Remarks
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Replies

The Plan's the Thing: Deconstructing Futurate Meanings

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A *futurate* is a sentence with no obvious means of future reference, which conveys that a future-oriented eventuality is planned or scheduled. I argue that the component of planning found in the meaning of futurates should be derived from the more familiar modal concepts of abilities and desires. A futurate statement presupposes that some contextually salient entity d, the *director*, has the ability to bring it about that p, and asserts that d is committed to bringing it about that p.

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A *futurate* is a sentence with no obvious means of future reference, which nonetheless conveys that a future-oriented eventuality is planned, scheduled, or otherwise determined.[1] The sentences in (1) and (2) are examples of futurates. The (a) examples, which discuss a plannable event (a baseball game), are far more acceptable than the (b) examples, which refer to a presumably unplannable event (the Red Sox winning).

(1) a.   The Red Sox play the Yankees tomorrow.
      b. #The Red Sox defeat the Yankees tomorrow.

(2) a.   The Red Sox are playing the Yankees tomorrow.
      b. #The Red Sox are defeating the Yankees tomorrow.

The (a) examples convey, roughly, that there exists a plan for the Red Sox and the Yankees to play tomorrow; the (b) examples, however, are decidedly odd. By comparison, there is nothing odd about (3).

(3) The Red Sox will defeat the Yankees tomorrow.

The oddness of (1b) and (2b), as compared with (3), seems to stem from the fact that the winner of a baseball game is (usually) not decided ahead of time. The sentences in (1b) and (2b) improve markedly in a context where it is presupposed that the winner *can* be decided ahead of time—for instance, if we are allowed to consider the possibility that someone has fixed the game.

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[1] Early works on futurates include Lakoff 1971, Prince 1971, Vetter 1973, Huddleston 1977, and Dowty 1979. See Binnick 1991 for an overview. More recent efforts are found in Landman 1992, Portner 1998, Cipria and Roberts 2000, and Copley 2008.

Futurate readings are not universal. In some languages, ''present'' tense verbs might be better understood as ''nonpast,'' in that they do not have this plannability restriction when used to talk about the future. This can be true even when additional future morphology is available, as in German. For the purposes of this article, I leave aside the question of the correct analysis of the German present tense. My central concern here will be to investigate the origin of the flavor of planning that arises in English.[2]

As can be seen in (1) and (2), in English both simple and progressive present forms can have futurate construals.[3] Crosslinguistically, not all progressive forms have futurate construals. For example, the progressive in Italian does not have a futurate reading.

(4) *I   Red Sox stanno giocondo gli   Yankees domani.
     the.PL Red Sox be.3PL play.PROG the.PL Yankees tomorrow

Presumably the difference between (2a) and (4) lies in some difference between the meaning of the English progressive and that of the Italian progressive. What can be said is that most if not all forms with futurate construals seem to be imperfective or progressive forms. It has been proposed, understandably under the circumstances, that imperfective semantics are responsible for futurate meaning (e.g., Dowty 1979, Cipria and Roberts 2000). What these proposals have in common is the idea that a plan for an event can constitute an early stage of the event, and thus that an imperfective sentence about the event can be true before the event has begun, while the event is only a gleam in someone's eye. This idea is an interesting one, but it raises the question of why exactly a plan can count as an early stage of an event. To understand this, more must be known about how plans are involved in the meanings of futurates, and how they might be assimilated to more general semantic concepts. The evidence presented below will suggest that plans can be reduced to desires and abilities, bringing them into the realm of more familiar modal concepts and making it easier to draw parallels to nonfuturate construals of imperfectives.

1 An Initial Hypothesis and Its Problems

Consider again the futurate contrast in (2), repeated here as (5).

(5) a.   The Red Sox are playing the Yankees tomorrow.
     b. #The Red Sox are defeating the Yankees tomorrow.

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[2] An anonymous reviewer points out that future-oriented bare verbs also appear in English in certain embedded contexts, as in (i) and (ii).

(i) If/When it rains tomorrow . . .

(ii) I hope it rains tomorrow.

I wish to exclude such uses of the bare verb from the current discussion, as they do not exhibit the plannability constraint. Given that languages differ with respect to which morphology they use in such embedded contexts, I assume that these uses of the bare verb need not be explained in the same breath as the futurate uses of the bare verb.

[3] While there are differences between the meanings of these forms, they share a great deal (Copley 2008). Here, I will concentrate on the meaning of progressive futurates.

