The Open Future: Why Future Contingents are All False

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The Open Future: Introduction to a Classical Approach

At least since Aristotle's famous 'sea-battle' passages in *On Interpretation 9*, some substantial minority of philosophers has been attracted to the thesis that future contingent propositions – roughly, propositions saying of causally undetermined events that they will happen – systematically fail to be true. However, open futurists, in this sense of the term, have always struggled to articulate how their view interacts with standard principles of classical logic – most notably, with bivalence and the Law of Excluded Middle. For consider the following two claims:

> There will be a sea-battle tomorrow
> There will not be a sea-battle tomorrow

According to the kind of open futurist at issue, both of these claims may currently fail to be true. In this sense, the future is "open". According to many, however, denying the disjunction of these claims ("There will be a sea-battle tomorrow or there will not be a sea-battle tomorrow") is tantamount to denying the Law of Excluded Middle (LEM). Accordingly, the open futurist must either deny LEM outright, or instead maintain that a disjunction can be true without either of its disjuncts being true. Worse, according to bivalence, if a proposition is not true, it is false – and thus the open futurist seemingly must either deny bivalence, or instead maintain that a disjunction can be true although both of its disjuncts are *false*.

Such are the familiar problems. The thesis of this book is that they are borne of an illusion. The thesis of this book is that the disjunction of the above two claims is no instance of the Law of Excluded Middle – indeed, the thesis of this book is that the disjunction of the above two claims is not an instance of any principle whose validity is ultimately worth accepting. In this book, I do not defend a denial of LEM, and I do not defend the truth of the given disjunction by way of defending the claim that the disjunction is true even though its disjuncts fail to be true. I defend the claim that the disjunction is no instance of LEM, and that, in the relevant contexts, this disjunction is simply *false*, because both of its disjuncts are false. (With apologies to the reader, I do qualify this claim in Chapter 2 [*Missing Ambiguities*?] – but these qualifications can wait.) The central goal of this book is to defend the thesis that *future contingents are systematically false*. I thus defend a version of the doctrine of the open future that is *consistent* with the classical principles of bivalence and Excluded Middle.

The thesis that future contingents are systematically false has been defended before. Indeed, such a view was first put forward by Charles Hartshorne in 1941, and later defended by

A.N. Prior in the 50s and 60s in the form of his 'Peircean' tense logic. My own view and the Peircean view thus have much in common: in particular, both maintain that future contingents are all false. However, in my estimation, the Peircean view is subject to serious objections. If Peirceanism were thus the only way of maintaining that future contingents are systematically false, then the open future *would* indeed require a revision of classical logic. My goal in this book is to articulate a version of the thesis that future contingents are all false that is not subject to the problems that plague the Peircean.

The central goal of this book is thus to develop a plausible, non-Peircean account of the open future and the semantics of future contingents that preserves classical logic. A brief word about this goal is in order. The standpoint that animates my discussion is not so much that classical logic is the true logic, but that the open future gives us no reason to think that it isn't. I am agnostic concerning whether there is any such thing as the "true" logic, and I am agnostic whether, if there is such a thing, classical logic is that logic. Nevertheless, it is clear that both bivalence and Excluded Middle still command the loyalty of a significant proportion of philosophers. I hope that the *desirability* of an account of the open future that preserves both such principles is not in need of substantial defense.

One distinctive feature of this book is the extent to which it features discussion of problems concerning future contingents and *omniscience*. It is, of course, common for theorists to point out the longstanding historical connections between the topics of future contingents and divine foreknowledge. As often as not, however – barring, of course, explicit discussion of this issue in the philosophy of religion – these connections are only noted in passing, and at any rate do no substantial work in motivating the relevant positions or arguments. As readers of this book will notice, however, considerations of divine omniscience are, starting in Chapter 6, invoked routinely in this book. This fact reflects my own interests in the philosophy of religion, but it also reflects my conviction that thinking about the problems of omniscience and the future are invaluable when assessing philosophical theories of the open future. Indeed, I believe that a primary advantage of the view I aim to develop is that it promises to provide an elegant story concerning omniscience and the future – and a primary argument I develop against rival ("supervaluationist" and "relativist") views is that they can tell no such story. However, a word of caution is in order about these points. At no point in this book do I develop arguments in which the *truth* of theism is invoked. The result, I hope, is an essay that appeals to philosophers of religion, but is not itself a work directly in the philosophy of religion.

This book will assume the basic framework of A.N. Prior's tense logic. In particular, it will assume henceforth without comment that it is unproblematic to ask about the meaning, and

the truth conditions, of propositions such as 'It was n units of time ago that *p*' and 'It will be in n units of time hence that *p*' – which, following Prior, I will abbreviate throughout as '**P**n*p*' and '**F**n*p*', respectively.

The book is organized around the resolution of what might be called "the problem of future contingents". Again, future contingent propositions are propositions saying of contingent, presently undetermined events that they will happen. (The events must be neither determined to occur, nor determined *not* to occur.) The problem of future contingents arises from the following conflict. On the one hand, we have what we might call *the grounding problem*. If nothing about present reality – and the laws governing how reality unfolds over time – settles it that the relevant events will happen, how and why is it *true* that they will happen? What, in short, accounts for the truth of future contingent propositions? Or if nothing *does* account for their truth, how are they nevertheless true? This is the grounding problem. On the other hand, we have what we might call *the logical problem* and a series of *practical problems*. If, instead, such propositions are never true, what becomes of the classical logical principles of bivalence and Excluded Middle? This is the logical problem. Further, if such propositions are never true – or even false – we seem to face a series of roughly *practical* problems regarding, for instance, our practices of betting, our credences regarding future contingents, our assertions about the future, and especially our practice of retrospectively predicating truth to predictions that in fact come to pass. If you predict that a horse will win a race, and then that horse does win, we will typically say that "you were right". If future contingents are never true, however, then it is not clear how this practice can make sense. These are our practical problems.

Open futurists endorse the grounding problem, and thus face the logical problem and the practical problems. In Chapter 1, I develop and advance the grounding problem. In Chapters 2 – 5, I address the logical problem for the open future. In Chapters 6 - 8, I respond to the practical problems. The result: the grounding problem stands, and the logical and practical problems can be addressed – and we have a defense of the doctrine of the open future.

It is worth noting that this book shall simply take for granted the two substantive theses that are plausibly necessary in order for the "grounding problem" to get off the ground: causal indeterminism, together with what might be called *no-futurism* in the ontology of time. In debates about the ontology of time, there are three primary competitors: *presentism*, the *growing-block* theory, and *eternalism*. Roughly speaking, presentism is the thesis that only present objects exist, the growing-block theory is the thesis that past and present (but no future) objects exist, and eternalism is the thesis that past, present, and future objects all exist. In this book, I assume non-eternalism. The argument of Chapter 1 is that, given either presentism or the growing-

block theory, future contingents lack an appropriate sort of 'grounding', and therefore fail to be true. However, since my own personal view – which I shall at no point attempt to defend – is that *presentism* is true, I shall try in Chapter 1 to defend a *presentist* version of the open future that does not similarly result in an open past. Growing-blockers, however, can regard that project as a failure, and nevertheless accept the arguments to come for the claim that future contingents are all false.

This book also simply takes for granted the thesis of causal indeterminism. This is the thesis that the past and the present, together with the causal laws, fail to entail a unique future. That is, indeterminism is the thesis that there is at least more than one total way reality could evolve from "here", consistently with present reality and causal law. In keeping with tradition, we can call any total way things may go from a given moment that is consistent with causal law a *branch*. Thus, indeterminism is the thesis that there are multiple *branches*. An important word of caution, however: in this book, I am not thinking of these "branches" as in any way *concrete*. Rather, they are simply abstract representations – that is, abstract representations of total ways things could evolve. (In point of fact, they are segments of traditional abstract possible worlds.) Thus, to say that there are *branches* in my sense is not to commit oneself to the kind of *branching* at issue in some (so-called "many-worlds") interpretations of quantum mechanics.

Having now stated what this book simply assumes but does not defend, I am now in position to offer brief chapter by chapter summaries of what it does defend.

In Chapter 1, I develop what I above called the *grounding problem*, and articulate what I take to be the *metaphysical* case for the open future. More particularly, I argue that presentism and indeterminism imply the open future – or, in the terminology to come, I argue that, given presentism and indeterminism, there is no 'privileged branch' of those that remain causally possible. In this chapter, I investigate what sort of principles regarding *truth* and *grounding* together ought to imply that, given presentism and indeterminism, there are no truths regarding undetermined aspects of the future. I further respond to the problem that, given *presentism* and indeterminism, if we have an argument for the open future, we also have an unwelcome argument for the *open past*. It is worth noting that Chapter 1 is the only properly *metaphysical* chapter in this book. In Chapter 1, I attempt to argue on metaphysical grounds that there is no privileged future branch – but the rest of the book, by and large, simply takes for granted that there is no privileged future branch. Of course, if no arguments even in the *vicinity* of those of

Chapter 1 are cogent arguments, what comes after Chapter 1 is perhaps of little interest. Nevertheless, the rest of the book can be read in isolation from Chapter 1.

In Chapter 2, I articulate *three models of the undetermined future.* In a context in which there are multiple future branches consistent with the past and the laws, is there any such thing as the "actual future"? According to the Ockhamist, there is an actual future history, and it is determinate which history is the actual future history. (Thus, there is a *privileged* future history.) According to the supervaluationist, there is an actual future history, but it is indeterminate which history is the actual future history. On the view I defend, however, there just *is no* "actual future history" in the first place. I further bring out the result that proponents of all three models can accept a plausible *modal* semantics for *will* – one on which *will* is a universal quantifier over all "available" branches. I show how this semantics for *will* combined with the various models under consideration gives rise to differing results about the truth values for future contingents. In particular, I bring out the result that, if there are several *available* branches, then future contingents, given a plausible semantics for *will*, simply come out false.

In Chapter 3, I articulate my core response to the logical problem for open futurists. The central points I develop in Chapters 3 - 6 pertain, *inter alia*, to controversial distinctions in *scope.* The view I develop depends crucially on an important semantic distinction between the following two claims:

It is not the case that it will be in 20 minutes that there is rain. (~**F**np)

It will be in 20 minutes that there is no rain. (**F**n~p)

My strategy is to defend the thesis that *will* is a so-called "neg-raising predicate". *I don't think that Trump is a good president* strongly tends to implicate *I think that Trump is not a good president* – although the former does not semantically entail the latter. The same goes, I believe, for *It is not the case that it will rain in 20 minutes* and *It will be in 20 minutes that there is no rain.* Under "standard" (viz., Ockhamist) assumptions about the future, the former would of course entail the latter – and it is for this reason, I contend, that we have such trouble hearing a distinction in meaning between the given claims. On metaphysical grounds, however, one might reject these standard assumptions. I further defend a series of scope distinctions that are predicted by a theory on which future contingents are all false.

In Chapter 4, I defend these scope distinctions (and my theory of the open future more generally) by means of a comparison with the counterfactual conditional. In Chapter 3, I

attempt to make plausible a denial of the principle some authors have called "Will Excluded Middle" (WEM): $\mathbf{F}np \vee \mathbf{F}n{\sim}p$. As I hope to show, a denial of Will Excluded Middle is deeply parallel to the denial of what has been called "Conditional Excluded Middle":

> (CEM) If it had been the case that p, it would have been the case that $q \vee$ If it had been the case that p, it would have been the case that ${\sim}q$.

CEM has been the subject of vigorous dispute in both metaphysics and semantics. My claim is simple: if CEM is not a *semantic* truth – and many (e.g. Lewis and Williamson) have contended that it is not – then neither is WEM.

Chapter 5 takes up what A.N. Prior has called "The Formalities of Omniscience". The view I defend can accept the following biconditional: p if and only if *God believes p*. Accordingly, my view can happily accept the following biconditionals:

> It was n units of time ago that p iff God (quasi-) remembers than n units of time ago, p. ($\mathbf{P}np$ iff $\mathbf{Rem}np$)
>
> It will be in n units of time hence that p iff God anticipates that in n units of time hence, p. ($\mathbf{F}np$ iff $\mathbf{Ant}np$)

Accordingly, my view can happily accept – whereas other open future views cannot – the plausible thesis that *the logic of the tenses is the logic of perfect memory and anticipation*. I further discuss a set of principles regarding divine omniscience that are crucially related to the scope distinctions defended in Chapters 2 – 4. In particular, I defend the following slogan:

> For an omniscient being: Absence of memory implies memory of absence, but absence of anticipation does not imply anticipation of absence. (${\sim}\mathbf{Rem}np$ implies $\mathbf{Rem}n{\sim}p$, but ${\sim}\mathbf{Ant}np$ does not imply $\mathbf{Ant}n{\sim}p$)

For example: from the fact that God does not remember a sea-battle yesterday, we can, given the relevant idealizing assumptions about God, conclude that God remembers there being no sea-battle yesterday – and thus that there was no sea-battle yesterday. However, from the fact that God does not *anticipate* a sea-battle *tomorrow*, we cannot conclude that God anticipates the *absence* of a sea-battle tomorrow; God may have no anticipation as of yet either way. This is, on my view, precisely the asymmetry of openness between past and future.

