thing will in fact be produced. We might look at it this way. It is going to be that some event is produced arbitrarily, yes. That's just the way the world is. But it would be *oddly* arbitrary if there were some fact saying *which* event is going to be arbitrarily produced. When the event is arbitrarily produced, we know from what it was arbitrarily produced. But if there is a fact about *which* event is going to be arbitrarily produced, we have no idea at all from whence *that* fact comes. It's just there. I find that odd.

A theistic analogy might help. Suppose we say – qua Leibniz – that the universe (here understood as an entire 4-d block) is produced by God's timeless decree. And here we mean *solely* produced: it isn't as if God is part of a committee. So the universe is solely produced by God. But now imagine the following. God produces the universe, but then notices something curious: there are many things true of the universe that weren't necessitated by his creative decree! This should strike us as puzzling. If God is the sole cause and producer of the universe, then how could it be that there are truths about that universe that go beyond – are not strictly entailed by – God's creative act? The essential principle here seems to remain the same, even once we introduce an element of temporal dynamism (as required by presentism). Suppose we say that God solely and directly produces, not a whole 4-d block, but a set of initial conditions and laws. Now, God produces these initial conditions and laws, but then notices something curious: there are many things true of these conditions and laws that are not necessitated by his creative decree (nor, of course, by those conditions themselves)! To wit: they are going to indeterministically produce a sea-battle (when they could just as well indeterminisitically produce an absence of a sea-battle). Isn't that strange in just the same way?

Commenting on my argument, Bigg and Miller write:

> [Todd] maintains that the future tense fact that there *will be* a sea battle (or that there *will be no* sea battle) would have to be explained by the present and the laws, and that that explanation, if it actually obtained, would be indeterministic (non-necessitating), and that, therefore, there would exist intolerable arbitrariness if the present and the laws explained one rather than the other of the aforementioned future tense facts.

I would instead say the following. I maintain that the future tense fact (if it is one) that there will be a sea battle would have to be *grounded* in the present and the laws, and that – since grounding requires necessitation – that grounding would be necessitating. Further, it would be intolerably arbitrary if this future tense fact were *not* grounded in the present and the laws, but were instead ungrounded.

Let me end with the following. I do not mean to suggest that the above is anything like the final word on this topic. In fact, I want to reiterate once more that – in my estimation – whatever argument I am making here is both underdeveloped and in many ways obscure. Bigg and Miller (and Wasserman) are clearly pressing on some difficult key issues[15], and any convincing version of this argument needs to grapple with them more carefully that I have done so here.

2. The Logic of Ending Time

Bigg and Miller write:

> Consider the following metaphysical possibility. First, causal indeterminism is true. Secondly, not only is the future not determined, but whether or not time marches forwards – whether or not time will pass from the present moment to the next – is *itself* an indeterministic matter. That is, the world faces the possibility that time will continue past this moment, and the possibility that it will not. Call this possibility *temporal passage indeterminism*. Assume, then, that temporal passage indeterminism is true. How is the truth of a sentence like WILL(p) to be evaluated on Todd's semantics?

First a methodological point. This is a fascinating problem – and I have become (and remain) desperately confused in trying to address it – but my sense is that we should be wary before letting these issues decide the debate. We simply don't know how to think about "the end of time", let alone its being an indeterministic matter moment to moment that time should continue – let alone how to think of all of this in the context of the open future.[16]

With that said, however, let's plow ahead. First, distinguish between two nearby semantic proposals:

> "Will(n)p" is true iff every available history (a) extends n units of time and (b) has p in n units time.

[15] Cf. also Ingram 2023.
[16] The idea here has been discussed before, however. See Barnes and Cameron 2011: 14, Loss 2019, and Andreoletti 2022: 85.

> "Will(n)p" is true iff every available history which extends n units of time is such that in n units of time, p.