As noted above, the sentence in (5a) seems to say that there is a plan for the Red Sox to play the Yankees tomorrow. It seems that the existence of a plan in futurates matters, at the very least, to temporal predicates; the time over which the plan is asserted to hold is constrained by tense and can also be constrained by a temporal adverbial. The utterance in (6) seems to convey that at some time in the past, for a period of two weeks, there was a plan for the Red Sox to play the Yankees today.

(6) For two weeks, the Red Sox were playing the Yankees today.

The semantics of futurates will thus need to refer to at least the duration of the aforementioned plan. But what is the nature of the reference to the plan?[4] Let us suppose, as an initial hypothesis, that a plan, as far as the grammar is concerned, is simply the conjunction of future-oriented propositions. For now, I will not venture to say what might make any old conjunction of future-oriented propositions a plan. At least the propositions ought to be consistent with each other, for example. But let us suppose, for now, that whatever else makes a plan a plan, it is not manipulated by the semantics. (This supposition will, incidentally, turn out to be incorrect.)

If propositions are sets of worlds, we can define a plan as the joint intersection of a set of type $\langle w,t \rangle$ propositions p, where each of these propositions is equal to a type $\langle i,\langle w,t \rangle \rangle$ proposition q applied to a future time.

(7) *Definition of planhood (initial try)*
$X_{w,t}$ is a plan in w at t if
$X_{w,t} = \cap\{p: p \in D_{\langle w,t \rangle} \ \& \ \exists q \in D_{\langle i,\langle w,t \rangle \rangle}: [\exists t' > t: [p = q(t')]]\}$

A plan then provides for p just in case all worlds in the plan are also in p.

(8) $\forall p \in D_{\langle w,t \rangle}$, $X_{w,t}$ provides for p iff $\forall w'$ such that $w' \in X_{w,t}: [p(w')]$

We then define a futurate operator Op, as in (9), that takes a proposition, a world, and a time, and asserts that at that world and time there is a plan that provides for p.

(9) $Op = \lambda p \ \lambda w \ \lambda t \ . \ \exists X_{w,t}: X_{w,t}$ provides for p

This, then, is our initial hypothesis for the meaning of futurates:

(10) *Initial hypothesis*
Futurates assert that there is a plan that provides for p.

Of course, as with most initial hypotheses, the story is not this simple. There are two major problems.

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[4] Note that the nature of the reference to the plan is not the same as the nature of the plan. The field of artificial intelligence planning is concerned with the latter (see Weld 1994 for an introduction and Geffner 2002 for an overview); we are concerned with the former.

1.1 Problem 1: The Status of the Plan

The first problem is that futurates do not really seem to *assert* the existence of a plan that provides for p. If they did, we would expect (11a) to mean that there does not exist a plan for the Red Sox to play the Yankees tomorrow. But this meaning is not quite right. Suppose that Major League Baseball has not yet decided who plays whom tomorrow. Then neither (11a) nor (11b) is true.

> (11) a. The Red Sox aren't playing the Yankees tomorrow.
>   b. The Red Sox are playing the Yankees tomorrow.

So futurates apparently exclude the middle: in the case where there is no particular plan with anything to say about the Red Sox playing the Yankees, neither (11a) nor (11b) is true.[5] This is in conflict with the proposed meaning for futurates, in which the negation ('There does not exist a plan that provides for the Red Sox to play the Yankees tomorrow') would be expected to be true in exactly this middle case.[6]

One possible solution to the problem posed by (11) would be to interpret negation below the futurate operator Op. Then (11a) would be predicted to mean something like 'There is a plan that provides for the Red Sox to not play the Yankees tomorrow'. But while this solution works for (11a), it is unavailable for biclausal cases such as (12), which have exactly the same problem.

> (12) I doubt that the Red Sox are playing the Yankees tomorrow.

What (12) seems to mean is that the speaker doubts that the plan provides for the Red Sox to play the Yankees tomorrow. That is, the speaker is of the opinion that the plan provides for the Red Sox to not play the Yankees tomorrow. So again, the middle is excluded, but the option of interpreting the proposed embedded-clause futurate operator over the matrix-clause *doubt* is unavailable.

So p is either entailed by the plan or inconsistent with the plan, but it cannot be merely consistent with it. And indeed, in a case where the matter is still under consideration by the relevant parties, it is neither true to say that the Red Sox play the Yankees tomorrow, nor true to say that they do not play the Yankees tomorrow; we can only say that it has not yet been decided whether they do or not.