In Chapter 6, I shift gears. Chapters 3 – 5 are primarily concerned with the logical problem for the open future. In Chapter 6, however, I turn to the first of our *practical* problems for the doctrine of the open future – a problem articulated in the first instance by A.N. Prior. Prior noted that it can *seem* that, on the open future view, if I bet that a given horse will win a race, and then that horse does win, someone working under open-futurist assumptions could refuse to grant the payout. After all, it would seem, what I was betting was true was not, on my view, true. I respond to this problem by developing a picture of *betting* that does not presuppose the truth of any future contingents – and I address a difficult related problem having to do with what *credence* we should assign to the claim that it will rain tomorrow, on assumption that no rain tomorrow is objectively possible. (Hint: it is 0.)

In Chapter 7, I build on themes from Chapter 5, and criticize the two most prominent rival positions to my own: *supervaluationism* and *relativism*. In this chapter, co-written with Brian Rabern (and previously published), I begin consideration of what might be called the "prediction problem". This problem is associated with a critical principle of tense-logic, a principle I call "Retro-closure": $p \rightarrow \mathbf{PF}p$ – or, in its metric formulation, $p \rightarrow \mathbf{P}n\mathbf{F}np$. More simply: If p, then it was n units of time ago that it will be the case n units of time later that p. For example: if it is raining, it follows that yesterday it would rain a day later. The crucial result from this chapter is the following. You can take your pick between the open future and Retro-closure, but – contra what is predicted by both supervaluationism and relativism – you *can't have both*. I further add an appendix to this chapter – written solely by myself – explaining why, as I see it, we don't *need* Retro-closure. The argument against the open future from the validity of the Retro-closure principle is, in my estimation, far and away the most common argument given against the doctrine of the open future. It is thus crucial for a successful defense of the open future that we see how Retro-closure may plausibly be denied.

In Chapter 8, I address what has sometimes been called the *assertion problem* for open future views. Roughly, the problem stems from the observation that what are plausibly future contingents are still sometimes properly *assertible* – despite being, on my view, false. The challenge is thus to specify how the open futurist's proposal interacts with standard norms of assertion. There are, to be sure, further objections to the doctrine of the open future – my version included – but a book has to end somewhere, and mine ends here.

The Open Future, Classical Style

> "I cannot help suspecting that the theory of neuter propositions arose out of
> insufficient machinery to distinguish between ~**F**n*p* and **F**n~*p*." – A.N. Prior
> (1967:136)

Various philosophers have long since been attracted to the doctrine that future contingent propositions systematically fail to be true – what is sometimes called the doctrine of the *open future*. However, open futurists, in this sense of the term, have always struggled to articulate how their view interacts with standard principles of classical logic – for instance, with the Law of Excluded Middle (LEM). For consider the following two claims:

> There will be a sea-battle tomorrow
> There will not be a sea-battle tomorrow

According to the kind of open futurist at issue, both of these claims may well fail to be true. According to many, however, the disjunction of these claims can be represented as $p \vee \sim p$ – that is, as an instance of LEM. And if this is so, the open futurist is plainly in a difficult position. She must either simply deny LEM outright, or instead maintain that a disjunction can be true without either of its disjuncts being true. And whereas open futurists have defended both such options with considerable care and ingenuity, both are also faced with substantial costs.[1]

      In this chapter, however, I wish to explore a different option – an option that has been articulated and defended by at least one of the leading lights of tense-logic in the 20th century (A.N. Prior) but is nevertheless often bypassed and even ignored. This is the position that, in fact, the disjunction of the above two claims *cannot* be represented as an instance of $p \vee \sim p$. And this is for the following reason: the latter claim is not, in fact, the strict negation of the former. More particularly, there is an important semantic distinction between the strict negation of the first claim [~(There will be a sea-battle tomorrow)] and the latter claim (There will not be a sea-battle tomorrow). And LEM, of course, is

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[1] For the former approach, see Lukasiewicz 1920; for the latter, see esp. Thomason 1970.

concerned with strict negations.[2] If this semantic distinction can be maintained, the open futurist's prospects concerning LEM appear much more hopeful. For starters: she can maintain that neither of the above claims is true, but that this, in itself, tells us nothing about LEM – because the disjunction of these claims is not an instance of LEM. More to the point: she can maintain that when we *do* have the strict negation of the first claim, we have a claim that is just plain *true*, even if the future is "open". If the future is open regarding sea-battles tomorrow, then currently *it is not the case that* there will be such a sea-battle tomorrow. But this isn't to say that there *won't* be a sea-battle tomorrow. Accordingly, the open futurist can maintain that the *real* instance of LEM is just plain true. Problem solved.

Or so it seems. Again, the possibility of this approach is more often ignored than it is denied. But it is sometimes denied. In particular, it has been denied by Cahn (1967: 60 - 65), Thomason (1970), and more recently by John MacFarlane (2014) and Fabrizio Cariani and Paolo Santorio (2017), the latter of whom call the denial of the given semantic distinction "scopelessness". According to these authors, that is, *will* is "scopeless" with respect to negation; for instance, whereas there is perhaps a *syntactic* distinction between 'It is not the case that it will be tomorrow that there is a sea battle' and 'It will be the case tomorrow that it is not the case that there is a sea battle', there is no corresponding *semantic* distinction – that is, no corresponding difference in *meaning*. And if this is so, the approach in question fails.

In this chapter, however, I defend the unorthodox position that the above two claims are classical *contraries* (both can be false, but not both true) – and I thereby criticize the claim that *will* is "scopeless" with respect to negation. The central theme underlying my position is this: philosophers (and semanticists) are mistaking semantic competence with *will* with what is in fact semantic competence with *will* together with *an implicit metaphysical model of the future* – one on which there is a unique actual future. (See models (I) and (II) in the previous chapter.) However, once this model is denied, the judgments undergirding scopelessness lose their motivation and justification. Thus, in this chapter, I develop a sort of "error-theory" for certain ordinary semantic intuitions about *will*. Adopting Prior's (1957: 11 – 12) metric tense operator '**F**n*p*' as shorthand for 'It will be in n units of time hence that *p*', I contend that the dominant metaphysical model of the future implicit in ordinary,

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[2] For differing defenses of this position, see Prior 1957: 95 – 96, 1967: 128 – 129, Hartshorne 1965, Bourne 2006: 91, Wilson 2016: 114, and Todd 2016 and Todd 2018.

unreflective discourse renders it the case that ~**F**n*p* implies **F**n~*p*. Accordingly, when this model is operative in the background of the discourse, it is, naturally, unimportant to distinguish between ~**F**n*p* and **F**n~*p*, for according to this model, whenever we have the former, we have the latter. However, once one firmly denies the given model of the future, all bets are off: we can see that ~**F**n*p* does not *mean* **F**n~*p*. The distinction, to be sure, is a philosophers' distinction. But it is a distinction nonetheless. And when it comes to articulating the *philosophical* theory of the open future, this is what matters.

I develop this point by defending the claim that *will* is so-called *neg-raising predicate*. "Neg-raising" refers to the widespread linguistic phenomenon whereby what is in fact semantically wide-scope negation gets treated, in context, as if it belonged to the relevant embedded clause. For instance, *I don't think that Trump is a good president* strongly tends to implicate *I think that Trump is not a good president* – despite the former not semantically entailing the latter. The phenomenon of neg-raising has generated a substantial discussion in the linguistics literature – and the present chapter thus aims, in part, to make a contribution to that literature. However, I do not aim to make a direct contribution to providing a *theory* of neg-raising – a theory that would predict which predicates are neg-raising and why. Rather, my aim here is to show that, whatever its fundamental explanation, the phenomenon can also be seen to apply to *will* and *will not*. As I hope becomes clear, seeing *will* as a neg-raiser promises to solve what would otherwise be intractable problems in the philosophical theory of the open future.

3.1. Scopelesssness

As noted above, some authors have claimed that *will* is "scopeless" with respect to negation. Under the heading *Missing Scope Distinctions,* John MacFarlane articulates the thesis by comparing two claims, and writes as follows:

(13) It is not the case that it will be sunny tomorrow

~ Tomorrow *S*

(14) It will be the case tomorrow that it is not sunny

Tomorrow ~*S*

It is striking, though, that although we can mark the syntactic distinction by resorting to cumbersome circumlocutions, as in (13) – (14), these variants seem like different ways of saying the same thing. (2014: 216)

According to MacFarlane, then, we can simply push the negation in (13) inside the scope of the "Tomorrow" (thereby getting (14)), and we can do so without any change in meaning.[3] Now, MacFarlane makes the claim that the requisite scope distinctions are "missing" in the context of a criticism of the so-called (by Prior) "Peircean" semantics for *will*, which treat *will* as a universal quantifier over all open causal possibilities. (These are the semantics defended in Prior 1957: 95 – 96, 1967: 128 – 129, and Hartshorne 1965.) If 'It will be in n units of time that *p*' meant 'On all causally possible branches, in n units of time hence, *p*', we would expect to see a plain scope difference between $\sim\mathbf{F}np$ and $\mathbf{F}n\sim p$ – which we don't see, according to MacFarlane.[4] Notably, however, essentially the same objection would seem to apply to the account I proposed in the previous chapter – an account on which *will* is a universal quantifier over all *available* branches.

Following MacFarlane, Cariani and Santorio write:

Our second constraint [on developing a semantics for *will*] is that *will* is scopeless with respect to an important class of other linguistic items. By this we mean that changes in the relative syntactic scope between *will* and these other items don't make a difference to the truth conditions of *will*-sentences. This is a remarkable feature of *will*, and one that is not generally shared by modal expressions. For present purposes, it is enough to observe scopelessness with respect to negative items, as illustrated by:

(9) a. It will not rain.
b. It is not the case that it will rain.

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[3] Cf. also Craig's (1987: 62) comments on Prior's "Peirceanism": "But does such a reinterpretation make any difference at all? To say that it is not the case that Bush's election will be the case seems to be the same as saying that Bush's election will not be the case."
[4] A similar argument is offered by Hughes (2012: 48).

(9)a and (9)b are truth conditionally equivalent… In short, *will* appears to commute freely with ordinary English negation. … The lack of scope interactions with negation immediately yields an interesting logical constraint:

Will Excluded Middle (preliminary take): 'Will A ∨ Will ~A' is a logical truth.[5] (2017: 6 - 7)

Neither MacFarlane nor Cariani and Santorio put their points in terms of a *metric* tense operator; MacFarlane employs a (similar) 'tomorrow' operator, and Cariani and Santorio employ a non-metric 'will' operator. For various reasons, however, it will be convenient in what follows to employ a metric operator – and clearly whatever reasons MacFarlane and Cariani and Santorio have given above for "scopelessness" regarding 'tomorrow' and 'will' apply *mutatis mutandis* to 'It will be in units of time hence that…'. Thus, again, adopting '**F**n*p*' as shorthand for 'It will be in n units of time hence that *p*', the claim at issue is that there is no semantic distinction between ~**F**n*p* and **F**n~*p*. According to these authors, that is, making a sharp distinction between ~**F**n*p* and **F**n~*p* is approximately similar to making a sharp distinction between $(p \wedge q)$ and $(q \wedge p)$. The "order" of the negation with respect to *will* is as semantically irrelevant as is the "order" of the conjuncts with respect to conjunction. Similarly, we may face a decision whether to write *I gave money to Jones* or instead *I gave Jones money* – but this decision must be solely aesthetic or stylistic. Likewise for the items in (13) and (14). In this sense: *will* is scopeless with respect to negation.