Bigg and Miller suggest that my view has to be the first, not the second. If it were the second, then the present/past and the laws would be sufficient to guarantee (say) that it will be in n units time that 2+2=4 (and so that time will continue). But *ex hypothesi* temporal passage indeterminism (TPI) is true, so they aren't. (More on this later.) However, on the first proposal, given TPI, *every* future-tense claim will be false. Intuitively, the idea is that "It will be in n units that *p*" is true iff *all* of the possibilities extend for n units and feature *p*. But some of the possibilities do not "extend" any units at all; therefore, any *will* claim is false, including a claim like that it will be in n units that 2+2=4. Now their argument (which I think can be stated as follows):

> 1. Given Todd's view, and given temporal passage indeterminism, all 'will' claims are false.
> 2. If all 'will' claims are false at a time, then that time is the last moment of time. So
> 3. This is the last moment of time.

And presumably (3) is not something we want to accept merely on the basis of my view together with TPI. What, then, are our options?

The first is to maintain that there is something incoherent about the very idea of temporal passage indeterminism. I am not sure that there *is* something incoherent about this idea – but I am certainly not sure that there isn't. Consider the following. What is time and what are the laws such that it could be an indeterministic matter whether *time* continues? We have a fairly decent grip (one hopes at least) on what it means for it to be an indeterministic matter for some dynamical system *within time* whether *it* continues – say, some process of radioactive decay. However, the passage of time is not itself a physical process *in* the universe governed by laws. In other words, plausibly, time is not itself governed by laws; it is instead a measure on processes that *are* governed by laws. If so, however, then it isn't clear to me that we can make sense of the suggestion that the laws allow that time continues, but also allow that time doesn't. This is of course not to say that it is impossible that time should end. It is instead to say that its ending is not itself subject to natural law – and *ipso facto* not to indeterministic law. We can allow that the domain to which natural law applies has finite temporal boundaries. Nevertheless, natural law applies to the unfolding of events *in time,* within these boundaries – not to the unfolding of time,

i.e. not to the location of these boundaries themselves. And so speaking of it being *indeterministic* where these boundaries are may be a kind of category mistake.

However, let me simply waive these concerns and see where we end up. If we allow that TPI is coherent, then my preference at the moment is to deny premise (2). Notably, in "The Logic of Ending Time", Prior writes the following:

> Talk of time's having an end means that at a certain time, namely the last instant, all assertions to the effect that something *will be* the case, are false. (Prior 1968: 103)

Now, we can agree that if a certain time is the last moment of time, then all 'will' claims are false at that time. But we can deny that if all 'will' claims are false at a time, then that moment of time is the last moment of time. The resulting picture is something like the following. First, note that I have already defended the cogency of the denial of Retro-closure [$\varphi \rightarrow \text{Was}n\text{Will}n\varphi$], which denial allows for something like:

> It was false that there would be sun today – and yet here we are, enjoying the sun today.

If we can get our heads around *that*, then perhaps we can get our heads around the following:

> It was false that there would be another time – and yet here we are, at and enjoying another time.

> It was false that 2+2 would be 4 today (because it was false that there would be another day) – and yet here we are, enjoying another day, another day in which 2+2 is 4.

More generally, consider the relevant *forward-looking* claims. I am already committed to this:

> It is false that there will be a sea-battle, but it could come to be that there is a sea battle.

So why not:

> It is false that there will be another time, but it could come to be that there is another time.

My suggestion is thus the following. For it to be true at this moment of time that it is the last moment of time, it has to be false that there *could* be another time – not just that there *will* be another time. Although every *will* claim is false now, it isn't true that this *is* the last moment of time. All that is true is that this *could* be the last moment of time.

Bigg and Miller, however, suggest a reply to this thought roughly as follows:

> But if this is *not* the last moment of time, then it will be that there is another time. And if that is so, then not all *will* claims are false at this time.

This inference certainly *seems* good. To deny that Jack smoked his last cigarette today is to predict that Jack will at some point smoke another cigarette. To deny that this is last time is to predict that it will be that there is another time. My reply is this. I do not want to say (given TPI) that this is *not* the last moment of time. I want to say that it is neither true nor false that this is the last moment of time.[17] To wit:

> "This moment of time is the last" is:
>
> True at t iff no available branches extend any units of time after t.
>
> False at t iff every available branch extends at least one unit of time after t.
>
> Neither true nor false otherwise.