These facts suggest that futurates have a certain presupposition. The presupposition is that the plan provides either for p or for not-p; that is, a p-eventuality is the sort of thing that is either planned to happen or planned to not happen. Call this the *excluded-middle presupposition*.

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[5] An anonymous reviewer asks whether (i) indicates that no plans have been made either way.

(i) The Red Sox aren't playing the Yankees tomorrow, or at least not yet.

If that is what (i) indicates, then the middle can after all be included, making the exclusion of the middle an implicature, perhaps, rather than an entailment. It seems, however, that (i) does not indicate that no plans have been made. Rather, there is at the time of utterance a plan for the Red Sox not to play the Yankees. By uttering (i), the speaker conveys that she or he expects the powers that be to change their minds about the plan. See section 3.3 for more on changing plans.

[6] For more on the future version of the Law of the Excluded Middle, see, for example, Van Fraassen 1966, Thomason 1970.

(13) *Excluded-middle presupposition*
     The plan provides either for p or for not-p.

This idea makes sense of the judgments in (14) in terms of a presupposition failure (a failure that, again, is ameliorated if we can suppose that the eventualities in question are in fact part of someone's plan).

(14) a. #The Red Sox are defeating the Yankees tomorrow.
     b. #It's raining tomorrow.

It is not yet clear where this presupposition would fit in compositionally. I will raise this question again below, since the solution to the second problem will prove relevant to this issue.

1.2 Problem 2: Speaker Confidence

Recall the initial hypothesis for futurate meaning: that futurates assert the existence of a plan that provides for p. The second problem with this hypothesis is that futurates commit the speaker to the belief that the eventuality in question will in fact occur, as shown in (15a).[7] This would be surprising under the initial hypothesis, as there is no problem with asserting, as in (15b), that there is a plan that provides for p but you don't think it will happen.

(15) a. #The Red Sox are playing the Yankees tomorrow, but they won't/might not.
     b. There is a plan for the Red Sox to play the Yankees tomorrow, but they won't/ might not.

If the assertion of the futurate in (15a) really is just that the plan exists, it is not clear why spelling it out that there is a plan, as in (15b), should be any different. Yet the futurate shows a conflict with denying that the eventuality will happen, while the explicit assertion that there is a plan does not. Our initial hypothesis cannot account for this difference.

Could this problem be solved by adding, as part of the assertion contributed by the future operator, an assertion reflecting speaker confidence that the plan will be realized? It turns out that this move will not work. In past tense futurates, the realization of the plan does not seem to be part of the assertion, as shown in (16). Past tense futurates do not commit the speaker to the belief that the plan was or will be realized.[8]

(16) The Red Sox were playing the Yankees tomorrow, but now they won't.

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[7] This fact seems not to have been discussed in the literature prior to Copley 2008, and indeed I know of no other analyses that can account for it. Thanks to Sabine Iatridou (pers. comm.) for originally bringing this kind of example to my attention.

[8] Incidentally, past tense is one environment where progressive and simple futurates differ; simple futurates are extremely marked, if not impossible, in the past tense.

(i) #The Red Sox played the Yankees tomorrow.

These past simple futurates do improve under sequence of tense and in narrative contexts, but the contrast is very striking. This fact has long been noted but remains unexplained.

So assertion of the realization of the plan is apparently not an option for explaining the contrast in (15).

2 Getting Smarter about Plans

What went wrong with the idea that futurates assert the existence of a plan that provides for p? Consider the problematic examples again.

(17) a. I doubt that the Red Sox are playing the Yankees tomorrow.
     b. #The Red Sox are playing the Yankees tomorrow, but they might not.

The first problem is that (17a) appears to have a presupposition that the eventuality be of a kind that could, in principle, be planned. The second problem, the unacceptability of (17b), seems to indicate that the speaker of a futurate has some high level of confidence that the future eventuality will happen.

   To solve these problems, we will need to know something more about plans than merely that they are sets of future-oriented propositions. This is clearest in the case of the first problem; we apparently need to care whether or not a p-eventuality is something that *could* be planned. Some eventualities can be planned, it seems, and some can't, and this is relevant. Since any future-oriented proposition trivially *could* be included in a set of future-oriented propositions, we must have a more restrictive definition of what it is to be a plan.