Before moving on, it is important to note that MacFarlane is here plainly assuming that time does not end prior to tomorrow; in other words, his claim is that (13) and (14) say the same thing, under the assumption that time does not end prior to tomorrow. Clearly, (13) and (14) may come apart, if one is assuming that time ends a few minutes from now,

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[5] As Cariani and Santorio recognize, if a given operator **S** is scopeless, then if the Law of Excluded Middle is a logical truth, then **S**-Excluded Middle will be a logical truth, viz. '**S***p* ∨ **S**~*p*'. Assuming LEM, the claim that an operator **S** is scopeless is, therefore, equivalent to the claim that **S**-Excluded Middle is a logical truth. However, it is worth noting, as I note again shortly vis-à-vis- MacFarlane – that the claim that Will Excluded Middle is a *logical* truth is immediately complicated by the observation that a logical truth should be true at the last moment of time – but Will Excluded Middle is not true at the last moment of time. As in the note above, I set this complicating factor aside. The argument of this chapter is that the *metric* version of Will Excluded Middle (**F**n*p* ∨ **F**n~*p*) fails, *even if* time is assumed to continue at least n units of time hence. *This* is the fundamental question at issue.

well before "tomorrow". If time ends in a few minutes, (13) is presumably true and (14) false. The intuitive idea, again, is that (13) and (14) are equivalent in meaning, under the assumption that time does not end prior to tomorrow. In what follows, I make the relevant parallel assumption, and ignore this complication. It is worth noting, however, that this observation does complicate MacFarlane's contention that there is no important distinction in scope between (13) and (14).[6]

I deny that *will* is scopeless with respect to negation. In particular, I deny that (13) implies (14). The position I wish to defend in this chapter, inter alia, is that (14) implies (13), but (13) does not imply (14). Accordingly, these claims do not have the same meaning. Now, there is a sense in which I agree with these philosophers: it is, in ordinary contexts, extremely difficult to hear any distinction between (13) and (14) – that is, between $\sim\mathbf{F}np$ and $\mathbf{F}n\sim p$. In ordinary contexts, that is, if you deny that the future features p in n units of time, then you affirm that that the future features $\sim p$ in n units of time. This is because, in ordinary contexts, it is presupposed that there exists what we might call "the actual future" – and so, if it doesn't feature p in n units time, it instead features $\sim p$ in n units time. However, my contention is this. Once we move to (admittedly) non-ordinary, metaphysically-loaded contexts, in which we are explicitly considering the metaphysical model of the "open future", we can see that scopelessness breaks down. In such a context, there is, I argue, no reason to maintain that if it is not the case that the future features p in n units time, it therefore follows that it instead features $\sim p$ in n units time. Of course not: there is no such thing as "the actual future"! Contra the above authors, then, we cannot simply push the negation in $\sim\mathbf{F}np$ inside the scope of the "$\mathbf{F}$" to achieve $\mathbf{F}n\sim p$. More particularly, the claim that you can requires (or perhaps just *is*) a substantive *theory* of the future – a theory of the future that may indeed be plausible (and is certainly widespread), but a theory of the future that we could (I contend) nevertheless coherently reject. The inference holds, if it holds at all, as a matter of *metaphysics*, not semantics.

In order to see this result, we must again put on the table our three different models of the undetermined future, articulated in the previous chapter: (I) *Indeterminism with a*

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[6] Cf. Correia and Rosenkranz: "Are we therefore bound to conclude that if all future contingents fail to be true, they likewise fail to be false? Not obviously so. The principles $\neg F\varphi \rightarrow F\neg\varphi$ and $\neg F_n\varphi \rightarrow F_n\neg\varphi$ are objectionable on other grounds. They in effect rule out that time has come to an end: if time has come to an end, then $\neg F\varphi$, $\neg F\neg\varphi$, $\neg F_n\varphi$ and $\neg F_n\neg\varphi$ should all hold." (2018: 102). For a similar point, see Briggs and Forbes 2012: 12.

privileged branch, (II) *Indeterminism with an actual branch, but it is indeterminate which branch that is*, and (III) *Indeterminism with no actual branch*. And my claim is simple: because the third model has no actual future history, it invalidates the inference from ~**F**np to **F**n~p. However, because the first two models do have (albeit in different ways) an actual future history, those models validate that inference. And the model implicit in ordinary discourse is the first model, and this is what makes it difficult to hear a distinction between the two claims. Nevertheless, the third model is perfectly metaphysically coherent – and this is the model of the "open future" I wish to defend. And my claim is that we are not in position to rule out the third model in virtue of semantic competence with *will* and negation.

To quickly recap. In the context of causal indeterminism, we have various "branches" that represent causally possible (maximal) ways things might go from here, consistently with the past and the laws. (Such branches will be segments of traditional abstract possible worlds.) On the model I defend, no one of these branches is metaphysically privileged, in the sense that that branch is uniquely "going to be". In this sense: there is no privileged branch in the model. Further, there is, now, no such thing as "the actual future history" or "the *actual* way things will go". (Thus, there is nothing, now, that deserves the title "the actual world".[7]) Here it is crucial to see that this model of the "open future" is to be distinguished from a different model of the open future, viz. model (II). This is the model of the "open future" presupposed by Cariani and Santorio (who are in turn inspired by Barnes and Cameron 2009); indeed, they maintain that their semantics

> presupposes that there is a 'unique' actual course of history. At the same time, it
> might be indeterminate which possible world instantiates the actual course of history.
> As a result, it might be indeterminate which world *will* selects, and *will*-statements
> may have indeterminate truth values. (2017: 3)

The (certainly mysterious) idea here is that though one such branch *is* the actual future history, it is just indeterminate which branch that is. On the model I defend, however, if this is what their semantics presupposes, then their semantics presupposes something false: it isn't "indeterminate" which branch *is* the actual future history – it is just that, again, there *is*

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[7] Cf. Kodaj 2013.

no "actual future history" in the first place.[8] My aim in this chapter, however, is not primarily to compare this model of the open future to the former model. It is to assess the implications of the former model – which is, I believe, perfectly coherent.

But now we must consider the first model, viz., *indeterminism with a privileged branch* – a model that is often called "Ockhamism". According to Ockhamism, though the world is (or certainly may be) causally indeterministic, there are nevertheless facts about how causally indeterministic processes will unfold. To be sure, these facts are (standardly) humanly unknowable, but the facts are there nevertheless, and they are perfectly determinate.[9] To give expression to this model, various theorists have employed the idea of a privileged branch.[10] Now, my claim is simple: it is the Ockhamist's model that is implicit in ordinary discourse. In ordinary discourse, we might grant that there are various ways things might go from here. Nevertheless, we take it for granted that we can, inter alia, reason about, talk about, and bet about the facts concerning how things *will* go from here. Of course, a philosopher may come along and challenge our assumption that there *are* such facts. But now we are in a philosophical context – and even if we grant this philosopher his or her point, we may soon find ourselves saying things that would seem to belie it. That is: we have lapsed back into the ordinary context.

Indeed, that the Ockhamist model is the model presupposed in ordinary discourse is made plausible by the observation that, as soon as we adopt one of the other two models, we

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[8] Here we encounter a question for Cariani and Santorio: why is it safe to presuppose, when giving a semantics for *will*, that there is a unique actual course of history? And what happens to *will* claims when this assumption is denied? Perhaps their idea is that *everyone* agrees that there is such a unique actual course of history – the disagreement just concerning whether it is *determinate* what it is or *indeterminate* what it is. But this is false: certainly one standard way to express "openness" is simply to deny that there is a "unique actual future" at all (Cf. Halpin 1988: 208 – 209, Belnap and Green 1994 (in Belnap et al: 133 - 136)), Hare 2011: 193, Pooley 2013: 340, and Müller, Rumberg, and Wagner 2019: 4). One further note: Cariani and Santorio say that their semantics *presupposes* that there is a unique actual course of history. If Will Excluded Middle is meant to *follow from* their semantics, which simply *assumes* that there is such a unique actual course of history, then I have no objection, for, as I note shortly, such an *assumption* plainly validates Will Excluded Middle. However, Cariani and Santorio – and certainly MacFarlane – appear to write as if scopelessness should hold *no matter* our model – or that it is, in some sense, a semantic constraint on the coherence of such models. And it is this that I wish to deny. The assumption that there is such a unique actual course of history is explanatorily prior to the intuition that *will* is scopeless.
[9] For a defense of Ockhamism thus understood, see Rosenkranz 2012.
[10] Cf. Malpass and Wawer 2012, Wawer 2014, and Wawer and Malpass 2018.

find it immediately difficult to give a philosophical account of our future directed talk.[11] Defenders of the other models may certainly try to address such worries, but the point is that they must be addressed. (See chapters 6 - 8.) Ockhamism, however, generates no such difficulties. Instead, its difficulties are those of the metaphysician – namely, that it seemingly postulates a realm of fact that outstrips what could be accounted for by current physical reality and the laws alone.[12] And some feel that the existence of this realm of fact is objectionable. (See Chapter 1.) But the problems for the Ockhamist, then, are primarily metaphysical, not semantic.

And now we can note the following. The Ockhamist's model is plainly a model on which the distinction between $\sim\mathbf{F}np$ and $\mathbf{F}n\sim p$ is simply unimportant. Intuitively: if there are (determinate, fully complete, fully exhaustive) facts about how indeterministic processes will unfold, then if those facts don't have it that p in n units of time, then they have it that $\sim p$ in n units of time. That is, we might say, just in the nature of "the facts". Slightly more carefully, in terms of the model, we might notice that it immediately vindicates the following pattern of reasoning:

> (1) It is not the case that: the actual future history features p in n units of time. ($\sim\mathbf{F}np$)
>
> (2) There is an actual future history, which, for any p, either includes or excludes p in n units of time.
>
> (3) So, the actual future history features $\sim p$ in n units of time. ($\mathbf{F}n\sim p$)

And there we have it: models with a unique actual future immediately validate the inference from $\sim\mathbf{F}np$ to $\mathbf{F}n\sim p$. Further, such a model is, very plausibly, the model implicit in ordinary discourse. More particularly: I contend that, in ordinary discourse, the second premise is simply *implicit* and *unspoken*. This claim is, in some sense, simply a regulative principle undergirding ordinary thought and talk about the future. And this opens up the space to maintain the following: if a revisionist metaphysician *denies* the second premise, then that metaphysician will likewise have reason to deny the inference from $\sim\mathbf{F}np$ to $\mathbf{F}n\sim p$. And if

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[11] Cf. MacFarlane 2014: 233 – 236, and Williams ms., on, e.g., the "credence problem" and the "assertion problem".

[12] Cf. Belnap and Green (in Belnap et al 2001: 168).

that metaphysician's *model* is itself coherent, then the inference will, indeed, by licensed by *certain* models of the future – but it is not one that should be licensed by semantic competence alone. More generally: I maintain that it is *because* we already implicitly accept premise (2) that we feel like we can move from ~$\mathbf{F}np$ to $\mathbf{F}n{\sim}p$. Thus: proponents of models (I) and (II) cannot appeal to linguistic data to the effect that we do not recognize a distinction between ~$\mathbf{F}np$ and $\mathbf{F}n{\sim}p$ to *support* premise (2) – for that data *presupposes* premise (2).

3.2. Neg-raising: A primer

The way I wish to develop this point is to develop the claim that *will* is a so-called *neg-raising* predicate. (I extend this explanation to the counterfactual *would* in the next chapter.) "Neg-raising" refers to the widespread semantic phenomenon whereby what is in fact semantically wide-scope negation gets treated, in context, as if it belonged to the relevant embedded clause. For instance, *I don't think that Trump is a good president* strongly tends to implicate *I think that Trump is not a good president* – despite the former not semantically entailing the latter. It is tempting simply to let Laurence Horn – whose work on negation is as comprehensive as it is careful – explain the phenomenon in his own words. And so I will. Thus Horn (writing here with Wansing):

> In his dictum, "The essence of formal negation is to invest the contrary with the character of the contradictory", Bosanquet encapsulates the widespread tendency for formal contradictory (wide-scope) negation to be semantically or pragmatically strengthened to a contrary… The strengthening of a contradictory negation … to a contrary typically instantiates the inference schema of disjunctive syllogism or *modus tollendo ponens* in (11):

> (11) A ∨ B; ~A; B

Note: A and B are here *contraries*: both can be false, but not both true. However, given the first premise, B, in effect, becomes the contradictory of A; that is, if we have ~A, we have B, and vice versa. Horn and Wansing continue:

While the key disjunctive premise is typically suppressed, the role of disjunctive syllogism can be detected in a variety of strengthening shifts in natural language where the disjunction in question is pragmatically presupposed in relevant contexts. Among the illustrations of this pattern [is the] tendency for negation outside the scope of (certain) negated propositional attitude predicates (e.g. *a does not believe that p*) to be interpreted as associated with the embedded clause (e.g. *a believes that ~p*); this is so-called "neg-raising".