Is this to give up on something essential to my "all false" view? No. Here it is crucial to appreciate that "This moment of time is the last" *is not a future contingent*. It is not a prediction – a *will* claim – to the effect that it will be at later times that, well, there are no times. That of course makes no sense. Thus, my view about future contingents needn't apply here. Of course, someone might suggest that to go this route would be to give up a key motivating principle behind my view, viz., the preservation of bivalence. But this would be to misunderstand my project. My project is to show that nothing about *future contingents* requires us to give up bivalence. It is not to show that *nothing at all* requires us to give up bivalence. For instance, one might think that "Jones stopped smoking" is neither true nor false if Jones never smoked – or "The King of France is bald" is neither true nor false if there's no King of France. My project is in no way connected to a project that tries to preserve (nor, of course, deny) bivalence, for instance, in the face of textbook presupposition failure.

[17] For a similar thought, see Andreoletti 2022: 87.

But let's back up. There seems to be an obvious objection to this proposal, however, which we might try putting as follows:

> Suppose that – per this proposal – it is neither true nor false at *t* that time *t* is the last moment of time. But then suppose that, as it happens, there just never come to be any further times after *t*. So time ends up ending at *t*, so to speak. But this seems like saying that time ends at *t*, but it is neither true nor false at *t* that time ends at *t*. Isn't that like saying, for instance, that Jack is sitting at *t*, but it is neither true nor false at *t* that Jack is sitting at *t*?

This is a difficult objection, and I'm afraid my reply will be even more difficult – and obscure. My question is: from which vantage point is it, exactly, that it can be seen that time ends at *t*? Obviously not at some time after *t,* looking back on *t* . To articulate the thought here, we have to allow something further – something (and here I apologize) like *hypertime* (Hudson 2014). From the perspective of hypertime, someone in principle could look at our universe (universe U) and say: for universe U, time ended at *t*. But this is not to say that it is true at *t* – in U itself – that time ends at *t*. Time ends at *t* in U*,* but it is not true in U at *t* that time ends at *t*. Well, that is the bill of goods I'm trying to sell here, and I won't pretend that I know clearly what I'm even suggesting. But note: something like this is what we seem to end up with, *if* we allow in the first place that it makes sense even to think that it could come to *be* – to be *true* – that "there just never come to be any further times after *t*." A presentist is liable to think that all truth is truth *at a time*. But then there is never a time at which it is true at that time that *t* is the last moment of time. Not at *t* itself, for the reasons already given: what could make that true, and what could make it false? Not at a later time, because there is none. And not at some *hyper*time, because hypertime is a fantasy.

Let me conclude by mentioning one further option. Perhaps we should after all go with:

> "Will(n)*p*" is true iff every available history <u>which extends n units of time</u> is such that in n units of time, *p*.

From the perspective of hypertime, this will allow the following: for universe U, the present and the laws were sufficient at *t* to guarantee [let's say] that it will be in n units that the sun rises – but then, unfortunately, time ended at *t* in U. However, it is still true at *t* in U that in n units the sun will rise. It is just that this truth is "on hold". Is that absurd? Why? Perhaps it is no more

absurd than the idea of time suddenly ending for no reason. After all, what is the difference between time ending and time being on hold? If it is an indeterministic matter that time should continue, then if it ends, why shouldn't it be an indeterministic matter that it should restart?

Let's say that at *t* Jones predicts that it will be in n units that the sun rises. As it happens, every possibility that extends for n units is one in which the sun *does* rise. But – from the perspective of hypertime – let's say that time "ended" at *t,* right when Jones made his prediction. Does that falsify his prediction? On this suggestion, the answer is: No, it doesn't – his prediction is still true at that time, and his prediction will be borne out, should time ever in fact continue. *That* is what it is relevant to the truth of his prediction: *in all the available scenarios in which time continues,* you get the predicted event. That time can suddenly end is irrelevant.[18]

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