   In the second problem, too, this issue arises. Above, I have argued that the speaker confidence cannot be part of the assertion of a futurate. Suppose instead that the confidence is expressed in a presupposition, that the speaker of a futurate presupposes that the eventuality will actually happen, and that there is some sort of context shift that allows the past tense futurate to be truly asserted even when the speaker goes on to deny that the event will actually happen. But this attempt does not provide satisfactory results either, as Vetter (1973) argues. If there were such a presupposition, (17b) would deny its own presupposition, because the presupposition of the embedded clause would also be a presupposition of the matrix. Consider (18), for example.

(18) I doubt that John has quit smoking.

The matrix clause, like the embedded clause, presupposes that John smoked at one time; this property is a general property of attitude sentences (Karttunen 1974, Heim 1992). Vetter argues that the same kind of presupposition projection is at work in (12), repeated here as (19).

(19) I doubt that the Red Sox are playing the Yankees tomorrow.

Thus, the sincere utterer of (19) would doubt whether the Red Sox would play, but would presuppose that he or she was sure that they would play. Likewise, a putative presupposition of speaker confidence would be totally inappropriate for futurate questions, as in (20). We certainly would not want the speaker of (20) to be presupposing that the Red Sox are playing the Yankees tomorrow.

(20) Are the Red Sox playing the Yankees tomorrow?

Therefore, following Vetter, I conclude that a presupposition of speaker confidence is not the correct presupposition for futurates.

The appropriate presupposition, rather, seems to be a conditional one: the speaker is certain that *if* the plan says the Red Sox play the Yankees tomorrow, they will. This can be a presupposition of both the embedded clause and the matrix clause without contradiction, and it would yield the correct judgments. A conditional presupposition of this sort would also solve the first problem, by providing a source for the excluded-middle presupposition. Recall that there seemed to be a presupposition that either p is planned or not-p is planned. As long as plans are assumed to be exhaustive, the excluded-middle presupposition would be subsumed under this conditional presupposition; a p-eventuality must be the sort of thing that can be planned. A conditional presupposition therefore seems appropriate.

(21) *Conditional presupposition*
     If p is planned, p will happen.

However, if that is so, again we must specify more about the plan than we have so far. If a plan is just a set of future-oriented propositions, then futurates should be able to vary with respect to whether their plans consist only of propositions describing eventualities that will actually turn out to happen, or only of those that will not turn out to happen, or of a combination of both. Thus, there should be no conditional presupposition and no excluded middle. But this conclusion contradicts the observed facts. Therefore, once again, we need a more restrictive definition of a plan than merely an arbitrary set of future-oriented propositions; ideally, this definition should be expressed in terms of more primitive semantic concepts. To that end, let us consider in more detail our intuitions about plans.

3 Intuitions about Plans

If we consider what we know about plans aside from their being sets of future-oriented propositions, we might come up with the following initial intuitions:

1. A certain entity has a desire for the plan to be realized.
2. The entity has the ability to see that the plan is realized.
3. Plans can change, since desires and abilities can change.

I take these intuitions, without argument, to be a reasonably good starting point. Unpacking them will motivate a theory of plans in more familiar semantic terms.

3.1 On Being Committed

The first intuition on the list is that the person making the plan for p must somehow want p to happen. However, an entity can have a plan and intend to carry it out, seemingly without actually wanting to, as in (22).

(22) I'm doing laundry tomorrow, even though I don't want to.

Is there a problem, then, with the naive intuition?

I think we can safely say that there is no substantive problem here, on the strength of Kratzer's (1991) discussion of a parallel issue. Here is a version of Kratzer's point. Suppose that I only have enough clean clothes to make it through tomorrow. Suppose also that the propositions in (23) are true.

(23) a. I want to have clean clothes.
     b. I don't want (= want not) to do my laundry.
     c. I don't want to (= want to not) have someone else do my laundry.
     d. I don't want to (= want to not) buy new clothes.

Assuming that the only ways I am going to get clean clothes are by washing my clothes myself, having someone else do it for me, or buying something new to wear, there is no world in which all of the desires expressed in (23) are true, because taken together they are contradictory. And yet the desires in (23) are perfectly natural simultaneous desires.