When there are only two alternatives in a given context, as in the case of neg-raising (as stressed by Bartsch 1973; cf. Horn 1978; Horn 1989, Chapter 5), the denial of one … amounts to the assertion of the other. The relevant reasoning is an instance of the disjunctive syllogism pattern in (11), as seen in (12), where F represents a propositional attitude and a the subject of that attitude.

(12) $F(a,p) \lor F(a, \sim p)$ [the pragmatically assumed disjunction]
         $\underline{\sim F(a,p)}$ [the sentence explicitly uttered]
         $F(a,\sim p)$ [the stronger negative proposition conveyed]

The key step is the pragmatically licensed disjunction of contraries [*a believes that p $\lor$ a believes that ~p*]: if you assume I've made up my mind about the truth value of a given proposition p, rather than being ignorant or undecided about it, then you will infer that I believe either p or $\sim p$, and my denial that I believe the former will lead you to conclude that I believe the latter.[13]

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[13] Horn and Wansing 2015. Almost identical points can be found in Horn 2015 (and the classic Horn 1989). However, in the interest of simplicity, I have followed the more streamlined presentation of these points in Horn and Wansing 2015. Interestingly, elsewhere in their 2015, Horn and Wansing mention "future contingents" as a case in which one might reasonably claim that propositions often taken to contradictories are in fact contraries: "Other cases in which apparent contradictories can be seen as contraries, and thus immune from any application of LEM, are future contingents (*There will be/will not be a sea battle tomorrow*)." The authors do not, however, link this issue to the issue of neg-raising.

The key idea here is this: *a believes that p* and *a believes that ~p* are strictly speaking contraries: both could be false. However, if the disjunction of these contraries is presupposed in context, then *a does not believe that p* – what is strictly speaking [~(*a believes that p*)] – will tend to be interpreted as *a believes that ~p*. That is, what is in fact semantically wide-scope negation gets interpreted as if it were associated with the "embedded clause". As Horn notes, however, neg-raising effects are not witnessed solely in cases of (certain) propositional attitudes. Commenting on Horn, Gajewski (2007: 292) summarizes:

> *A list of Neg-Raising predicates, arranged by semantic field (Horn 1989):*
>   a. think, believe, suppose, imagine, expect, reckon, feel
>   b. seem, appear, look like, sound like, feel like
>   c. be probable, be likely, figure to
>   d. want, intend, choose, plan
>   e. be supposed to, ought, should, be desirable, advise, suggest

The central idea is that in all of these cases, there is a semantic difference between the relevant wide-scope and narrow-scope readings (*I don't think that p/I think that ~p; I don't want to do it/I want to not do it; You're not supposed to do that/You're supposed to not do that*). However, *in context*, this distinction is often suppressed or otherwise masked – and this is because, in these contexts, we bring a certain *model* of the situation with us. In a context in which I am assuming that you're not simply indifferent (that you aren't indifferent is part of my background model of the situation), when you say that you don't want to come to the party, I hear this as an assertion that you want to *not* come. Indeed, it is extremely difficult to hear *I don't want to come* as anything *but* this stronger assertion – or, perhaps, it is difficult to imagine that there even *is* a stronger assertion available (*He said he doesn't want to come! Quit asking him.*). At the same time, on reflection, we are capable of seeing that it is *possible* (even if, in context, probably unkind) for someone truly to say *I don't want to come*, although that person doesn't want to *not* come – because, at the moment, that person is completely indifferent. That is, on reflection, we can grant that *does not want to come* does not *semantically* entail *wants not to come*. It does so only *holding fixed* our assumed model of the situation, viz. that you aren't indifferent. If, indeed, you *aren't* indifferent, then that you don't want to

come does imply that you want not to. But once this model is relinquished, a scope distinction becomes salient that was otherwise practically irrelevant.

And this is plainly deeply similar to what I wish to say about *will* and *will not*. Indeed, my claim is that we may plausibly add *will* to the list of neg-raising predicates above. [14] In this case, the relevant inference pattern identified by Horn, I contend, goes as follows:

> (1) There is a "a unique actual course of history", which, for any *p,* either includes or excludes *p* in n units of time. (Implicit, unspoken assumption)
>
> (2) $\mathbf{F}np \lor \mathbf{F}n\sim p.$ (Trivial consequence of (1) – and establishment of semantic contraries) (e.g. There will be a sea battle tomorrow or there will not be a sea battle tomorrow)

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[14] In this chapter, I defend the claim that will is a "neg-raiser". However, some might have a conception of "neg-raising" that prohibits *will* from being a neg-raiser from the start. Roughly, on a certain *syntactic* approach to neg-raising (cf. Collins and Postal 2014), neg-raising is essentially a bi-clausal operation (in which the negation is "raised" from the lower clause). In personal correspondence, Laurence Horn thus notes that if neg-raising is essentially such an operation, if *will* is a modal, *will* cannot be a neg-raiser, since a modal is in the same clause as the main verb it governs. However, some in the literature have employed a more permissive approach to the terminology of "neg-raising"; as just noted by Gajewski, for instance, Horn (1978: 198) claims that the deontic modal *should* is a neg-raiser, on grounds that *I don't think he should go to the party* strongly conveys *I think he should not go to the party.* In this book, I thus assume a conception of "neg-raising" that does not prohibit *will* from being a "neg-raiser" on terminological grounds alone; in other words, I assume a conception on which *should* is appropriately called a "neg-raiser" (and thus, in principle, a conception on which *will* can be a neg-raiser). For more on these issues, see Collins and Postal 2017, which clarifies the relationship between the syntactic theory of neg-raising developed in their 2014 and the pragmatic/excluded middle approach to which I appeal in this chapter. Collins and Postal 2014 reserve the label "Classical Neg-Raising" (CNR) for neg-raising in the more narrow sense just noted; I thus assume that not all neg-raising is classical neg-raising.

Incidentally, the comparison with *should* is instructive. (Cf. Horn's [1978: 200] discussion of St. Anselm on the Latin *ducere.*) "Trump should be impeached or Trump should not be impeached" certainly *sounds* initially like an instance of ($p \lor \sim p$), although, on reflection, we may be prepared to grant that it isn't; for someone on the fence, it is not the case that he *should* be impeached, and not the case that he should *not* be impeached. So similarly, when reality is "on the fence" concerning Trump's impeachment tomorrow, I say, it is not the case that he *will* be impeached tomorrow, and not the case that he will *not* be impeached tomorrow. It is open. (Thanks to Laurence Horn for discussion on these points.) I extend this comparison with *should* towards the end of the next chapter. (See further Todd and Rabern forthcoming.) A preview: "No one nowadays should have to suffer from malaria" certainly seems *prima facie* equivalent to "Everyone nowadays should be free from malaria", but very plausibly we cannot rely on this feeling of equivalence to generate an argument for "Should Excluded Middle"!

(3) ~**F**n*p* (The proposition considered or uttered) ("It is not the case that there will be a sea battle tomorrow"/"I deny [assert that it is false] that there will be a sea battle tomorrow")

(4) **F**n~*p* (The proposition communicated or expressed) ("There will not be a sea battle tomorrow")

My argument, then, is that we can see the distinction between MacFarlane's original items in (13) and (14) as continuous with a wide range of linguistic data in which distinctions of scope are suppressed or masked by the implicit models we bring to the relevant contexts. At the same time, the difference between the case of *will* and *will not* and the standard cases of neg-raising listed above is perhaps obvious. For instance, as explained, in context, we may bring with us a supposition that Jones has thought about the matter and formed an opinion one way or the other; when Jones thus says that he doesn't think that *p*, we interpret this to mean that he thinks that ~*p*. But it is, for most of us, relatively easy to forego or cancel this assumption; all of us are familiar with the situation of withholding belief (or being agnostic). Thus, when such an option is made salient, we are able to consider *Jones does not think that p* as true and *Jones thinks that ~p* as false. He's an agnostic on this matter, so the inference that usually holds good does not hold good.

In this case, then, the situation that makes salient the difference in scope is relatively familiar and benign. But this plainly is not the case for *not that will* and *will not*. Indeed, the purported situation that would make salient the difference in scope is a situation that would only be insisted on by a philosopher. *Only a philosopher* – a philosopher! – would think to question the inference from (3) to (4), because only a philosopher would have cause to consider and reject (1) (and thereby (2)). Only philosophers (broadly conceived) are concerned with "models of the undetermined future", and only philosophers would contend that, as far as we know, *indeterminism with no actual future branch* is the correct such model. Ordinary persons in ordinary life may pause to say *Well, wait – maybe Jones hasn't considered the matter, so, sure, he doesn't think that p, but maybe he also doesn't think that ~p.* But only a philosopher would wish to pause to say, *Well, wait – maybe there are no facts about undetermined aspects of the future, so, sure, it isn't yet the case that it* will *happen an hour from now, but maybe it also isn't yet the case that it* won't *happen an hour from now.* This, then, plausibly explains why *will* has not (to my knowledge) yet appeared on any list of neg-raising predicates. Semanticists and

linguists concerned with the theory of neg-raising are plainly not going to be concerned with cases that appear, if at all, only in the context of an explicit rejection of a metaphysical theory of time. (Their work is already difficult enough.)

And so the difference is this. The situation, I contend, that masks the relevant scope difference in the case of *will* is *thoroughgoing* and *metaphysically entrenched*. However, the claim that the scope differences are *there* is deeply theoretically motivated. My claim, then, is that the move from ~**F**n*p* to **F**n~*p* is, in fact, a move not licensed *merely* by semantic competence, but semantic-cum-*metaphysical* competence – that is, competence with the prevailing *metaphysical theory* of the future and what semantical distinctions that theory makes relevant and irrelevant. On reflection, that is, there is a coherent (albeit highly controversial) metaphysics that makes salient the given distinction in scope. I do not know what it is that entitles us to accept premise (1) above, if indeed anything does, but what I *do* know is that, *if* something does, it isn't linguistic or semantic competence with *will* and negation. After all, it is *because* that (1) that (2) – and because that (2) that we can move from (3) to (4). That we can move from (3) to (4) *presupposes* exactly what is at issue: that there is some future branch which is the unique actual future.

3.3. Interlude: pure semantic competence

Here we must make an important clarification. My claim is that we must be careful to distinguish between judgments made in virtue of *pure* semantic competence, and those made in virtue of semantic-cum-metaphysical competence. However, my view is *not* that our faculties of semantic competence are simply broken, and *any* semantic distinction can be introduced by inventing some bizarre metaphysics which allegedly brings it out. For instance, I suggest that it is in virtue of *pure* semantic competence that we can distinguish between

> # John has yet arrived to the party
> John has not yet arrived to the party.

More particularly, it is in virtue of pure semantic competence that we judge that the former sentence is infelicitous, and the latter felicitous. ("Yet" is a so-called negative polarity item,

hence the infelicity of the former.) But it is extremely difficult to see what kind of *metaphysical* hypothesis might imply that former is, after all, felicitous. Similarly, it is pure semantic competence that tells us that there is no difference in meaning between

> Sally gave money to John
> Sally gave John money

Then again: perhaps some theory of substances and relations may make one true and the other false? Well, having considered the matter for a few minutes – no, I don't think so, but nevermind. Needless to say, it is beyond the scope of this book to attempt to give some sort of criterion that might distinguish between judgments of pure semantic competence and the rest – if, as I doubt, such a criterion could be given at all. The important point is this. Model (III) cannot be ruled out on *merely* grounds of semantic competence.

3.4. Against Scopelessness: quantifiers

Recall Cariani and Santorio's claim that *will* is scopeless with respect to "an important class of other linguistic items." Thus far, the focus of this chapter has been on whether *will* is scopeless with respect to *negation*. Here I focus on whether *will* is scopeless with respect to quantifiers.[15] Notably, on this issue, Jonathan Bennett – who is no friend of *counterfactual* excluded middle (about which more in the next chapter) – sees no distinction between "Will ∃x Fx" and "∃x Will Fx". Indeed, Bennett writes:

> In the case of Will [unlike with *Would*, Bennett maintains], there is no room for two readings, no issue about the scope of the quantifier… It cannot be that he will appoint a woman unless there is a woman whom he will appoint.[16]

I will argue, however, that Bennett was mistaken on this point.

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[15] Cf. Forbes 1996 for discussion of related issues; Forbes does not, however, consider the position I develop shortly. Cf. also Higginbotham 1986, who introduced the method of using quantifiers to test the scope of negation for conditionals.
[16] Bennett 2003: 186.

Suppose we are running an indeterministic lottery in one hour with three and only three tickets. Now consider the sentence:

(1) No ticket will win (in an hour).