The introduction of gradable modality into the modal framework allows us to model contradictory desires such as those in (23). The idea is that my desires in (23)—and desires in general—do not all have equal weight. In the present instance, suppose that above all else I would like to avoid buying new clothes. Next most important to me is to avoid having someone else do my laundry. Having clean clothes is my next priority, and avoiding doing the laundry myself is least important. In such a scenario, it is obvious that my best course of action is to resign myself to doing my laundry. Thus, the utterance in (24) expresses a true proposition.

(24) I should do laundry tomorrow, even though I don't want to.

Now we alter the theory of modals to get (24) to turn out true. In Kratzer's terminology, the conversational background consisting of the propositions expressed in (23) provides an ordering source on the accessible worlds being quantified over. The ordering source partitions the worlds into sets and ranks them according to how well they agree with the conversational background. In our case, for instance, worlds in which I do my own laundry are the best possible worlds; worlds in which I buy new clothes so I can have something to wear tomorrow are the worst.

The modal *should* is approximated by universal quantification over, not the set of accessible worlds, but the set of best accessible worlds. In all those worlds, I do my laundry. Thus, the reason that (24) comes out true is not that my desires are not involved in the evaluation of the *should*-clause, but that *should* takes into account my ''net'' desires, while *want* does not.

This mechanism works equally well to explain why (22), repeated here as (25), is true, not contradictory.

(25) I'm doing laundry tomorrow, even though I don't want to.

We might therefore revise the statement of the intuition to say that the following is true of an entity making a plan for p: p is true in all the worlds that are optimal according to an ordering source given by the entity's desires. Then a fact about an entity's plan for p is that p is true in all the worlds consistent with the entity's net desires, which we might also term commitments.

3.2 On Ability

The second intuition about plans is that the entity making the plan, if it is a valid plan, has the ability to see that the plan is realized. To demonstrate the role of this claim, suppose that five-year-old Max utters the sentence in (26a) and his mother Chelsea utters the one in (26b).

(26) a. We're seeing *Spiderman* tomorrow.
b. We are not seeing *Spiderman* tomorrow.

Max is clearly mistaken in uttering (26a). He could in fact be mistaken in either of two ways. He could be making a mistake about his mother's commitments, still accepting that she is the one with the ability to determine which movie the family will see. In that case, he will probably correct his belief upon hearing what his mother has to say on the subject.

On the other hand, being a five-year-old, he could equally be under the misapprehension that he has the authority to make plans for the family. On that scenario, he wants to see *Spiderman* (that is, he is committed to it), and he believes that he has the ability to make that happen, so that his mother's comment may well not change his belief.

But it is Chelsea and not Max, of course, who really has the ability to say what the family does. For a certain class of eventualities, if she wants an eventuality to happen, it happens. And equally, if she doesn't want an eventuality to happen, it doesn't happen. What Mom says, goes—or at least, is presupposed to go.

3.3 On Changes

But plans do not always get realized. One way they might fail to be realized is that the person doing the planning changes his or her mind. The other way is that the person's abilities change; that is, the best-laid schemes of mice and men might go, as they so often do, awry. We may presuppose that Mom has the ability to say what goes, but it can happen that somewhere along the way, something unexpected, and more powerful, disrupts her plans. Chelsea may, for example, utter the sentence in (27), but if there are flash floods and the family cannot get to the theater the next day, what she ordained does not end up happening.

(27) We're seeing *Scooby Doo* tomorrow.

This kind of thing happens now and then. It does not shake our belief in Chelsea's authority as a mother if there happens to be a flash flood just as the family starts out for the movie theater.[9]

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[9] It is interesting that (ia) and (ib), which are roughly equivalent to each other, are possible (brought to my attention by an anonymous reviewer).

(i) a. We're seeing *Scooby Doo* tomorrow, unless it rains.
b. We're seeing *Scooby Doo* tomorrow, if it doesn't rain.

Does the possibility of adding an *unless-* or *if*-clause conflict with our hypothesis that the speaker of a futurate has confidence that the plan will be realized? It seems not. There are two ways to understand these utterances. The first, available especially if the pause for the comma is not long, is that the plan itself is a plan for a conditional proposition,

We still want to presuppose that what Mom and Dad say about certain events, goes, all else being equal.[10] This kind of ceteris paribus restriction on the possible worlds being considered is a familiar one, seen throughout the modal literature (e.g., Stalnaker 1968, Lewis 1986, Kratzer 1991). Dowty (1979) invokes it for progressives by delimiting a set of ''inertia worlds,'' which is roughly the set of worlds in which things proceed normally. This restriction also applies to commitments: we assume that they will not change, even though we recognize that they could.

4 Proposal

Having unpacked plans in terms of desires and abilities and the fact that either of these can change, I will now incorporate these intuitions into the semantics of futurates.

The initial hypothesis was that futurates assert the existence of a plan that provides for p. Recall once more the examples that are problematic for this hypothesis, repeated here from (17).

(28) a. #I doubt that the Red Sox are playing the Yankees tomorrow.
     b. #The Red Sox are playing the Yankees tomorrow, but they might not.

The example in (28a) mysteriously excludes the middle, and the example in (28b) is mysteriously contradictory. I attributed these problems to an inadequate understanding of plans. If the presupposition in (29) (= (21)) could be added, however, all would be well.

(29) *Conditional presupposition*
     If p is planned, p will happen.

(29), of course, could be stipulated, but we wanted to know whether it followed from some more basic properties of plans.

The intuitions fleshed out above regarding the entities behind the plans will now prove to be of use in augmenting our representation of plans to account for (28a) and (28b). Before we start, let us agree to call the entity who makes a plan a *director*. As we have seen, the director need not be the subject of the sentence; for now, let's suppose that a director is supplied contextually, or at least that the existence of a director is accommodated. Directors must be animate; they may also be plural individuals (e.g., Major League Baseball and Max's parents both qualify as possible directors).

A director for a proposition p, according to the intuitions detailed above, has at least two properties: the ability to ensure that p happens, and the commitment, or ''net desire,'' to seeing that it does happen. I would like to propose that, in futurates, the former property is attributed

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namely, the proposition that we see *Scooby Doo* tomorrow if it's not raining then. In that case, we still have confidence in the plan, even though the plan itself has a contingency built into it. The second way to understand the sentences in (i), available if there is a substantial intonational break between the clauses, is to treat the *unless*- or *if*-clause as an afterthought, representing a change of context. That is, the speaker at first is not considering the possibility that it will rain (in which case the futurate is true), and then does consider it. At that point, it would be true to assert a plan for a conditional proposition, as in the first case.

[10] What if Mom and Dad disagree? If they are really sharing control, they probably won't talk about the possible options using futurates. The reader can verify this by trying some futurates on his or her significant other.

to the director in a presupposition, and the latter property is attributed to the director in the assertion, as stated informally in (30).

(30) a. *Direction presupposition*
       The director has the ability to ensure that a p-eventuality happens.
    b. *Commitment assertion*
       The director is committed to a p-eventuality happening.

In effect, the presupposition in (30a) is a restatement of what I called the conditional presupposition, given in (29). Like the conditional presupposition, this direction presupposition accounts for the fact that the middle is excluded. If it is presupposed that the contextually supplied director has the ability to see that the eventuality is carried out, presupposition failure will rule out utterances such as #*The Red Sox are defeating the Yankees tomorrow*, cases where we assume there could not be such a plan. This is as desired.

   The second problem is also solved. The reason (28b) is a contradiction, on this proposal, is that the second conjunct contradicts an entailment of the first conjunct. The utterer of *The Red Sox are playing the Yankees tomorrow* presupposes that the plan for them to do so is made by someone who has the ability to see that such a plan is carried out (Major League Baseball, in this case). When this presupposition is combined with the assertion that there is such a plan, it is entailed that the plan will come to fruition. Thus, it feels like a contradiction for the speaker to continue on to assert that it might not. However, if past tense affects the temporal location of both the director's commitments and the director's abilities, we still correctly predict it is not contradictory to say (31).

(31) The Red Sox were playing the Yankees tomorrow, but then Major League Baseball changed its mind.

This is because we are only making a statement about what an entity's commitments and abilities were at some time in the past. Since either of these could have changed since then, the speaker is not committed to the belief that the eventuality did or will happen.

   At this point, we have a hypothesis about both the assertion and the presupposition of futurates. To formalize it, let us define *d directs p in w at t* to capture the notion of the ability to make a valid plan, for use in presuppositions of futurates. This ability is the ability to ensure that, if d is committed to p's happening, p will happen. (Note that this formulation is quite similar to the conditional presupposition in (29).) The antecedent includes all cases where p is true in all the worlds in which d's commitments are satisfied; we discussed this earlier. The consequent, however, we have not discussed. How to express what will actually turn out to happen is not clear. It could be a metaphysical modal base with an empty ordering source, or a single future. We do not have any way to decide between these alternatives here, so I will just use the former option. Here, then, is a formal definition of direction:[11]

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[11] For reasons of space, not to mention complexity, I will not further formalize the notions of commitment and ability, but I take the abilities in the definition of direction to be substantive abilities—that is, abilities that supervene on physical and social facts about the director.