As a first approximation, it seems that someone uttering (1) must be maintaining that our lottery is going to be a failed lottery – a lottery in which no ticket has ended up winning. In other words, on the assumption that any non-win is a loss, (1) seems equivalent to "Every ticket will lose." However, (1) is *de re/de dicto* ambiguous (respectively):

(1a) No ticket is such that it will win (in an hour). ~∃x, x a ticket, x is such that:
Willn: x a winner
(1b) It will be (in an hour) that no ticket wins. **Will**n: ~∃x, x a ticket, x a winner

Now, everyone can observe the *syntactic* distinction between (1a) and (1b). A theory on which *will* is "scopeless", however, predicts that (1a) and (1b) are nevertheless truth-conditionally equivalent. Prima facie, this seems reasonable. If no ticket is such that it will win at a certain time, isn't this just to say that it will be that no ticket wins at that time?

It is not. I contend that, if the future is open, there are scenarios in which (1a) is true and yet (1b) is false. On reflection, if there are no facts about undetermined aspects of the future, then such a scenario is easy to construct. Suppose that there are three and only three total, distinct branches. On branch 1, ticket 1 wins; on branch 2, ticket 2 wins, and on branch 3, ticket 3 wins. Now, since there are no facts about undetermined aspects of the future, no one of these tickets is such that *it* will win. If one such ticket *were* such that *it* will win, then this very fact – that that ticket will be the winner – would be a fact about an undetermined aspect of the future. (1a), accordingly, is true. However, we have also said that our three branches are all and only the branches there are. And observe: on every branch, some ticket or other is the winner. On branch 1, it is ticket 1, on branch 2, ticket 2, and on branch 3, ticket 3. Thus: on every branch, in n units time, we have the formula '∃x, x a ticket, x a winner'. What we have is simply different tickets making that formula true on the different respective branches. But the formula is true on *all* the branches. Thus, far

from having (1b), we in fact have the following: **Will**n: ∃x, x a ticket, x a winner. (1a) is true in this scenario and yet (1b) is false.[17]

I am prepared for the obvious objection: "Are you really saying that there is a true reading of 'No ticket will win' in a context in which it is taken for granted that it is *open* that ticket 1 wins, open that ticket 2 wins, and open that ticket 3 wins?" And yes, that is what I am saying. I contend that the default reading of (1) is (1b), however, and that in this scenario, (1b) is false. (1b), of course, is equivalent to the claim that every ticket will lose. You are, therefore, ill-advised blithely to assert (1) in such a context. Nevertheless, (1) is ambiguous between (1a) and (1b), and (1a) is true in this scenario. (If you want to say that 'No ticket will win', because, on your view, the future is open, and so no ticket is such that *it* will win, then, even though what you say is true, you had better prepare your audience.) That (1) has a true reading in this scenario is perhaps unexpected, but there it is. As I see it, however, you can earn the right to make fun of this view only if you can earn the right to make fun of the view that there are no facts about undetermined aspects of the future. For if there are no facts about undetermined aspects of the future, and we are running an indeterministic lottery with three tickets, it is just plain true – or so it seems to me – that no one ticket in this lottery is such that *it* will win. And yet if some ticket or other wins on *every* way things could develop for this lottery, it is just plain false that it will be that no ticket wins. Indeed, it is just plain true that it will be that some ticket wins. It will be that some ticket wins, but no one ticket is such that *it* will win. This is strange, but the open future is strange. I don't know what else to tell you.

The general lesson is this. We cannot unproblematically move between the following:

Willn: ∃x **Φ**x (e.g., "It will be that there is a winning ticket in an hour")

∃x **Will**n: **Φ**x (e.g., "There is a ticket such that it will be the winning ticket in an

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[17] This issue here is a variant on the following. On my view, we could have ~**F**n*p*, ~**F**n*q*, ~**F**n*r*, and yet **F**n(*p* ∨ *q* ∨ *r*). For suppose we have three and only three differing branches: a *p* branch, a *q* branch, and an *r* branch. Then, on every branch, in n units of time, we have it that (*p* ∨ *q* ∨ *r*). After all, any *p* branch is ipso facto a (*p* ∨ *q* ∨ *r*)) branch, and any *q* branch is ipso facto a (*p* ∨ *q* ∨ *r*) branch, and so on. Thus, in this case, **F**n(*p* ∨ *q* ∨ *r*)) is not a future contingent, but a future *necessity*.

hour.")[18]

I appreciate that these points are delicate. Yet it is worth bringing out the way in which they seem problematic for scopelessness. Scopelessness predicts that there is *no difference in meaning* between '**Will** ∃x **Φ**x' and '∃x **Will Φ**x'. Accordingly, whatever semantic profile is had by one ought to be had by the other. There are two distinct challenges here. The first – challenge (a) – is simply the challenge that there are scenarios in which one such claim seems more clearly true than the other. Again, in the three branch scenario in which, in branch 1, ticket 1 wins, and branch 2, ticket 2 wins, and branch 3, ticket 3 wins, the following claim is clearly true (indeed, in MacFarlane's terminology, it is settled-true): **Will**n: ∃x, x a ticket, x a winner. But whereas this claim seems, for this reason, clearly true in this scenario, the other given claim seems much less clearly true. In this scenario, it is not clearly true that *one* of these tickets is such that *it* will be the winner (in n units time). (At least, the question whether this claim is true is a confusing question.) The second challenge – challenge (b) – is related to the first. For, again, *this* claim (the *de re* claim) would seem to be committing us to facts about the future that outstrip what is determined by the present; not so, of course, for the former claim, which is *settled* by the present. For whichever ticket has the property in question – and, on this view, some ticket has it – its having this property cannot be

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[18] Note: there is an important subtlety here that I am ignoring for the sake of simplicity. There is of course an important sense in which *any* presentist must deny the equivalence of these formulas. For instance: a presentist may want to grant that it will be in 1000 years that there exists a Martian outpost. But our presentist will presumably *not* wish to grant that there exists something such that it in 1000 years will be a Martian outpost (what would *that* be?) – anyway, not unless our presentist is prepared to say that the domain of objects never changes over time (nothing really comes into existence or goes out of existence). Notably, however, an eternalist does not have this reason for distinguishing between these two formulas; for her, if there will be a Martian outpost in 1000 years, there indeed exists something such that it in 1000 years will be a Martian outpost. For the eternalist, our most unrestricted quantifier *does* range over future objects like Martian outposts (if there will be such outposts). For discussion of this issue, see Prior 1957: Ch. 4, and Sider 2006. I want to sidestep this issue simply by restricting our attention to contexts in which the objects in the given domain exist, even on presentist grounds. In other words, *all* presentists will have cause to say that "It will be that there exists a winning ticket" does not entail "There exists a ticket such that it will be the winning ticket" if, say, the lottery is fated to be run next year, and there aren't even *tickets* for the lottery yet. Nevertheless, if all the tickets for the lottery have just been created, then a presentist who accepts scopelessness will insist that there is no difference between "It will be that there exists a winning ticket" and "There exists a ticket such that it will be the winning ticket". And *that* is what I am denying.

accounted for in terms of facts about current conditions and causal laws, and its having it will therefore be a brute fact with respect to such conditions and laws. Insofar as one such claim seems clearly true whereas the other does not, and insofar as one such claim seems to have ontological and metaphysical commitments that the other does not, we have reason to think that these claims, contra scopelessness, do not mean the same thing.

But perhaps we are now in position to see how scopelessness might be saved. Concerning challenge (a), the proponent of scoplessness must say the following. In this scenario, it is indeed clearly true that one of these tickets is such that it will be the winner. It is just *indeterminate which* is such that it will be the winner. Again, some ticket or other has the property *being going to be the winner*. It is just indeterminate which ticket has that property. In this way, we can preserve the equivalence between the relevant formulas. If it will be that some ticket wins, then, indeed, some ticket is such that it will win. But if it is indeterminate which ticket will win – look at the disagreeing branches! – then it is indeterminate, now, which ticket is such that it will win, although, of course, some one ticket is indeed such that it will win. Again: there is a ticket such that it will win, but it is indeterminate which ticket has this property.

So far so good. This is an elegant reply to problem (a). But is it an adequate reply to problem (b)? Problem (b) is that '∃x, x a ticket, x is such that: **Will**n: x a winner' seems to commit its proponent to a fact that goes beyond what is entailed by the present, whereas '**Will**n: ∃x, x a ticket, x a winner' does not. And here the proponent of scopelessness arguably must say the following. Yes, there is indeed a fact about the future that goes beyond what is entailed by the present and the laws. This is precisely the fact about which ticket is such that it will win – for there is indeed a particular ticket such that it will win. This fact – about which ticket has this property, and again, some ticket does have this property! – cannot be accounted for by virtue of the present and the laws. The central claim the proponent of scopelessness must make here is that there are facts about the future that go beyond what is entailed by the present and the laws – there are *primitive future directed facts* (recall Chapter 2) – but it is simply *indeterminate* what these facts are.

But now I wish to harken back to Chapter 1 and the motivations for the theory of the "open future" at issue. As I am imagining it, precisely the motivation of the open futurist is that there are *no facts about the future that go beyond those that are entailed by the present and the laws*. Their central motivation is *not* thereby respected if we say that though there are facts

about the future that go beyond the present and the laws, it is indeterminate what those facts are. No! That would be precisely to violate the spirit of the motivation for openness, which is the feeling that *any such facts* – say that they are "indeterminate" if you must – would be mysteriously brute or unexplained. Consider once again our comparison with fictions. There is all the difference between saying that there are no facts about fictions that go beyond those specified by the fiction-determining facts, and that though there are facts about fictions that do go beyond those specified by the fiction-determining facts, it is simply indeterminate what facts those are. On the latter view, but not the former, we still must ask: where are those facts *coming from*?

Perhaps we are at some kind of stalemate. Perhaps we have simply discovered two distinct, perfectly respectable conceptions of "openness", one which would preserve scopelessness, and one which would not. And so let me simply put my cards on the table. My claim is that we do not *need* to have recourse to the claim that (in this scenario) there is a ticket such that it will be the winner, but it is indeterminate which ticket that is. We can simply say that though it will be that a ticket wins, there is, as of now, no ticket such that *it* will win. Here we simply employ the familiar tools and distinctions we already had at our disposal, without introducing a new, mysterious kind of "indeterminacy". The cost, of course, is that we now must defend some scope distinctions to which we previously had not been sensitive. But this cost is well worth paying. As shown in the neg-raising literature, it is often the case that a scope distinction is not salient until a shift in one's background assumptions makes it salient. My contention is that an acceptance of the claim that there are no facts about undetermined aspects of the future is precisely a claim that makes salient the scope distinctions developed above.

3.5. One or the other/Neither

We are not out of the woods yet. There are other *de re/de dicto* ambiguities to contend with. Consider an indeterministic lottery with two and only two tickets. There are two and only two branches; in n units time, on branch 1, ticket 1 wins, and on branch 2, ticket 2 wins. Now suppose someone says:

(3) One or the other will win.

As before, I think that (3) has a true reading in this scenario, and a false reading – to be sure, a false reading that must be forced, but a reading that can be forced. The true reading again is the *de dicto* reading (3b), and the false reading is the *de re* reading (3a):

(3a) One ticket is such that it will win or the other ticket is such that it will win.

(3b) It will be that one ticket wins or the other ticket wins.

In this scenario, I contend that (3a) is false, whereas (3b) is true.

A final case. Scenario: an indeterministic three ticket lottery; I buy tickets 1 and 2, Jones buys ticket 3. There are three branches as before; on branch 1, ticket 1 wins, etc. Jones is prone to superstition; in a superstitious moment, he looks at my tickets and says:

(4) Neither will win.

Do I agree with what Jones said? That depends. There are again two readings of (4), the *de re* (4a) and the *de dicto* (4b):

(4a) Not either are such that they will win.

(4b) It will be that not either win.

= both will lose.

If Jones means (4a), then I agree: neither of my tickets are such that they will win. That sounds bad for me. However, I do *not* thereby think that both of my tickets are such that they will *lose*. Under one reading of (4), I agree, and on the other, I disagree. Neither of my tickets are such that they will win, but happily neither are such that they will lose. That's why I want to play this lottery.

3.6. A prediction of salience

If you are, at this stage, at least somewhat bewildered, then I am sympathetic. For though I claim that the given scope distinctions are *there*, they certainly do not *feel* like they are there,

and we certainly do not proceed practically as if they are there. And this I am happy to grant. But I would like to defend these scope distinctions by making a certain kind of prediction of my own – a prediction about what we should expect to see *if* there came to be a community of speakers who were determined to speak only in ways licensed by the philosophical theory that there are no facts about undetermined aspects of the future. For it is important to note that ours is certainly not anything like such a community. What sorts of distinctions may *become* salient to those in such a community?