(32) An entity d *directs* a proposition p in w at t iff:
$\forall$w′, d has the same abilities in w′ as in w:
[$\forall$w″ metaphysically accessible from w′ at t and consistent
with d's commitments in w′ at t:
[$\forall$w‴ metaphysically accessible from w at t:
[$\exists$t′ > t: [p(w″)(t′)] ⇔ [$\exists$t″ > t: [p(w‴)(t″)]]]]]]

What this definition does is to take a set of worlds and say that there is a subset of that set, such that all the worlds in the subset agree with all the worlds in the larger set on a certain property.[12] The larger set is the entire set of metaphysically possible worlds, while the subset is the set of worlds consistent with the director's commitments (but still metaphysically accessible). The property is the property of there being some—possibly nonspecific—future time at which p is true in the world in question. Thus, whether the director's commitment-worlds have the property determines whether the entire set of metaphysically possible worlds has that property or not.[13] That is, what the director says, goes (or at least, is presupposed to go).

The presupposition of futurates is then simply the presupposition in (33).

(33) *Direction presupposition*
d directs p in w at t.

The assertion is, still, that the future-oriented proposition p is consistent with d's commitments (i.e., maximally consistent with d's desires) in w at t.

(34) *Commitment assertion*
d is committed to p in w at t.

And the meaning we want for the futurate operator is as follows:[14]

(35) Op(d)(p)(w)(t) is defined iff d directs p in w at t. If defined,
Op(d)(p)(w)(t) = 1 iff d is committed to p in w at t.

To summarize: I have presented a denotation for a futurate operator that solves two problems of futurate meaning. The problems, I argued, indicated that we needed more information about what constitutes a plan. This information needed to be derived from more familiar semantic concepts, in order to facilitate the assimilation of futurate meanings to other imperfective meanings. On the basis of intuitions about plans, I employed the concept of a *director*, the entity who is able to make a p-eventuality come about. I argued that futurates presuppose that an entity d directs a proposition p, and that they assert that d is committed to p.

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[12] The double restriction to metaphysically accessible worlds is not redundant. Suppose, for instance, that d wants p and also wants not-p, and only p is metaphysically possible. If we were considering all of d's desire-worlds, d would not have an opinion about p. But intuitively, d does have an opinion about p in such a case.

[13] It is here that the Law of the Excluded Middle is incorporated: the worlds must all agree, whether on p or on not-p.

[14] Ideally, there would be a better theory of the syntax-semantics interface in futurates; this operator is not intended as a serious candidate for a morphologically real null operator. Rather, its meaning is expected to be part of the meaning of the imperfective operator. For some further discussion, see Copley 2005.

5 Further Questions

One facet of the approach taken here is that much of the meaning of futurates follows from our real-world intuitions about plans. Since these intuitions led us to a modal semantics, complete with ordering sources and ceteris paribus conditions, we are now in a position to ask how the modality in futurate progressives can be assimilated to the modality in nonfuturate progressives (and how both, perhaps, can be assimilated to the modality in other imperfectives, assuming that imperfectives and progressives trigger the imperfective paradox because of a modal component to their meaning; Dowty 1979).

A question that will need to be addressed by a more complete theory of futurate meaning is how future orientation without an overt modal can ever be possible in the absence of a flavor of planning. In (36a), for example, future reference is possible even though (presumably) nobody plans for the sun to rise.[15] This kind of example contrasts with the kind of unplannable events we have been considering up to this point, such as a raining event, as in (36b).

(36) *Achievements*
    a. The sun rises at five tomorrow.
    b. #It rains at five tomorrow.