Here is an initial comparison. Previously we could reliably communicate to our interlocutor that we think Trump is not a good president simply by saying, in a particular tone and context, "No, I don't think Trump is a good president." But now 1000 neutrals have moved to town. Eventually, I can no longer reliably communicate to my interlocutor that I think Trump is not a good president by saying that I don't think Trump is a good president. For now my interlocutor may wonder: are you simply *denying* that you think he's a good president, which is consistent with you not thinking he is *not* a good president? In other words: are you possibly yet one more of the neutrals? A scope distinction has been made salient that otherwise was practically irrelevant.

Similarly: we've become open futurists who take very seriously our open futurism in our daily thought and talk. (Don't ask me why we've made this mistake.) Previously we could reliably communicate to our interlocutor that it is going to fail to rain tomorrow simply by asserting that it isn't going to rain tomorrow. But now we recognize that there are no facts about the future beyond those necessitated by the present – and people know that and talk accordingly. We're making critically important plans and wondering about the weather; you report that Jones – an authority about the weather – said it isn't going to rain tomorrow, but then the phone suddenly cut out. That's good news. He said it isn't going to rain. But wait. The phone cut out. So, sure. He said it isn't *going to* rain tomorrow. But did he say it is going to *not* rain tomorrow? Now we want to be clear. Did it sound like he might be about to say that though it isn't *going to* rain tomorrow, as of yet, it isn't going to *not* rain tomorrow either? In which case: pack umbrellas.

My prediction, in short, is that though this *sounds* odd to us, conversations like these would eventually encourage our (perhaps benighted) open futurists to hear certain scope distinctions as salient that we do not find salient. Would this simply be a scenario in which the relevant words – *will, be going to* – have taken on new meanings? For instance, one might

object that, in the final line of the previous paragraph, the italicized *going to* simply means something different than our *going to*. In particular, one might object that, in this usage, it means (roughly) "determined". ("Did it sound like he might think that though it isn't determined for there to be rain, it isn't determined that there be no rain either?") Does *going to* simply mean "determined" in this scenario? No. It is well-known that which "reading" of a given sentence we find salient in a context is highly sensitive to such factors as the tone, emphasis, and intonation of the speaker. The given emphasis makes a certain reading more salient or otherwise possible, but it does not change the *meaning* of the *going to*.

Consider. The following sentence almost inevitably gives rise to the "neg-raised" reading:

Jack: Jill, listen. I don't want to go to your party.

Jill: OK, well, maybe next time.
[Improper response: OK, let me try to sway you!]

But with a change in emphasis, the neg-raised reading is at least postponed:

Jack: Jill, listen. I don't *want* to go to your party.

Jill: OK, but … what? You are going to come anyway? Or you're on the fence? Or what?

Jack: But … right. I don't want to *not* come. Given my anxiety, I just feel very unsure about parties right now.

In this second dialogue, *want* has not become *definitely want*. It is, well, just *want*. It is just that a change in emphasis has made a reading salient that otherwise would not have been salient; the change in emphasis invites a "But…". Similarly, if we say that it isn't *going to* rain tomorrow, this invites the possibility of saying, "But it isn't going to *not* rain tomorrow either," and it can do so without involving a change of the meaning of *going to* to anything like *definitely/determinately/determined to be going to*.

3.7. The dialectic: circular arguments

Given the above, consider the following argument – implicit in MacFarlane's argument above – against what I have called "model (III)".

> (1) WEM is a logical truth (and *will* is "scopeless"). (Generalization from linguistic data)
> (2) If WEM is a logical truth (and *will* is "scopeless"), there is a unique actual future (and future contingents aren't all false). So,
> (3) There is a unique actual future (and future contingents aren't all false).

My reply is that the argument is objectionably circular. Premise (1) seems plausible (to the extent that it does) *because* we already think of the conclusion as true. The argument thus gets us nowhere. It is at least in part because we implicitly think that there is a unique specification of "what is actually going to happen tomorrow" (i.e., that there is a unique actual future) that it seems to us that WEM is a logical truth, and that *will* is "scopeless", and that therefore future contingents can't all be false. Thus, that it seems like WEM is a logical truth, and that *will* is scopeless, can't be *reason* to believe that there is a unique actual future, and that therefore future contingents can't all be false.

3.8. Some comparisons with other modals

Cariani and Santorio maintain that *will* is a "modal". However, they claim, *will* simply has a unique property amongst modals: it is scopeless. At this stage, however, it is worth pausing to remark on precisely how (in Cariani and Santorio's words) "remarkable" scopelessness really would be, if *will* is a modal. (And even if *will* is not a modal, some comparisons are nice.) As they note, that *will* is scopeless would be a unique feature of *will* amongst other modals: to my knowledge, there are no *other* modals **M** – of whatever "flavor" – such that there is no truth-conditional difference between ~**M**p and **M**~p.[19] Consider:

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[19] What counts as a "modal" in this context? It is difficult to say (cf. Pullum and Huddleston 2002: 172.) At any rate, Cariani and Santorio contrast *will* with *must* and *might*, which, they say, are modals

(i) Necessity. ~(*Necessarily p*) does not mean *Necessarily ~p*.

'*Necessarily p* ∨ *Necessarily ~p*' eliminates *contingency*.

(ii) Must (epistemic). ~(*According to S, it must be that p*) does not mean *According to S, it must be that ~p*.

'*According to S, it must be that p* ∨ *According to S, it must be that ~p*' eliminates *uncertainty*.

(iii) Obligation. ~(*S is obligated to see to it that p*) does not mean *S is obligated to see to it that ~p*.

'*S is obligated to see to it that p* ∨ *S is obligated to see to it that ~p*' eliminates *mere permission*.

(iv) Belief. ~(*S believes that p*) does not mean *S believes that ~p*.

'*S believes that p* ∨ *S believes that ~p*' eliminates *agnosticism*.

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that do not commute freely with negation – and those I have listed here seem standard. For an updated version of the modal view defended by Cariani and Santorio, see Cariani (ms).   I set aside the claim that *negation itself* is a modal (for discussion, see Berto and Restall 2019); negation would seem to commute freely with itself.

A further note: we can observe that there are indeed modals – possibility modals – in which ~**M**p does imply **M**~p, although not the other way around, e.g. metaphysical possibility. Under standard assumptions, ~ Possibly p implies Possibly ~p, though not vice versa. "Possibly" is thus not "scopeless", although ~ Possibly p does imply Possibly ~p. (Similar claims can be made concerning epistemic possibility and deontic permissibility.)

What is thus (minimally) required for the claim that ~**F**np does not imply **F**n~p is the claim that *will* is stronger than a *possibility* modal. And, indeed, this is plausible: intuitively, to say that something *will* happen is to say something stronger than that it is *possible* for it to happen. Intuitively, in terms of modal strength, *will* lays between *may* and *must*: it is stronger than *it may happen* and weaker than (but of course does not *rule out*) *it must happen*.

Incidentally, we can connect this claim about *will* with a theme from Horn on the nature of neg-raising, although a full discussion of these issues must lie outside the scope of the present chapter. In his 1975, Horn considers as a necessary condition on neg-raising something he calls "midscalar generalization". (For discussion, see Gajewski 2005: 86 – 90.) Roughly, the idea is that expressions in the same semantic field can be ordered in terms of logical strength, e.g., *some, many, most, all* – and that, in order to be a neg-raiser, the expression must be somewhere in the middle. (For more on this theme, see Pullum and Huddleston's (2002: 838 – 843) discussion of "increased specificity of negation" in terms of "medium strength modality".) My point here is not that neg-raisers must be "medium strength" in the requisite way; my point is instead that, if it is claimed that they must be, then one could plausibly contend that *will* is "medium strength".

(v) Intention. ~(*S intends to bring it about that p*) does not mean *S intends to bring it about that ~p*.

'*S intends to bring it about that p* ∨ *S intends to bring it about that ~p*' eliminates *indecision*.

My point here is not that since scopelessness fails in these cases, *will* cannot be scopeless. Perhaps there is an important disanalogy between *will* and these other cases. My point, instead, is twofold. First, it is burden-shifting: proponents of scopelessness must explain what this disanalogy comes to. Second, and more importantly, it is illustrative: if it is claimed, from the outset, as a semantic "constraint" on our theorizing, that the items at issue in (i) – (v) are scopeless, then, from the outset, we seemingly eliminate as possibilities *contingency, uncertainty, mere permission, agnosticism,* and *indecision.* And the argument of this book is that if is it similarly insisted that *will* is scopeless, then we eliminate, from the outset, what I would like to call *openness.* My theory is that openness stands to *will* as mere permission and contingency stand to *obligation* and *necessity.*

If we defend the claim that *will* is a modal, we thus have a choice: we can defend the claim that *will* is unique amongst modals in being scopeless with respect to negation, or we can maintain that *will* is unique amongst modals in having standard scope interactions with negation, but these interactions being systematically suppressed in ordinary thought and talk by our implicit assumptions about its unique *subject matter* – namely, the future. The former approach must see *will* as semantically discontinuous with other modals. The latter approach instead can see *will* as perfectly semantically continuous with other such modals – and, indeed, can see the suppression of the relevant scope distinctions as perfectly continuous with a whole range of *distinct* semantic data (identified in the neg-raising literature) in which we can observe precisely the phenomenon I have here identified. The latter option sees deep continuity where the former sees discontinuity. The latter option, to this extent, is preferable.

3.9 Some objections

Here is the first.

You just maintained that, if we insist that *will* is scopeless, then from the outset, we eliminate "openness". But this is false. Suppose, as you grant, that "openness" is the state of affairs that obtains with respect to p (in n units of time) when it is not true that $\mathbf{F}np$ and not true that $\mathbf{F}n{\sim}p$. Well, we can maintain scopelessness and Will Excluded Middle ($\mathbf{F}np \vee \mathbf{F}n{\sim}p$) consistently with openness thus defined: we can say that neither such disjunct is true, but that the disjunction is true.

Granted. Strictly speaking, we do not *eliminate* openness thus-conceived: we simply make its expression difficult to understand. Consider, after all, the following parody of the above speech:

You just maintained that if we insist that *necessity* is scopeless, then, from the outset, we eliminate contingency. But this is false. Suppose, as you may grant, that contingency is the state of affairs that obtains with respect to p when it is not true that Necessarily p and not true that Necessarily $\sim p$. Well, we can maintain 'Necessarily $p \vee$ Necessarily $\sim p$' consistently with contingency thus defined: we can say that neither such disjunct is true, but that the disjunction is true.

And parallel claims may be made for the other given items in (ii) – (v). But the response to any such claim is clear. We simply have no need to say that *contingency* is the state of affairs that obtains with respect to p when, roughly, it is indeterminate whether it is necessary that p or instead necessary that $\sim p$. We have the theoretically far more satisfactory option of saying that it is the state of affairs that obtains when both such claims are *false* – and thus when the given disjunction is false. And so similarly for openness. Philosophers attracted to the "open future" have felt the need to invoke the mysterious sort of "openness" at issue in the first speech precisely because they have felt the need to respect (something like) scopelessness. Once scopelessness is denied, however, then we are in position to say that openness is no more mysterious than contingency, uncertainty, mere permission, agnosticism, and indecision – intuitively, all of which obtain when both of the relevant claims are *false*. Once again, we have continuity where other approaches must see discontinuity.

The second objection is related to the first:

Well, those philosophers were on to something. For your core idea, developed at length above, is that we are inclined to accept scopelessness – and Will Excluded Middle – only because we bring with us a certain *model* of the future, viz., a model on which there is an "actual future history", the existence of which makes the distinction between ~$\mathbf{F}np$ and $\mathbf{F}n$~p practically irrelevant. But this is false. For *even if* there is no actual future history, Will Excluded Middle *still* seems true. That is, even if I am explicitly taking into account that there is no "actual future", "Trump will be impeached in an hour or Trump will not be impeached in an hour" *still* seems true – even if, as you say, Trump is impeached in an hour on some branches, and not on others, and there is nothing at all to break the tie. And so your claim that the purported scope distinctions are being *masked* by this assumption is false: for the intuition that there are no such distinctions survives the explicit denial of that assumption.

My response to such an objection is simple: No it doesn't. It *does not* still seem that 'Trump will be impeached in an hour or Trump will not be impeached in an hour' is true, once we have before us a model on which Trump is impeached in an hour on some branches and not on others, and with nothing at all to break the tie. For consider the claim that Trump will be impeached in an hour. We check: there is nothing in the model to make such a claim true; and if a claim isn't true, it is false. So that claim is false. And consider the claim that Trump will not be impeached in an hour. We check: there is nothing in the model to make such a claim true; and if a claim isn't true, it is false. So that claim is false. But the disjunction of two falsehoods is false. Surprise! 'Trump will be impeached in an hour or Trump will not be impeached in an hour' is false. (I did promise an error-theory.) So what the objector says still seems true does not still seem true.