This fact should not, however, cause us to abandon the preceding discussion of plans in futurates. Instead, it should make us wonder what the differences and similarities are between plans, which have to do with an animate entity's force of will, and natural forces, which cause the sun to rise or rain to fall. This kind of discussion is beyond the scope of this article; however, recently a number of papers in the generative tradition have taken up the idea that physical forces and intentions are represented similarly in both the grammar and cognitive representations (e.g., Wolff 2007, Guéron, to appear, Harley and Folli, to appear), an idea championed much earlier by Talmy (1975, 1988). Then the question is what allows intentions to have results in the future, while some but not all physical forces (as shown in (36)) can act in the future. We might note that gravity (or, because our explanation should depend only on naive physics, whatever it is that makes the sun rise) acts on the sun both now and throughout the rising process, while there is no single force happening now that makes it rain later. A greater understanding of the contrast in (36) will no doubt rely on finding out how we conceive of physical forces as different from intentions.

References

Binnick, Robert I. 1991. *Time and the verb*. Oxford: Oxford University Press.
Cipria, Alicia, and Craige Roberts. 2000. Spanish *imperfecto* and *pretérito*: Truth conditions and aktionsart effects in a Situation Semantics. *Natural Language Semantics* 8:297–347.

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[15] While *The sun rises at five tomorrow* is felicitous, as in (36), ?*The sun is rising at five tomorrow* is often judged to be slightly degraded by comparison (Leech 1971).

Copley, Bridget. 2005. Ordering and reasoning. In *New work on modality*, ed. by Jon Gajewski, Valentine Hacquard, Bernard Nickel, and Seth Yalcin, 7–34. MIT Working Papers in Linguistics 51. Cambridge, MA: MIT, MIT Working Papers in Linguistics.

Copley, Bridget. 2008. *Semantics of the future*. London: Routledge.

Dowty, David. 1979. *Word meaning and Montague Grammar*. Dordrecht: Reidel.

Fraassen, Bas van. 1966. Singular terms, truth-value gaps, and free logic. *Journal of Philosophy* 63:481–495.

Geffner, Héctor. 2002. Perspectives on artificial intelligence planning. In *Proceedings of the Eighteenth National Conference on Artificial Intelligence*, 1013–1023. Menlo Park, CA: AAAI.

Guéron, Jacqueline. To appear. On the temporal function of modal verbs. In *Time and modality*, ed. by Jacqueline Lecarme and Jacqueline Guéron. Dordrecht: Springer.

Harley, Heidi, and Raffaella Folli. To appear. Teleology and animacy in external events. *Lingua*.

Heim, Irene. 1992. Presupposition projection and the semantics of attitude verbs. *Journal of Semantics* 9: 183–221.

Huddleston, Rodney. 1977. The futurate construction. *Linguistic Inquiry* 8:730–736.

Karttunen, Lauri. 1974. Presupposition and linguistic context. *Theoretical Linguistics* 1:181–194.

Kratzer, Angelika. 1991. Modality. In *Semantics: An international handbook of contemporary research*, ed. by Arnim von Stechow and Dieter Wunderlich, 639–650. Berlin: Mouton de Gruyter.

Lakoff, George. 1971. Presupposition and relative well-formedness. In *Semantics: An interdisciplinary reader in philosophy, linguistics and psychology*, ed. by Danny D. Steinberg and Leon A. Jacobovits, 329–340. Cambridge: Cambridge University Press.

Landman, Fred. 1992. The progressive. *Natural Language Semantics* 1:1–32.

Leech, Geoffrey N. 1971. *Meaning and the English verb*. London: Longman.

Lewis, David. 1986. *On the plurality of worlds*. Oxford: Blackwell.

Portner, Paul. 1998. The progressive in modal semantics. *Language* 74:760–787.

Prince, Ellen. 1971. Futurate be-ing, or Why Yesterday morning, I was leaving tomorrow on the Midnight Special is OK. Ms., University of Pennsylvania, Philadelphia. Presented at the 1973 summer meeting of the Linguistic Society of America.

Stalnaker, Robert. 1968. A theory of conditionals. *Philosophia* 5:269–286.

Talmy, Leonard. 1975. Semantics and syntax of motion. In *Syntax and semantics 4*, ed. by John P. Kimball, 181–238. New York: Academic Press.

Talmy, Leonard. 1988. Force dynamics in language and cognition. *Cognitive Science* 12:49–100.

Thomason, Richmond. 1970. Indeterminist time and truth-value gaps. *Theoria* 36:264–281.

Vetter, David C. 1973. Someone solves this problem tomorrow. *Linguistic Inquiry* 4:104–108.

Weld, Daniel S. 1994. An introduction to least commitment planning. *AI Magazine* 15:27–61.

Wolff, Phillip. 2007. Representing causation. *Journal of Experimental Psychology: General* 136:82–111.

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