But the objector may wish to interject:

But you are simply *assuming* bivalence. If we *assume* bivalence, then the given disjuncts are going to turn out false, and the disjunction false. But you cannot simply *assume* bivalence in this context.

Such an objection shows – or would show – that we have lost sight of the longstanding historical discussion of the problem of future contingents. Traditionally, the problem for the open futurist has not been that she has simply *assumed* bivalence – indeed, the problem has been that she *cannot* assume bivalence. The problem has been, in other words, that if we assume bivalence, the open futurist's position ends in contradiction (or some other similar disaster).[20] It cannot be a *problem* for my view that I am assuming bivalence: what must be shown is that something absurd follows from such an assumption, together with the denial of the claim that either such disjunct is true. And this is what I claim has not been shown.

However, the objector may wish to say more:

> Let me back up. The problem is how you are *proceeding* when evaluating 'Trump will be impeached in an hour or Trump will not be impeached in an hour'. You are simply going to the model, checking the first disjunct against that model, then returning to the model, and checking the second disjunct against that model – and you are then employing the standard semantics for disjunction to return the claim that the given disjunction is false. But you are hereby missing the intuition, which is that *looking directly at the disjunction as a whole*, the disjunction seems true – and, again, *still* seems true, even though we recognize that there is nothing in the model to support either disjunct.

But the problem here is twofold. First, I seem to stand accused of employing the otherwise perfectly standard way of evaluating the truth of a disjunction to evaluate the truth of this particular disjunction. This is not, I believe, a compelling objection. Second, the problem once more comes in the final line: why should we *still* maintain that the disjunction seems true, once we recognize that the model supports neither disjunct? Why not instead conclude that a claim that initially seemed true is not in fact true, given that model? The open future has surprises; this much, however, is not surprising.

What this sort of objector likely has in mind, however, is something like this.

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[20] In particular, the traditional problem is that, if we say that both such disjuncts are false, we will have to say that the given disjunction is false – but the disjunction is an instance of LEM, and so we must deny LEM. Response: as I argued above, the disjunction is not an instance of LEM!

But look: *no matter how things go*, Trump gets impeached in an hour, or does not get impeached in an hour; accordingly, he will get impeached in an hour, or he won't get impeached in an hour. As we might say: it will be one or the other! How can we *deny* that it will be one or the other, when those are *the only two options?* Accordingly, even when we explicitly recognize that there is nothing to break the tie, and so it is not true that it will be one, and not true that it will be the other, we *still* must grant that it will be one or the other.

And it is here that we encounter, perhaps, the crux of the issue – and it is here, I contend, that we must be extremely careful. For how should we interpret the crucial claim here, viz., that it will be one or the other? How should that intuition be made more precise?

Prima facie, it seems that we should write 'It will be one or the other' as follows: '**F**n($p \vee \sim p$)'. And here we encounter the beginnings of what I believe to be a plausible error-theory for why 'Will Excluded Middle' '(**F**n$p \vee$ **F**n$\sim p$)' can *seem* so plausible, even if we grant the openness of the future. (I defend this theory at greater length in Chapter 4.) And that is that we are mistaking a true claim, viz. '**F**n($p \vee \sim p$)' with a false claim, viz. '(**F**n$p \vee$ **F**n$\sim p$)'. The former is not a future contingent, but a future necessity (($p \vee \sim p$) holds on *all* branches). The latter, however, is the disjunction of two future contingents. The former says, in short, that it will continue to be in n units of time that LEM holds – and surely it must, and so surely it will. The latter, however, says not that LEM will hold in n units of time, but that, one the one hand, it will be that p in n units time, or, on the other, it will be that $\sim p$ in n units time. And this is to say something much stronger than the former claim. On reflection, however, I believe that, often, when we try to *justify* '**F**n$p \vee$ **F**n$\sim p$', we lapse into what is in fact not a justification of *that* claim, but instead a justification of '**F**n($p \vee \sim p$)'. Consider, after all, the objector's final line: even though it is not true that it will be one, and not true that will be the other, we *still* must grant that it will be one or the other. And surely that is right: it will be one or the other. No matter which future we choose, that future has it (in n units of time) that p or has it that $\sim p$ – accordingly, it will be in n units of time that $p \vee \sim p$. That, I believe, is the intuition that must be respected. But that is an intuition my account can happily accommodate. And once again, a comparison with the operators at issue in (i) – (v) is instructive. In these cases, '**M**($p \vee \sim p$)' does not imply '**M**$p \vee$ **M**$\sim p$'. Similarly,

I claim, '$\mathbf{F}\mathrm{n}(p \vee \sim p)$' does not imply '$(\mathbf{F}\mathrm{n}p \vee \mathbf{F}\mathrm{n}\sim p)$'. Once again, my account sees continuity where others must see discontinuity.

3.10. Interim Conclusion

It is worth summing up the picture that results from the above discussion. In sum, when we have p in n units of time on some but not all branches, and no 'actual future', we have the following:

$\quad$ $\mathbf{F}\mathrm{n}p \vee \sim\mathbf{F}\mathrm{n}p$ – true.

This is a classical instance of LEM, and the second disjunct is true. Now consider:

$\quad$ $\mathbf{F}\mathrm{n}p \vee \mathbf{F}\mathrm{n}\sim p$ – false.

This is not an instance of LEM, and both disjuncts are false. Will Excluded Middle is denied.

$\quad$ $\mathbf{F}\mathrm{n}(p \vee \sim p)$ – true.

Even if p in n units time isn't on all branches, $p \vee \sim p$ certainly is, and even if there is no 'actual branch', and so no unique actual branch on which q, if q is nevertheless on *all* branches in n units time, this should suffice for the truth of $\mathbf{F}\mathrm{n}q$.

$\qquad$ This picture is plainly *simple* and it is plainly *classical*. I do not hereby claim that this is a decisive advantage for this view – but I do contend that it is a view that deserves serious consideration by philosophers working on these topics. The primary obstacle to this view has been the suspicion that its crucial resource – the distinction in scope between $\sim\mathbf{F}\mathrm{n}p$ and $\mathbf{F}\mathrm{n}\sim p$ – is, in MacFarlane's words, simply "missing". Above, however, I have argued that this distinction is not missing, but is simply being *masked* by our implicit assumptions about the future – an argument that gains substantial traction once we see *will* as continuous with other so-called "neg-raisers". Such a view can allow us to see to *will* as semantically

continuous with the modals at issue in (i) – (v) above – and thus as having meaningful scope interactions with negation – and can see *openness* on analogy with (inter alia) contingency and mere permission. To be sure, whether these scope interactions are *important* or *practically relevant* is a question beyond the scope of this chapter – for this question is, as I have argued, inevitably and finally a question for the metaphysician.

3.11. Supervaluationism: A comparison

At this stage, I wish to make a comparison between my own view and the so-called *supervaluationist* view in the context of future contingents. Now, the supervaluationist maintains that any given instance of WEM is not only true, but, in their terminology, *supertrue.* I am thus in the position of denying a what is, according to my opponents, not only *true*, but supertrue! It is thus worth bringing out how the supervaluationist and myself arrive at these different results. (My co-author and I discuss supervaluationism at greater length in Chapter 8.) Using a standard, simplified example, we can articulate the supervaluationist's reasoning in favor of WEM as follows:

> Suppose we have two total candidates for actuality, W1 and W2. According to W1, there is a sea-battle tomorrow. According to W2, there is no sea-battle tomorrow. This is other words for saying: if W1 is the actual world, then there will be a sea-battle tomorrow. And if W2 is the actual world, then there will be no sea-battle tomorrow. But W1 and W2 are our only candidates for actuality. Accordingly, *one* of them is the actual world. But since if W1 is the actual world, there will be a sea-battle tomorrow, then if W1 is the actual world, there will be a sea-battle tomorrow or there will be no sea-battle tomorrow. And since if W2 is the actual world, there will be no sea-battle tomorrow, then if W2 is the actual world, there will be a sea-battle tomorrow or there will be no sea-battle tomorrow. Thus, regardless of whether W1 is the actual world or instead W2, there will be a sea-battle tomorrow or there will be no-sea battle tomorrow. In that sense, "There will be a sea-battle tomorrow or there will be no sea-battle tomorrow" is *supertrue* – assuming that a given world is actual, that claim is true *no matter which* world is actual.

The crucial posit of the supervaluationist is thus that *there is an actual world*. Without the assumption of there *being* an "actual world", the supervaluationist's reasoning in favor of the supertruth of WEM cannot so much as get off the ground. For I can of course grant the following: *if* W1 is the actual world, then WEM holds. And *if* W2 is the actual world, *then* WEM *also* holds. So? On my account, *neither* are the "actual world", because, again, there just *is no* "actual world" in the first place. For the supervaluationist, however, it is simply *indeterminate* (in this scenario) which world is actual – W1, or instead W2. But there is an actual world. For me, however, there just *is no* actual world.

Is this some kind of absurd result? It isn't. Suppose we have only two entities in existence, a red ball and an orange ball. Well, then the red ball and the orange ball are the only two candidates for *being President of the United States* – but we should hardly conclude that therefore one of them *is* President of the United States. To be sure, they are the only two candidates for the role – but the role, in that scenario, is simply *empty*. Similarly, I grant that W1 and W2 may be the only candidates for actuality. But I do not thereby conclude that one of them *is* actual – for, as I see it, the role of *being the actual world* is currently *empty*. (Granted, from the standpoint of the end of time, it will be filled, but that is not to say that it *is* filled *now*.[21])

In this light, we must attempt to get clear on which model, as described in Chapter 2, the supervaluationist endorses. Consider the following quote from Sven Rosenkranz: "The Ockhamist allows...while both the Peircean and the Supervaluationist Indeterminist deny...that there is a thin red line marking out the one and only course of events, of all the possible future ones, that is going to unfold." (2012: 625-626) But if the above fairly represents the supervaluationist's reasoning, then the supervaluationist *does* believe that there is a 'thin red line' marking out the one and only course of events that is going to unfold. (And if it doesn't, then I'm afraid I don't understand the supervaluationist's reasoning.) What they *add* is that it is *indeterminate* which course of events – which *world* – is marked out

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[21] Cf. this apt comment from Dale Tuggy, making the same realization in a slightly different context: "A couple of interesting things follow from this picture. First, there is at present no actual world!...one can reason about possible and impossible worlds, which would be maximal branches through the tree, but there won't now be any actual world." (Tuggy 2007: 33). See also Kodaj 2013 for an extended development of this point. Note: on my picture, it is not quite right to say that there is only an "actual world" from the standpoint of the end of time; there may *come* to be an "actual world" if all the indeterminism in the world is eliminated. At *that* point, God could, *ex hypothesi*, simply *deduce* which world is "actual". (Todd 2016: 786)

in this way. The point here is simply that the supervaluationist adopts a model on which there is a unique actual future. And as we have seen above (and in Chapter 2), any such model vindicates WEM.

Here is a comparison (explored also in the next chapter). Consider Stalnaker's supervaluationism in the context of counterfactuals – in particular, in the context of his way of preserving "Counterfactual Excluded Middle". Roughly, both Stalnaker and Lewis agree that whether a counterfactual is true is a matter of whether the closest worlds at which the antecedent is true are worlds at which the consequent is true. But in certain cases, it may reasonably be supposed that certain differing worlds are *tied* for "closeness" in the relevant way. It is here, however, that Stalnaker assumes that there is indeed a unique closest world – but simply contends that, in the relevant cases, it is *indeterminate* which world is closest. The parallel here in the case of future contingents is obvious. The supervaluationist assumes that there is indeed a unique actual future – a complete "actual world" – but simply contends that, in the relevant cases, it is *indeterminate* which world is actual.

Having said all of this, why not go supervaluationist? Well, my primary motivation is again ontological or metaphysical: *the actual world* must earn its keep – but it doesn't. It just isn't *needed*. There just is no *need* to say that there is a unique actual future, but it is indeterminate which it is. *The actual world* is an ontological or metaphysical posit that can be dispensed with. Second, the supervaluationist must deny bivalence, and must maintain that a disjunction can be true while neither disjunct is true – and both results are associated with various costs. Of course, on these latter points, we might appeal to a different context in which the supervaluationist method has been deployed: vagueness. Can we understand the claim that 'Jones is bald' is not true, 'Jones is not bald' is not true, and yet 'Jones is bald or Jones is not bald' *is* true? If we can, then why can't we understand the claim that neither $\mathbf{F}np$ nor $\mathbf{F}n\sim p$ is true, and yet '$\mathbf{F}np \lor \mathbf{F}n\sim p$' nevertheless is true?

This is a good challenge to which I do not have a fully satisfactory answer – and this is, at least in part, because I do not have anything approaching a satisfactory answer to the problem of vagueness. More generally, perhaps the phenomenon of vagueness does indeed force us to deny bivalence; this is, of course, an enormously contentious and difficult issue to which I cannot, in this book, even do minimal justice. My claim is simply that, even if we have reason from the phenomenon of *vagueness* to deny bivalence, we do *not* have such reason from considerations arising from the openness of the future. That we have such

reason would follow from the one domain to the other only if the "indeterminacy" involved in vagueness were the same sort of "indeterminacy" involved in future contingents. But this is implausible. *Prima facie*, the openness of the future is not any kind of indeterminacy as that involved in vagueness. It arises out of nothing like semantic indecision, or the phenomenon of borderline cases. The openness of the future does not arise, say, because it is indeterminate whether the event that will happen tomorrow counts as a genuine sea-battle – rather than, say, a sea-skirmish. Perhaps it is vague matter how many (or what size) ships are needed to constitute a "sea-battle". That may be so – that does seem to be so – but one thing that *is* clear is that this has nothing whatever to do with the traditional problem of the open future.

More particularly, the sorts of "indeterminacy" at stake in these domains seem fundamentally different. Indeed, if someone suggests that it is *indeterminate* whether there will be a sea battle tomorrow, there is indeed a sense I can attach to this expression: it is indeterminate whether the event that shall be taking place tomorrow does or does not count as a "sea battle". (Or, perhaps, it is indeterminate whether the event in question will be taking place "tomorrow" – perhaps because the event partially straddles tomorrow and the day after.) However, if we simply stipulate precisely what we mean by a 'sea battle' and 'tomorrow', the problem of the open future still arises, viz., the problem of what we should say about 'There will be a sea battle tomorrow', when *some* ways things could unfold include precisely that kind of event during the relevant span of time, and some ways do not, and "nothing to break the tie". If *this* is the problem under discussion, however, then I do not understand (or cannot easily understand) the sense in which it may be said to be *indeterminate* whether there will be a sea battle tomorrow. I should instead be inclined to say that it is *undetermined* whether there will be – or not yet *settled* whether there will be, or something such as this. However, the way in which an event may be "undetermined" in this sense has little or nothing to do with the phenomenon of indeterminacy as it arises in the literature on vagueness.

3.12. The Past and the Future: A Comparison

Recall the central objection to *presentist* versions of the open future I tried to address in Chapter 1. On this objection, if the future is "open", then so is the past – which it isn't.

Now, a comparison between *was* and *will* has been used before to object to the thesis that future contingents are systematically false. In criticizing Charles Hartshorne's (1965) defense of this position, Stephen Cahn writes:

> Now, Hartshorne asserts that it is false that a sea-fight will take place tomorrow and false that a sea-fight will not take place tomorrow. If we represent the proposition "a sea fight will take place tomorrow" by *p*, then Hartshorne seems to be affirming that *p* is false and ~*p* is false. But this is surely to deny the law of contradiction, for *p* and ~*p* are certainly contradictories, and as such, one must be true and the other false.
>
> Here Hartshorne affirms that, in the case of a statement affirming or denying the occurrence in the future of a contingent event, it and its denial are not contradictories, but contraries such that both may be false, though not both may be true. At this point it is no longer clear what Hartshorne means by a contradictory or what he means by affirming that one proposition is the contradictory of some other proposition. Since the propositions "there was a sea fight" and "there was not a sea-fight" are contradictories, so are the propositions "there will be a sea fight" and "there will not be a sea-fight". (1967: 63)

Cahn's reasoning in this passage is seductive. It is also, I contend, mistaken.

The reason Cahn's reasoning is *seductive* is the following. Nearly all of us – myself included – agree that, for the propositions "there was a sea fight yesterday" and "there was not a sea fight yesterday", "one must be true and the other false". And this can distract us from the central issues at stake. For consider. Suppose we *denied* that "there was a sea fight yesterday" and "there was not a sea fight yesterday" are contradictories. If we made such a denial, I expect Cahn would be prepared to say: "So you *deny* that, of those two propositions, one must be true, and the other false? But that is absurd." In other words, if we deny that those two propositions are contradictories, this seems to commit us to the possibility – in some sense of possibility – that both are false. But we are not inclined to think that both such claims could be false. Thus, if Cahn made the given rejoinder, Cahn would thereby have a point, or a kind of a point. For it may indeed be absurd to deny that, of those two propositions, one must be true and the other false. But what is crucial here is what Cahn's

discussion ignores: the *grounds* of this absurdity – or, in other words, the *sense in which* it "must" be that one such proposition is true and the other false. For I agree that there are such grounds. However, those grounds are *metaphysical*, not semantic. Cahn, however, needs those grounds to be *semantic*. But they are not.

Look at it this way. Cahn needs it that "there was not a sea fight" is the *semantic* contradictory of "there was a sea fight". That is, the needed claim is that it is in virtue of semantic competence that we can see that if we treat "there was a sea fight" as *p*, then we can treat "there was not a sea fight" as ~*p*. Cahn perhaps expects us to assent to this claim, I take it, precisely because he expects that no one will insist that there is an important semantic distinction between ~**P**n*p* and **P**n~*p*. But there is indeed such an important distinction – or so I wish to contend. It is not a common distinction to make, but that is because the doctrine that makes it salient – the open past – is not a common doctrine. On my view, however, it is not in virtue of pure semantic competence that we can "move" from ~**P**n*p* to **P**n~*p*. It is, rather, in virtue of semantic-cum-*metaphysical* competence – that is, competence with the prevailing (and, I think, clearly true) metaphysical *theory* of the past, namely, that we have a privileged past! In other words, when I consider

Pn*SF* ∨ **P**n~*SF* ("there was a sea fight yesterday or there was not a sea fight yesterday")

I do in fact accept this claim. But I accept this claim on *metaphysical grounds*. I accept this claim *because* I accept that *there is a unique actual past*. (Indeed, when it comes to the past, I accept the past-directed analogue of model (I). Model (I) is great for the past, but bad for the future.) Thus, I accept this claim *not* because, as Cahn would have it, it is an instance of LEM, or is some trivial application of LEM. This disjunction *is no instance of* LEM. The reason for accepting (what we might call) Was Excluded Middle is neither semantic nor logical. The reason is metaphysical. We have a complete, privileged past. And if we have a complete privileged past, then either, along that privileged past branch, n units of time ago, you have it that *p*, or, along that privileged branch, you have it that ~*p*. That is what it is for the given "past" to be *complete*. If we have a privileged past, then clearly one of the two given disjuncts is going to be true (although perhaps we don't know which) and the other false. If

the past were open – if there were no given past history that is uniquely our own[22] – however, then Was Excluded Middle would be false (in the relevant instance) – although Excluded Middle itself certainly would *not* be false. But this is just to say that if "there was a fight yesterday" is represented as *p*, we cannot simply semantically represent "there was not a sea fight yesterday" as ~*p*.[23] This is precisely to ignore the distinction between ~**P**n*p* and **P**n~*p*.

Consequently, Cahn's argument against Hartshorne's position fails. Cahn expects us to agree that the two past tense propositions are contradictories; he then expects us to agree that, if those propositions are contradictories, then the two future tense propositions are contradictories. Cahn is right in this much: they both are, or they both aren't. My answer to this challenge is simply to say that, in fact, the pair of past tense propositions are *also* not contradictories. At the very least, we must be very careful when treating the given past tense propositions as "contradictories" – at least, we must be careful to say what *kind* of "contradictories" these propositions are taken to be. If we simply say two propositions are "contradictories" just in case one must be true and the other false, then we must be clear on the modal force of this *must*. Again, I agree: when we have **P**n*p* and **P**n~*p*, one must be true and the other false. But this is *must* is metaphysical: it is the same *must* at issue in saying that there *must* be a privileged past. However, because these claims are (as it were) *metaphysical* contradictories, it does not follow that they are *semantic* contradictories. And if these claims are not semantic contradictories, neither are their future tense counterparts. At any rate, if these pairs cannot both be false, then this is one's *metaphysics* talking – not one's pure semantic competence.[24]

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[22] For a recent defense of this startling view, see Dawson 2020.

[23] Well, one cannot do so unproblematically; as I maintained in Chapter 2 with respect to *will*, one could make a parallel case that "there was not a sea fight yesterday" is *ambiguous* between ~**P**n*SF* and **P**n~*SF* – the default reading of course being the latter. I set this issue aside.

[24] My claim here is that, if one regarded the past as "open" (i.e., that "past contingents" aren't true), it would be reasonable to treat "past-contingents" as simply *false*. In other words, I wish to treat *was* and *will* as *semantically* on a par – the difference is solely metaphysical (there is privileged past, but no privileged future.) There is, however, one serious complication with this argument: this contention would seem to commit me to the view that *was* is similarly a modal, viz., a universal quantifier over past branches. And whereas linguists certainly do sometimes treat *will* as a modal, to my knowledge, no one has ever treated *was* as a modal. I am not entirely sure what to say about this issue, but my current feeling is this. It is indeed plausible to say that there is (and always has been) a covert modal component to *was*. To say that it was the case that *p* is indeed to say that, in all of the *available pasts*, *p*. However, as in the above, we can explain why no one tends to sense a difference between ~**P**n*p* and

By way of concluding this chapter, let me try to head off the following reasonable misgivings about the picture that results from the above discussion. Arguably, when we are attracted to the open future, the intuition to which we are attracted is that, given the relevant openness, there is something about which there is *no fact of the matter*. But precisely this language – that there is no fact of the matter! – strongly suggests an intuition that must be given a non-classical interpretation, if it is given one at all. For if there is no fact of the matter as concerns *p*, this strongly seems to imply that it is neither true *nor false* that *p* – after all, if it were simply *false* that *p*, there *would* be a fact of the matter as concerns *p*. Namely, it is false! Accordingly, by insisting that future contingents are simply *false*, we have arguably abandoned precisely the core set of intuitions that attracted us to the open future to begin with.

The misgiving is misplaced. As is the case for so much of our language in this area, the language of there being "no fact of the matter" is difficult language. Plausibly, however, we do not need to abandon bivalence to appropriately speak of contexts in which there is no "fact of the matter". [25] Consider incomplete fictions. There is no fact of the matter whether Gandalf put on his left shoe first or instead his right the day he first met Frodo; this means that it is false that, in the fiction, he put on this left shoe first, and false that, in the fiction, he put on his right shoe first. Nothing needs to be neither true nor false in this scenario. Or consider cases of *moral ties*. Three charities are all equally good. Jack must donate to one of them. However, there is no fact of the matter concerning to which charity he must donate. This means that it is not the case that he must donate to charity 1, not the case that he must donate to charity 2, and not the case that he must donate to charity 3 – although, of course,

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Pn~*p* by appeal to the obvious fact that we systematically tend to assume that there is only one available past – in which case, the distinction between ~**P**n*p* and **P**n~*p* is practically irrelevant.

[25] For one treatment of this issue, see Azzouni and Bueno 2008. As Azzouni and Bueno note, Quine famously maintained that there is no fact of the matter about whether, in Junglese, "gavagai" means "rabbit" or instead "undetached rabbit parts" – and yet Quine was still a strong proponent of bivalence. As they note, the development of this position does require substantial care. Personally, I am tempted toward the view that there is no fact of the matter about the "correct" usage of "no fact of the matter".

he must donate to charity 1, or charity 2, or charity 3. Again: nothing needs to be neither true nor false in this scenario. And yet it seems like a scenario in which there is no fact of the matter concerning to which charity Jones must donate.

Similarly: there is no unique actual future; as a consequence, there is no fact of the matter concerning whether the event *will* or instead *will not* occur. Nothing needs to be neither true nor false in former scenarios, and nothing needs to be so in the latter as well. Consider, after all, how we might put the intuition in question: there is no fact of the matter whether the events will happen. If we say that future contingents are false, have we taken back what we said? We have not. And how could we have? We certainly haven't said that the given events *will* happen. Nor have we said that those events *will not* happen. Precisely the indeterminacy we originally postulated is retained. And yet bivalence is retained as well. The result is a neglected picture of a neglected doctrine. The result is the open future, classical style.

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